

THE EFFECT OF REGULATION SCAFFOLDS ON ONLINE FORMATIVE
PEER ASSESSMENT ACTIVITIES: A MIXED METHODS STUDY

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STUDY**

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

THE EFFECT OF REGULATION SCAFFOLDS ON ONLINE FORMATIVE PEER ASSESSMENT ACTIVITIES: A MIXED METHODS STUDY

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The primary purpose of this research was to investigate the effect of the regulation scaffolds on online formative peer assessment (FPA) activities. To this end, first, it analyzed the effect of the regulation scaffolds on peer feedback provision, feedback uptake, and perceived contributions of the online FPA environment. Second, it described students' use of the regulation scaffolds and experiences in the FPA activities. The study was an embedded experimental mixed methods research conducted with 70 ninth-grade students from a high school for two writing tasks. The students were assigned to the two groups to use the online FPA environment with regulation scaffolds (WRS) and without regulation scaffolds. The results revealed that the group WRS gave a higher quality of peer feedback and more attention to the received peer feedback in the first task, whereas there was no significant difference between the groups in the second task. In addition, the regulation scaffolds did not contribute to the revision of the writings in both tasks. However, the students in the group WRS perceived greater contributions of the online FPA environment to the peer interaction and knowledge gains. Descriptive and qualitative findings regarding

students' use of the scaffolds and experiences elucidated both contributions and problems of the scaffolds. Overall, this study delved into the whole online FPA process in depth to provide a comprehensive account of the role of FPA activities and scaffolds. The study also proposes design guidelines to enhance FPA practices and directions for future research based on empirical evidence.

Keywords: Formative Peer Assessment, Peer Feedback, Scaffolding, Self-Regulated Learning, Online Learning



ÖZ

DÜZENLEME DESTEKLERİNİN ÇEVİRİM İÇİ BİÇİMLENDİRİCİ AKRAN DEĞERLENDİRME ETKİNLİKLERİNE ETKİSİ: BİR KARMA YÖNTEM ARAŞTIRMASI

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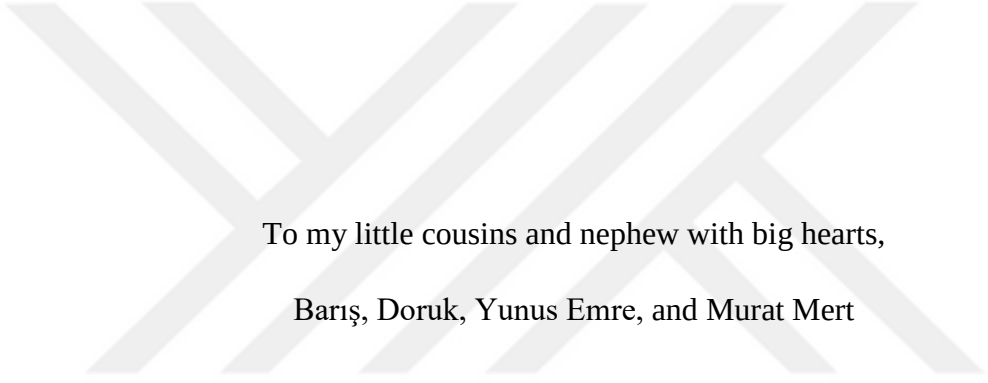
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Bu araştırmanın ana amacı, düzenleme desteklerinin çevrim içi biçimlendirici akran değerlendirme (BAD) etkinliklerine etkisini incelemektir. Bu amaç doğrultusunda ilk olarak; düzenleme desteklerinin akran geri bildirimi verme, geri bildirim alma ve çevrim içi ortamın algılanan katkılarına etkisi analiz edilmiştir. İkinci olarak ise öğrencilerin düzenleme destek kullanımları ve BAD etkinliklerindeki deneyimleri tanımlanmıştır. Çalışma, iki yazma görevi için bir lisedeki 70 dokuzuncu sınıf öğrencisiyle gerçekleştirilen gömülü deneysel karma yöntem araştırmasıdır. Öğrenciler düzenleme destekleri içeren (DDİ) ve içermeyen çevrim içi BAD ortamını kullanmak için iki gruba atanmıştır. Sonuçlar; ilk görevde DDİ grubunun daha yüksek kalitede akran geri bildirimi verdiğini ve alınan geri bildirimde daha fazla dikkat ettiğini, ikinci görevde ise gruplar arasında anlamlı farklılığın olmadığını ortaya koymuştur. Ayrıca düzenleme destekleri her iki görevde de yazıların düzeltilmesine katkı getirmemiştir. Bununla birlikte DDİ gruptaki öğrenciler, çevrim içi BAD ortamının akran etkileşimine ve bilgi kazanımına daha fazla katkı sağladığını algılamışlardır. Öğrencilerin destek kullanımları ile deneyimlerine ilişkin betimsel ve nitel bulgular ise desteklerin hem katkılarını hem de problemlerini açığa

ıkarmıřtır. Genel olarak bu alıřma, BAD etkinlik ve desteklerinin rol hakkında kapsamlı bir tanımlama saęlamak iin tm evrim ii BAD srecini derinlemesine arařtırmıřtır. alıřma ayrıca BAD uygulamalarını iyileřtirmek ve gelecek arařtırmalara yn vermek iin deneysel kanıta dayalı neriler sunmaktadır.

Anahtar Kelimeler: Biimlendirici Akran Deęerlendirme, Akran Geri Bildirimi, Destekleme, z-Dzenleyici ęrenme, evrim ii ęrenme





To my little cousins and nephew with big hearts,
Barış, Doruk, Yunus Emre, and Murat Mert

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LIST OF ABBREVIATIONS

ABBREVIATIONS

FPA: Formative peer assessment

W/ORS: Without regulation scaffolds

WRS: With regulation scaffolds

SWAPPER: Supportive writing and peer assessment environment

LMS: Learning management system

TLL: Turkish Language and Literature

CHAPTER 1

INTRODUCTION

The introduction chapter firstly provides the background of this study and then explains the problem statement. Afterward, it reveals the purpose of the study and lists the research questions accordingly. The significance of the study is also discussed in different aspects. Finally, the terms of the research are defined.

1.1 Background of the Study

Assessment is one of the instructional events in classrooms. It aims to gather and evaluate evidence of learning to identify students' strengths and weaknesses, monitor students' progress toward expected performance level, give grades, and provide feedback (McMillan, 2013). One way to examine classroom assessment from a narrower perspective is classifying it into summative and formative concerning the function it serves (William, 2014). Summative assessment is administered at the end of some units of instruction to acquire a measurement of achievement regarding students' performance (Cizek, 2010). In contrast, formative assessment is conducted during the instruction to diagnose learners' strengths and weaknesses, guide students or educators in their future learning or instructional decisions, and enhance students' autonomy (Cizek, 2010). This study focuses on formative assessment.

Recent definitions of formative assessment emphasize students' responsibility from their own and others' learning, self-direction, and self-assessment (Cizek, 2010). For example, in 1989, Sadler stated that "formative assessment is concerned with how judgments about the quality of student responses (performances, pieces, or works) can be used to shape and improve students' competence by short-circuiting the randomness and inefficiency of trial-and-error learning" (p. 120). On the other hand,

in 2009, Black and Wiliam defined formative assessment as analysis of learners' performance by teachers, learners themselves, or peers in order to decide potential remedial actions for learning and teaching. Therefore, they emphasized students as one of the stakeholders of formative assessment.

One particular formative assessment type in which students are active agents is formative peer assessment (FPA). The broad definition of peer assessment is "an arrangement for learners to consider and specify the level, value, or quality of a product or performance of other equal-status learners" (Topping, 2009, p. 20). However, peer assessment in formative type intends for students to plan their learning, determine their strengths, weaknesses, and mistakes in their performance, and improve metacognitive and other skills with the feedback they receive from their peers (Topping, 2009). Therefore, feedback plays a major role in FPA for learners to evaluate and enhance their performance. Accordingly, Kollar and Fischer (2010) identify FPA with four main activities that emphasize feedback: task performance, feedback provision, feedback reception, and revision. In other words, after students perform a task, they give feedback to their peers and then receive peer feedback regarding their performance. Finally, they revise their performance based on feedback. Consequently, they become both feedback providers and feedback receivers in this process.

While students act as a feedback provider and receiver in FPA, they can gain different benefits. For instance, FPA improves students' task engagement and performance, self-assessment, self-regulated learning, metacognitive awareness, reflective thinking, critical judgment, and sense of responsibility (Ashenafi, 2017; Kim & Ryu, 2013; Reinholz, 2016; Topping 2009; van Popta, Kral, Camp, Martens, & Simons, 2017). Besides, FPA can support cooperation among students as they request and provide peer help and enhance their task with peer feedback (Topping, 2009).

FPA results in such contributions provided that the activities in FPA are performed by students effectively. It is necessary for learners to give and receive quality

feedback (Hattie & Timperly, 2007; Narciss, 2008; van der Pol, van den Berg, Admiraal, and Simons, 2008), process feedback information mindfully, and use it (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Bolzer, Strijbos, & Fischer, 2015; Nicol, 2014). However, literature reveals that students encounter difficulty in fulfilling these expectations (Kim & Ryu, 2013; Prins, Sluijsmans, Kirschner, & Strijbos, 2005; O'Donnell & Topping, 1998; Strijbos, Ochoa, Sluijsmans, Segers, & Tillema, 2009; Wichmann, Funk, & Rummel, 2018).

Feedback provision is one activity in FPA that is mostly discussed with the quality of feedback students give. Feedback is reported among the top 10 factors that affect achievement in educational environments; nonetheless, meta-analysis studies reveal that effect size of feedback varies considerably from one study to another (Hattie & Gan, 2011). One reason underlying this result is differences in the content or quality of feedback provided (Narciss, 2008). To give quality feedback, it is crucial to address assessment criteria, explain strengths and weaknesses with justifications, propose suggestions to improve performance, localize problems and suggestions, and not to use a language discouraging individuals and harming their self-esteem (Brinko, 1993; Gan & Hattie, 2014; Gielen, Peeters, Dochy, Onghena, & Struyven, 2010a; Hattie & Timperley, 2007; Nelson & Schunn, 2009; Prins, Sluijsmans, & Kirschner, 2006; Sluijsmans, Brand-Gruwel, van Merriënboer, 2002). However, the provision of such feedback is a cognitively challenging activity for students (Kim, 2009; Kim & Ryu, 2013; O'Donnell & Topping, 1998). Students need to grasp the aim of task performance and assessment criteria, analyze errors in peers' performance by activating domain knowledge, identify different perspectives and evaluate them critically, explain evaluation results, and provide suggestions (O'Donnell & Topping, 1998; van Popta et al., 2017). To mitigate challenges of feedback provision and support students in this activity, use of scaffolds is recommended (Gielen & De Wever, 2015a, 2015b, 2015c; Hovardas, Tsivitanidou, Zacharia, 2014; Kollar & Fischer, 2010; Walker, 2015).

Feedback reception and revision are the activities following feedback provision in FPA. In these activities, students are expected to evaluate the feedback they received

critically, think about the reasons behind their performance level based on peer feedback, plan how to improve their performance, and apply the plan by revising their performance (Andrade, 2013; Bangert-Drowns et al., 1991; Bolzer et al., 2015; Kollar & Fischer, 2010; Nicol, 2014). It results in feedback uptake, and students can attain higher metacognitive awareness and performance levels (Kim, 2009; Li, Liu, & Zhou, 2012; Wichmann et al., 2018). Nevertheless, these activities are cognitively demanding for learners similar to feedback provision (Adachi, Tai, & Dawson, 2018b; Gravett & Winstone, 2019; Kollar & Fischer, 2010; Nicol, 2012; Patchan, Schunn, & Correnti, 2016). Students inexperienced in the task can be overcome much more (Wichmann et al., 2018). They may indicate insufficient engagement in reflection on the received feedback by themselves (Wichmann et al., 2018). Even if they think reflectively, there is a risk of unproductive causal attributions that result from linking failure to ability, chance, and personal characteristics (Andrade, 2013). Therefore, it is necessary to support students' constructive interpretation and use of feedback (Andrade & Brookhart, 2016; Boud & Molloy, 2013; Gravett & Winstone, 2019; Winstone, Nash, Parker, & Rowntree, 2017a).

Overall, the literature indicates challenges in FPA activities and the need for scaffolds. However, there are limited research and mixed findings regarding how to structure FPA with instructional scaffolds to facilitate FPA activities and optimize its benefits (Baker, 2016; Gikandi & Morrow, 2016; Panadero, Jonsson, & Alqassab, 2018b; Wanner & Palmer, 2018; Zheng, Zhang, & Cui, 2020). In this regard, the use of theoretical frameworks can be guiding to answer the questions regarding the design of FPA (Strijbos et al., 2009). The theories that can serve for this purpose are self-regulated and co-regulated learning (Panadero, Jonsson, & Strijbos, 2016b). One model constructed with these theories is Andrade's (2013) "model of assessment as the regulation of learning by oneself and others" (p. 22).

In Andrade's (2013) model, after teachers set the task, learners build goals and select tactics and strategies. Afterward, they try to accomplish their goals, which brings internal learning outcomes and externally observable outcomes. Meanwhile, they assess their progress toward their goals, evaluate the effectiveness of their strategies,

and regulate their cognition, motivation, and behavior with internal feedback. In this process, they also interpret external feedback coming from their peers and other sources. Goal setting, planning, and self-assessment described in this model can enhance learners' understanding of task requirements before peer feedback provision. Then, it contributes to the quality of feedback they will give their peers (Narciss, 2008) as they can develop cognitive schemas about the task before feedback provision (Könings, van Zundert, & van Merriënboer, 2019). In addition, learners' attention to the received peer feedback may increase to compare their internal feedback with external feedback (Gibbs & Simpson, 2004). Interpretation of peer feedback concerning task engagement and performance can also positively affect revision and the improvement of the performance (Gielen, Tops, Dochy, Onghena, & Smeets, 2010b).

There are other actions that are not covered in Andrade's model but can support regulated learning and can be beneficial for the activities in FPA. They include feedback requests, reflection on feedback provision, and dialog about received feedback. Feedback requests are learners' indication of what they need to receive feedback on (Gielen et al., 2010a). Learners requesting feedback apply the social form of information-seeking behavior to improve their performance with the help of others (Zimmerman & Moylan, 2009). Then, their peers receiving requests become more motivated to provide useful and elaborated feedback (Gielen et al., 2010b, Voet, Gielen, Boelens, & De Wever, 2018). In addition, learners whose requests are responded can pay more attention to the received feedback, perceive feedback more helpful, and use feedback to enhance their performance (Gibbs & Simpson, 2004; Gielen et al., 2010a, 2010b). Reflection on feedback provision can be another regulatory process in FPA. While students give peer feedback to indicate errors, gaps, and misconceptions, they can evaluate their subject knowledge and performance (Nicol, 2012). Then, it can trigger learners to revise their work even before they get peer feedback (Nicol, 2014). Moreover, it can help students discern the learning benefits of peer assessment (van Popta et al., 2017). Dialog about received feedback can also be added to Andrade's (2013) model to foster regulation

of learning. Dialog in which feedback receivers discuss the feedback and their revision plans with their feedback providers enhances understanding and acceptance of peer feedback (Strijbos et al., 2009), reflective knowledge building, self-evaluation, and self-regulation (Nicol, 2012; Panadero, Andrade, Brookhart, 2018a; Reinholz, 2016). It can bring about higher satisfaction with FPA, as well (Kim & Ryu, 2013).

Overall, FPA requires both domain-specific skills and higher-order thinking skills such as critical thinking, decision making, and problem-solving (van Zundert, Könings, Sluijsmans, & Van Merriënboer, 2012a; van Zundert, Sluijsmans, Könings, & van Merriënboer, 2012b; Voet et al., 2018). Therefore, FPA is an arduous task for students. To optimize benefits of FPA, it is significant to investigate how to structure FPA with scaffolds (Baker, 2016; Hovardas, 2014; Kollar & Fischer, 2010; Gielen, & De Wever, 2015a, 2015b; Reinholz, 2015; Wanner & Palmer, 2018). Aforementioned self- and co-regulatory processes can support feedback provision, reception, and revision activities in FPA (Panadero et al., 2016). Moreover, they can result in positive perceptions about FPA for students. Therefore, instructional scaffolds can target to activate students' regulatory processes to enhance activities in FPA.

1.2 Problem Statement

FPA is mostly implemented as standalone activities not grounded in theoretical frameworks (Ashenafi, 2017; Kim, 2009). Lack of connections between FPA and theoretical frameworks can challenge practitioners in the design of FPA as they need to consider and decide different elements (Adachi, Tai, & Dawson, 2018a; Mercader, Ion, & Diaz-Vicario, 2020; Topping, 1998). In addition, the scaffolds integrated to FPA up to now may be limited to account for the complex nature of learning and activities in FPA. On the other hand, there is a need for taking greater perspective in FPA research to support both feedback providers and receivers (Gielen, & De Wever, 2015a, 2015b; Kim, 2009). This study proposes the use of scaffolds that can trigger

learners' regulatory processes in all activities in FPA to improve students' feedback provision and uptake.

Another design element that can facilitate the successful implementation of FPA is technology use (Adachi et al., 2018a). There are a variety of technological tools for assessment to aid programmed and student-created content (Bennett, Dawson, Bearman, Molloy, & Boud, 2017). For example, online tools in learning management systems (LMSs) can be used to enable interaction and collaboration in FPA (Gikandi & Morrow, 2016). The use of such tools also affords to archive assessment processes and products in the online environment. As a result, it provides students with the opportunity to revisit their own and peers' prior contributions to knowledge construction, and monitor and reflect on their learning (Carless & Boud, 2018; Gikandi, Morrow, & Davis, 2011). In addition, teachers can continuously monitor their students' learning progression and give appropriate formative feedback to them in the online environment (Gikandi et al., 2011). Therefore, technology use can optimize the benefits of FPA activities. However, "it requires delicate orchestration of social, pedagogical and technological systems" (Pachler, Daly, Mor, & Mellar, 2010, p. 720). Current design suggestions regarding the technology-enhanced FPA activities, online ones in particular, are not adequate to provide meaningful learning experience based on theoretical perspectives (Gikandi & Morrow, 2016; Gikandi et al., 2011; Law & Baer, 2020; Zheng et al., 2020). Hence, it is significant to structure online environments for FPA considering theoretical frameworks and examine their impact. The use of the aforementioned regulation scaffolds in online context and analysis of their effect on students' feedback provision and uptake and perceptions can be one valuable step to fulfill this need.

There is also a call for more research to determine for whom, when, and how peer feedback works for certain types of learning (Panadero et al., 2018b; van Zundert, Sluijsmans, & Van Merriënboer, 2010). Therefore, the educational level of students and the duration of FPA activities can be a further concern in future research in addition to instructional scaffolds. In prior FPA studies, students in higher education

have become main participant group; hence, there is scarce research in which K-12 students participated (Peters, Körndle, & Narciss, 2018; Tenório, Bittencourt, Isotani, & Silva, 2016; Topping, 2010; van Zundert et al., 2010; Zheng et al., 2020). It implies the need for studies with the participants from lower educational levels to discuss the current findings by considering young learners (Patchan et al., 2016). In addition, it is necessary to investigate the role of FPA with instructional scaffolds for a longer period and identify when peer feedback is the most effective to enhance performance (Gielen & De Wever, 2015b; Könings et al., 2019).

Finally, studying the only effect of certain scaffolds may not be sufficient to explore and describe how students use scaffolds and what they experience in the activities of FPA. Therefore, a more in-depth investigation of learner experience is required. Correspondingly, prior studies addressed this issue and directed future research in line with this need. For instance, Kim and Ryu (2013) proposed to analyze students' dialog in FPA qualitatively. Voet et al.'s (2018) suggestion was an analysis of students' feedback requests to unveil differences among the students using it. A qualitative inquiry of students' perceptions about FPA with different design structure is also recommended to explain quantitative findings in the study and understand their perceptions more clearly (Kaufman & Schunn, 2011; Kim, 2009; Nicol, Thomson, & Breslin, 2014; Mercader, Georgeta Ion & Anna Díaz-Vicario, 2020).

On the whole, FPA design requires instructional scaffolds to mitigate the cognitive complexity of the activities. Lack of strong connections between FPA and theories brings questions about how to facilitate FPA with scaffolds. Use of online environments for FPA can also complicate the design process because the integration of technology into the social and pedagogical system needs further consideration. Therefore, there is a need for research that relates FPA with certain theories and examines the impact of the scaffolds designed with this relationship in online environments. These studies can provide more substantial explanations to the literature if they are conducted with K-12 students for long duration and they explore learners' experiences.

1.3 Purpose of the Study

The main purpose of this study is to investigate the impact of the regulation scaffolds on FPA activities in an online environment. It includes two particular aims. The first one is to examine the effect of the regulation scaffolds on peer feedback provision, feedback uptake, and perceived contributions of the online FPA environment. The second one is to describe students' use of the regulation scaffolds and experiences in the FPA activities. These aims are fulfilled in the context of two writing tasks at the high school level with two experimental groups using an online FPA environment with regulation scaffolds (WRS) or without regulation scaffolds (W/ORS).

1.4 Research Questions

Five main research questions are guiding this study. They are as follows:

1. Is there a significant mean difference between the groups W/ORS and WRS with respect to peer feedback provision in two writing tasks?
 - a. Is there a significant mean difference between the groups W/ORS and WRS with respect to the number of feedback segments in two writing tasks?
 - b. Is there a significant mean difference between the groups W/ORS and WRS with respect to a set of quality variables regarding peer feedback content in two writing tasks?
2. Do the groups W/ORS and WRS significantly differ in feedback uptake in two writing tasks?
 - a. Do the groups W/ORS and WRS significantly differ in reading peer feedback in two writing tasks?
 - b. Do the groups W/ORS and WRS significantly differ in revision in two writing tasks?

- c. Is there a significant mean difference between the groups W/ORS and WRS with respect to the implementation rate of peer feedback in two writing tasks?
3. Is there a significant difference between the groups W/ORS and WRS with respect to the perceived contributions of the online FPA environment?
4. How is the use of regulation scaffolds in FPA activities of the group WRS in two writing tasks?
5. What are students' experiences in FPA activities?

1.5 Significance of the Study

This research has potential contributions from different aspects, which can indicate the significance of the study. They include theoretical contributions, contributions to research gaps, technological contributions, practical contributions, and contributions to emergency remote teaching during COVID-19 pandemic. In this section, each of them is explained in detail.

Most of the peer assessment activities have been applied independently from broader theoretical frameworks (Ashenafi, 2017; Kim, 2009). This might result from the lack of theoretical models peculiar to FPA. In fact, the connections between formative assessment and self-regulated and co-regulated learning have been established (e.g., Allal, 2010; Andrade, 2013; Andrade & Brookhart, 2016; Panadero et al., 2016; Panadero et al., 2018a). However, empirical evidence supporting these connections with effective formative assessment practices is inadequate (Panadero et al., 2018a). This study organizes Andrade's (2013) model of assessment for FPA and improves it with new processes that can support regulated learning based on the empirical findings. Afterward, regulation scaffolds are designed considering the improved model, and their effect on activities in FPA is investigated. As a result, such research can provide theoretical contributions to FPA literature.

In regard to contributions to research gaps, this study addresses limitations of the prior studies in the design of instructional structure of FPA activities, investigation of feedback provision and uptake, and use of a more strong methodology. First, students' development of domain-specific knowledge drew little attention in FPA research to enhance the quality of peer feedback since much attention was paid to use of the support tools during feedback provision activity (Könings et al., 2019). This study benefits from regulation scaffolds that include goal setting and planning and self-assessment in task performance or writing activity of FPA. They can contribute to the development of both students' domain knowledge about writing and the quality of their feedback. As a result, this study can provide empirical evidence about the effect of these scaffolds. The current research also enables students' reflection on feedback provision and constructive interpretation of feedback for the group WRS. On the other hand, empirical studies regarding the impact of students' interpretation on learning and achievement are scant (Andrade, 2013; Andrade & Brookhart, 2016). The current study can show how it affects students' feedback uptake and perceptions about FPA. Furthermore, this research provides the opportunity to establish a dialog about received feedback for the group WRS. However, prior research on peer assessment was mostly applied as a one-shot assessment event rather than an iterative process allowing interaction between peers (Ashenafi, 2017; Strijbos et al., 2009; Strijbos & Sluijsmans, 2010). Widespread use of peer assessment as a summative assessment based on students' quantitative ratings prevented more cyclical and communicative peer assessment (Strijbos & Sluijsmans, 2010). In addition, students' assignments to assessor or assessee role to only provide feedback or revise their tasks caused a minimal level of interaction between peers in related studies (Kollar & Fischer, 2010). There is a need for research establishing and determining the effects of more dialogic and collaborative FPA in which learners elaborate and discuss peers' ideas (Deiglmayr, 2018; Zhu & Carless, 2018). This study can present a better understanding of the role of dialog in FPA and its potential benefits.

The aforementioned research gaps were related to the instructional structure of FPA. Investigating the impact of such structure on the FPA process is warranted for research studies. Feedback provision and uptake are two variables in the FPA process proposed by the literature. For example, van Popta et al. (2017) suggest further studies to enhance peer feedback provision in an online context in particular. There is also a need for more research to examine whether students reflect on their task performance and revise their tasks after receiving peer feedback (Baker, 2016; Cho & MacArthur, 2010; Hattie & Gan, 2011; Wichmann et al., 2018). This study can fill these research gaps as it examines the effect of regulation scaffolds on feedback provision and uptake.

In the methodology, this study followed mixed methods research design. Its quantitative phase was designed as an experimental study. It was conducted with high school students for two writing tasks. The literature indicates the inadequacy of experimental studies on FPA (Panadero et al., 2016; Strijbos & Sluijsmans, 2010; van Zundert et al., 2010). A limited number of research including the participation of young learners (Tenório et al., 2016; Topping, 2010; van Zundert et al., 2010) is also reported. Moreover, there is a lack of research analyzing the effect of the intervention in more than one performance task to identify its impact in a more extended period (Gielen & De Wever, 2015b). The current study addresses these research gaps and can provide new insights about FPA with a strong research design.

Concerning technological solutions for peer assesment, different online environments exist. At the time of this dissertation research, Moodle, Blackboard, and Open EdX were LMSs that included peer assessment activities. Moreover, there were websites for peer assessment, such as Turnitin and peergrade.io. Some of these environments were priced and did not support the Turkish language. In addition, they included limited features for peer assessment. Therefore, this study developed an online environment free, Turkish, and with various support tools for FPA. In fact, the workshop plugin of Moodle was modified to make it suitable for FPA, and it was improved to add modular support tools. Its design was developed three times iteratively with the help of students and teachers. The researcher plans to share it

with everybody so that all practitioners can benefit from it to enhance their FPA activities.

In addition to the provision of a new technology, this study is significant for practitioners because it focuses on two essential skills for students and intends to provide design suggestions. These skills are peer assessment and writing. Individuals assess others' works and give recommendations about how to improve their works, or they seek feedback from their peers for their development in different contexts and throughout life. Therefore, peer assessment skills gained at school settings can be transferable to the workplace and real-life cases, and they are regarded as one of the life-long learning skills (Law & Baer, 2020; Li, 2017; Liu & Carless, 2006; Nicol et al., 2014; Prins et al. 2005; Topping, 2009). Another critical skill in many professions and whole life is writing (Zumbrunn, Marrs, & Mewborn, 2016). "Writing is demanding and requires attention control, self-monitoring, and volitional control" (Schunk, 2012, p. 439). As a result, students might avoid writing tasks (Ungan, 2007) and encounter difficulties in writing even though they are at the university level (Ülper, 2012). Therefore, it is necessary to equip students with effective peer assessment and writing skills in younger ages to facilitate their learning process and performance in a longer period. However, ensuring the active participation of students in FPA activities is an arduous task for teachers (Wanner & Palmer, 2018). Moreover, the use of an online environment can be challenging for most of the teachers (van Popta et al., 2017). Therefore, it is significant to propose design suggestions that can guide the practitioners on FPA. However, the existing recommendations based on empirical evidence are limited and equivocal (Baker, 2016; Gikandi & Morrow, 2016; Panadero et al., 2018b). This study uses regulation scaffolds in the online environment to enhance FPA practices and empirically test their effectiveness on feedback provision, feedback uptake, and perceived contributions. Exploring students' use of the regulation scaffolds and experiences, the study also aims to provide a better understanding of the functioning of the scaffolds in a real classroom setting. According to the findings obtained from

multiple sources, design suggestions for FPA practices are proposed in the current study.

Finally, this study has contributed to the emergency remote teaching (ERT) during COVID-19 pandemic. Face-to-face education was replaced by ERT all over the world in the first quarter of 2020 due to COVID-19 pandemic. In this transition process, all stakeholders of education have struggled to adapt to online teaching and learning contexts. Assessment practices have also been transformed from the midterm and final tests to formative and alternative assessments, especially in K-12 education. The intervention of this study that finished in January 2020 might have been beneficial for the participants because they experienced online education and one formative assessment type just before the pandemic. Contact of one teacher in the study with the researcher during pandemic also revealed that the intervention was useful for them to prepare for ERT. In addition, the current research can be significant for other practitioners who aim to enhance their online assessment activities during or after pandemic because it provides a technological solution and design suggestions that can be transferable to different learning contexts.

1.6 Definition of Terms

Feedback: “Feedback is information provided by an agent (e.g., teacher, peer, book, parent, and self/experience) regarding aspects of one’s performance or understanding that reduces the discrepancy between what is understood and what is aimed to be understood” (Hattie & Gan, 2011, pp. 257-258).

Internal or self- feedback: It is the feedback generated by the learners themselves during monitoring of their learning activities and assessment of their progress towards goals (Nicol & Macfarlane-Dick, 2006).

Back-feedback: It is the feedback-on-feedback that learners give to reflect on their thoughts about the received feedback and share agreements or disagreements with their feedback providers (Kim, 2009; Kim & Ryu, 2013).

Formative peer assessment: Formative peer assessment includes four activities: task engagement, feedback provision, feedback reception, and revision. Its aim for learners is to help them identify their strengths, weaknesses, and mistakes in their performance with peer feedback (Topping, 2009).

Assessor: Assessor is the person who evaluates others' work and gives feedback. It is used interchangeably with the feedback provider.

Assessee: Assessee is the person who is evaluated and receive feedback. It is used interchangeably with the feedback receiver.

Regulation scaffolds: Regulation scaffolds are the ones that can activate learners' self-regulatory and co-regulatory processes with their peers during FPA activities in this study.

Quality peer feedback: Quality peer feedback includes a balanced proportion of verifications and elaborations, positive and negative verifications, and informative and suggestive elaborations (Gielen & De Wever, 2015c).

Feedback uptake: Feedback uptake is the process in which individuals attend to feedback, evaluate performance based on feedback, and use feedback to improve task performance (Wichmann et al., 2018).

Mindful processing of feedback: It is "how deeply the peer feedback has been cognitively processed and understood" (Bolzer et al., 2015, p. 425).

CHAPTER 2

LITERATURE REVIEW

This study was grounded in self-regulated and co-regulated learning as a theoretical framework. Therefore, these theoretical frameworks are explained in this chapter of the dissertation at first. As peer assessment is applied as a formative assessment for writing activities in the current study and it is linked to self-assessment, the following sections of the literature review are related to writing instruction, formative assessment, and self-assessment. Afterward, peer assessment is described by establishing connections with prior sections. Then, peer feedback quality, peer feedback uptake, and perceptions and experiences about peer assessment are explained since the study investigates the effect of regulation scaffolds in regard to the aforementioned aspects. The specific instructional scaffolds that have a potential impact on peer assessment are also exemplified. Finally, the chapter provides a summary of the literature related to this study.

2.1 Regulation of Learning

Regulation of learning is defined in terms of self-regulated learning and co-regulated learning in this study. They are explained in the following parts to provide a theoretical basis for FPA activities and better understand the interplay among them in the next sections.

2.1.1 Self-Regulated Learning

Self-regulated learning is “a core conceptual framework to understand the cognitive, motivational, and emotional aspects of learning” (Panadero, 2017, p. 1). It can be defined as thoughts, feelings, and actions individuals plan, generate, and cyclically

adapt for the accomplishment of personal goals (Zimmerman, 2000). Different models have been proposed to explain how self-regulated learning occurs. The ones mostly interpreted in the context of assessment literature belong to Winne and Hadwin (1998) and Zimmerman (2000).

Winne and Hadwin's (1998) model has a basis on information processing theory and emphasizes the metacognitive aspect of learning (Panadero, 2017). The model consists of recursively and weakly sequenced four primary stages: task definition, goal setting and planning, enactment, and adaptation. In the *task definition* stage, learners derive a perception about what the task is and what affordances and constraints exist in the study environment (Winne & Hadwin, 1998). External affordances and constraints can be the existence of a goal, time limitation, and peers to request help, and internal ones are knowledge about the task, motivation to do it, expectancy for success, and tactics and strategies for performing the task (Winne, 2011). In the second stage, *goal setting and planning*, learners choose or produce their goals and prepare their plan for the study task (Winne & Hadwin, 1998). In the *enactment* stage, learning strategies and tactics are applied, and products are built (Winne, 2011). In the final stage, *adaptation*, learners evaluate experiences in the first three stages and alter their knowledge, skills, and beliefs, which affects their future study performance (Winne & Hadwin, 1998). In all phases of self-regulation, learners can metacognitively monitor declarative and procedural knowledge and their cognitive experiences based on the standards supplied by teachers or learners themselves (Winne, 2011; Winne & Hadwin, 1998). In addition, when there are differences between the task performance and standards, they can metacognitively control them by changing the definition of task, goals, plans, and learning strategies (Winne, 2011; Winne & Hadwin, 1998). Therefore, an essential aspect of Winne and Hadwin's (1998) model is the consideration of criteria and standards to determine goals and monitor and evaluate learning.

Zimmerman's (2000) model is based on the socio-cognitive theory that emphasizes the acquisition of knowledge through observation and social interaction (Panadero, 2017). It aims to determine certain metacognitive processes and motivational sources

and explicate their interactions during learning in an authentic context (Zimmerman & Moylan, 2009). According to Zimmerman (2000), the self-regulation process includes cyclical phases of forethought, performance or volitional control, and self-reflection. In the *forethought phase*, learners determine the goals of their learning or performance and select methods or strategies appropriate for the task. Self-motivation beliefs (e.g., self-efficacy, outcome expectations, intrinsic interest, and goal orientation) influence goal setting and strategic planning. In the *performance or volitional control phase*, self-control and self-observation are performed while individuals monitor their progress and use self-control strategies for cognitive engagement and sustained motivation (Panadero, 2017). In particular, self-control enables learners to concentrate on the task and enhance their effort (Zimmerman, 2000). It includes a number of strategies, such as task strategies, time management, and help-seeking (Zimmerman & Moylan, 2009). Self-observation consists of metacognitive monitoring and self-recording (Zimmerman, 2000). Through metacognitive monitoring, learners track or monitor their performance, conditions in which performance occurs, and the effects of their performance (Zimmerman & Moylan, 2009). Self-recording enables learners to generate formal, reliable, and specific records of their learning processes and outcomes together with their conditions (Zimmerman & Moylan, 2009). In the *self-reflection phase*, learners compare their performance with their goals or standards to make self-evaluations and attribute the discrepancies between expected and existing performance to some causes such as ability and effort. In addition, they decide what they need to change in their subsequent learning attempts and task performance.

2.1.2 Co-Regulated Learning

Self-regulation concentrates on individuals' cognitive, metacognitive, and motivational processes. However, regulation of learning is social since it is affected by environmental context, promoted with participation, or embedded in social activity systems (Järvelä & Hadwin, 2013). In particular, the regulation of learning

with social perspective seeks to understand how individuals reciprocally influence each other's regulation and share cognitive and metacognitive regulation (Volet, Vauras, & Salonen, 2009). One type of regulated learning that emphasizes the social aspect of regulation is co-regulated learning.

Co-regulation has origins in Vygotsky's sociocultural theory that emphasizes interactions of social, cultural, and individual factors for human development (McCaslin, 2009). Correspondingly, co-regulation is defined as a dynamic interaction process through which individuals can mediate and internalize cultural and social impacts (McCaslin, 2009). Similarly, co-regulated learning occurs through the interactions of individuals with different types of self-regulatory challenges and expertise in individual, cooperative, and collaborative tasks to foster their own self-regulation or coordinate self-regulation of the individuals in the group (Hadwin, Järvelä, & Miller, 2011). As a result, co-regulation influences individual or shared regulation processes: goal setting, strategies, monitoring, evaluation, and motivation (Hadwin et al., 2011). Zheng and Huang (2016) also describe co-regulation in online learning environments. It is a process in which "students (or artificial software agents) help each other set goals, adapt them, make plans, enact strategies, and assess current skills and solutions" (Zheng & Huang, p. 61).

In parallel with sociocultural theory, specific sources of co-regulation in learning environments are (1) the structure of the teaching/learning situation such as learning goals and temporal and spatial organization of situation, (2) teachers' interventions and interactions with students, and (3) interactions among students (Allal, 2016). Based on multiple sources of co-regulation, Allal (2016) proposes that all learning in the classroom is co-regulated, but regulation of learning occurs provided that the individual integrates regulation processes provided by others into their self-regulation system.

In co-regulation, each participant develops as a result of interaction since they can play both expert and novice roles (McCaslin, 2009). For example, while students may be experts in the emergencies of their social environments, teachers may be

novices in such situations (McCaslin, 2009). On the other hand, students are novices in strategic knowledge in a learning task, whereas teachers are experts in this domain. However, when students internalize teachers' co-regulation into their individual system, they can become self-regulated in this domain as well. For instance, Hadwin, Wozney, and Pontin (2005) examined self-regulatory dialog between students and teachers about portfolio development task. Self-regulatory ownership belonged to the teacher at the beginning of the task; however, then, co-regulation occurred when teacher guided and prompted students to regulate their learning. Finally, students could appropriate self-regulated activity to control and reflect on self-regulatory processes on their own.

On the whole, it can be concluded that self-regulatory and co-regulatory processes occur concurrently and interdependently (Volet et al., 2009) as co-regulation supports the development of independent self-regulation or coordination of self-regulation of the participants in a group. There are tools that can foster both self-regulated and co-regulated learning in classroom settings (Allal, 2016). They include instructional materials, technological environments, and assessment procedures (Allal, 2016). For example, some instructional environments for writing can enhance self-regulation, and individuals' existing self-regulation can result in higher writing competence (Graham & Harris, 2000; Zimmerman & Risemberg, 1997). Formative assessment can also promote students' self-regulation; in addition, students' self-regulation skills can influence involvement in formative assessment (Panadero et al., 2016b, 2018a). In the following parts, writing instruction and formative assessment are explained in regard to regulation of learning.

2.2 Writing Instruction

Writing practices aim for students to express their knowledge, feelings, thoughts, and imagination accurately and effectively (Ungan, 2007). As a result of writing practices, students develop their writing, reading comprehension, reading fluency, learning, and communication skills (Graham, Gillespie, McKeown, 2013; Ungan,

2007). However, “writing is demanding and requires attention control, self-monitoring, and volitional control” (Schunk, 2012, p. 439). Therefore, the development of writing competence requires high level of self-regulation (Graham & Harris, 2000; Zimmerman & Risemberg, 1997).

Self-regulation helps individuals complete writing tasks successfully because self-regulatory mechanisms (e.g., planning, monitoring, evaluating, and adapting) are essential components of effective writing (Graham & Harris, 2000). Moreover, the use of these mechanisms can result in adjustments in cognitive, affective, and behavioral processes (Graham & Harris, 2000). Zimmerman and Risemberg (1997) provided a model to define the relationship between self-regulation and writing. According to this model, expert writers regulate environmental, behavioral, and personal processes during writing. These processes are also divided into ten sub-processes. Environmental processes include (1) environmental structuring and (2) self-selected models, tutors, or books; behavioral processes consist of (3) self-monitoring, (4) self-consequences, and (5) self-verbalization; and personal processes are (6) time planning and management, (7) goal setting, (8) self-evaluative standards, (9) cognitive strategies, and (10) mental imagery (Zimmerman & Risemberg, 1997). There is also reciprocal interaction among three main processes via feedback loops. Feedback loops enable writers to monitor their self-regulatory strategies, react to results, and adapt the processes if necessary (Zimmerman & Risemberg, 1997).

Santangelo, Harris, and Graham (2016) reviewed 78 experimental studies that investigated whether the application and teaching of these processes led to developments in students’ writings in the K-12 context. They found a small effect of using self-selected models, tutors, or books, the moderate effect of self-evaluative standards, goal setting, and mental imagery, and the large effect of cognitive strategies instruction. In a recent study, Müldür and Yalçın (2019) examined the impact of self-regulated writing instruction in sixth-grade Turkish course. They revealed that there was a significantly greater improvement in the writing quality, self-regulated writing skill, and writing self-efficacy in the group with self-regulated writing instruction.

Turkish Language and Literature (TLL) coursebooks published by the Ministry of National Education in Turkey in 2018 have also suggested the use of some self-regulated writing strategies. For example, the process of composing informative writings consists of five stages in the ninth-grade TLL book: preparation (e.g., determining theme, topic, purpose, target group, and genre), planning (identifying primary and secondary thoughts of the writing), composing draft writing, revising and improving based on writing criteria, and sharing writing. They are illustrated in story and fairy tale/fable writing, as well.

Writing instruction and performance can also vary in regard to writing genre. Therefore, a genre-based approach is followed in some language teaching contexts. It is a “pedagogy that involves examining and deconstructing examples of genres (categories of texts)” (Bruce, 2008, p. 6). Specifically, learners examine the organization and components of the texts written in the specific genre to obtain the knowledge required to compose their own texts in the same genre (Bruce, 2008). The curriculum of the Turkish language and literature course in Turkey applies the genre-based approach. Each unit is allocated to reading, writing, and speaking in a certain genre. In the assessment of general writing proficiency, the literature also proposes the assessment of writing performance in different genres and tasks to provide more valid and reliable inferences (e.g., Bouwer, Béguin, Sanders, & Van den Bergh, 2015). To illustrate, Bouwer et al. (2015) found that primary education students’ writing scores significantly varied by the writing genre, which also indicated differences in genre difficulty.

Another design element in writing instruction is the use of technology. Strobl et al. (2019) reviewed technologies that aimed to support writing instruction in secondary and higher education. Analyzing 44 technological tools, Strobl et al. (2019) found that the majority of the tools provided support in English, they were not specified to a specific writing genre and not adaptable by the teachers, and they did not allow interaction among learners. This review study did not report any Turkish technological tool for writing. The TLL curriculum in Turkey in 2018 offered the use of some technologies to compose, publish, and share writings collaboratively.

They suggested the use of presentations, computer, TV, interactive whiteboard, films, simulations, and documentaries, in general, to support learning and teaching in the course.

2.3 Formative Assessment

Assessment is a process of gathering information that leads to decision making about students, curricula, programs, schools, and educational policy (Nitko & Brookhart, 2006). For example, information obtained from the assessment can be used to assign grades to students, guide them, certify their competence, and manage classroom instruction (Nitko & Brookhart, 2006). The assessment techniques to learn how well students perform include paper-and-pencil tests with extended responses, teacher observations, students' performance in authentic tasks such as laboratory experiments, and students' self-reports (Miller, Linn, & Gronlund, 2009).

With respect to the function assessment serves, there are two categories: summative and formative assessment (Wiliam, 2014). Summative assessment is conducted at the end of course or unit to measure achievement for the purpose of giving course grades or certifying students' mastery of the learning outcomes (Miller et al. 2009). Formative assessment is administered during the instruction with the following purpose(s): to determine students' strengths and weakness, to help students direct their own learning, revise their work, and gain self-evaluation skill, to promote students' autonomy and responsibility, and to guide instructors in the planning of next instruction (Cizek, 2010).

The main focus of formative assessment has been collecting information to support teachers' instructional planning activities (Cizek, 2010). On the other hand, students are also decision-makers who need to be informed about their learning in formative assessment (Stiggins, 2005). To support learning through assessment, it is recommended for formative assessment practices to share learning goals and standards with students, involve them in self-assessment, join them in the inspection

of and reflection on assessment data with teachers, and provide feedback to students to help them identify what they need to do in subsequent learning steps (Broadfoot et al., 1999). Currently, formative assessment is used to equally emphasize students' involvement and responsibility for learning and assessment (Cizek, 2010).

One framework that explicitly indicates both learners and their peers as stakeholders of formative assessment belongs to Wiliam and Thompson (2008). In the framework, there are five key strategies of formative assessment that are performed by teachers, peers, or learners themselves to help learners realize where they are going, where they are now, and how they can get there (Figure 2.1). The first one is clarifying, sharing, and understanding learning intentions and success criteria with students to reveal where they are going (Wiliam & Thompson, 2008). The second one is eliciting evidence of achievement to understand where learners are right now (Wiliam & Thompson, 2008). The specific evidence regarding learners' progress in the accomplishment of learning intentions becomes useful to decide how instruction needs to be improved (Wiliam, 2010). The third strategy is giving feedback that helps learners attain the intended learning outcomes (Wiliam & Thompson, 2008). The feedback can also be for teachers so that they can enhance instruction (Wiliam, 2010). The last two strategies emphasize the role of learners. Learners can become owners of their own learning in the formative assessment if they have objectives and play an active role in directing their learning (Wiliam & Thompson, 2008). Moreover, they can act as learning resources for their peers.

	Where the learner is going	Where the learner is right now	How to get there
Teacher	1 Clarifying learning intentions and criteria for success	2 Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding	3 Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	4 Activating students as instructional resources for one another	
Learner	Understanding learning intentions and criteria for success	5 Activating students as the owners of their own learning	

Figure 2.1. The five key strategies of formative assessment (Black & Wiliam, 2009, p. 8)

Another aspect of formative assessment that needs to be emphasized is the role of feedback as it underpins action in formative assessment (Wiliam, 2010). Accordingly, Sadler (1998) states that the main aim of formative assessment is to give feedback on performance to enhance and advance learning. Therefore, the critical component of formative assessment that brings about learning and instructional consequences is feedback. However, it is generally insufficiently conceptualized and reported in research studies (Andrade & Valtcheva, 2009; Sadler, 1989, 1998). This study explains feedback in the following part.

2.3.1 Feedback

Feedback in the instructional context is all post-response information given to learners about their learning and performance (Narciss, 2008). Hattie and Gan (2011) define feedback with more formative flavor and different agents in learning. According to them, “feedback is information provided by an agent (e.g., teacher, peer, book, parent, and self/experience) regarding aspects of one’s performance or understanding that reduces the discrepancy between what is understood and what is aimed to be understood” (Hattie & Gan, 2011, pp. 257-258). It is important to emphasize that feedback aims to help learners compare their actual performance with

expected performance to regulate their following actions on the learning task (Narciss, 2008).

Feedback can be examined in detail with Narciss' (2008) model that shows how feedback generated by the learners themselves and external agents is processed (Figure 2.2). The name of the model is the interactive, two feedback loop (ITFL) model derived from research findings on systems theory, elaborated feedback, task analysis, error analysis, and tutoring techniques (Narciss, 2008). Two feedback loops are internal feedback loop in which learners' internal feedback or current task-related values are processed, and external feedback loop in which the values defined by the teacher or instructional medium are processed (Narciss, 2008).

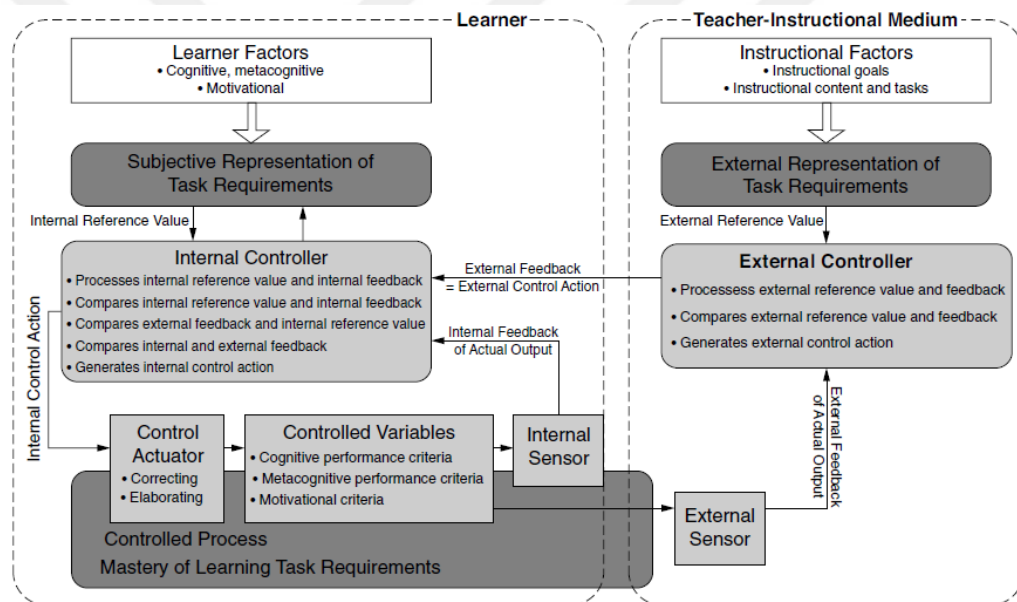


Figure 2.2. The interactive, two feedback loop (ITFL) model (Narciss, 2008, p. 128)

In the model, learning tasks are the controlled processes that need to be defined with cognitive, metacognitive, or motivational criteria or variables (Narciss, 2008). Sensors continuously record the actual values of the controlled process in both internal and external feedback loop (Narciss, 2008). Then, controllers in two feedback loops compare actual values with reference values (Narciss, 2008). For the feedback generated by the external controller and given to the internal controller,

comparisons between external and internal feedback and external feedback and internal reference value occur (Narciss, 2008). By determining sources of disparities after these comparisons, internal correction variables emerge (Narciss, 2008). Based on correction variables, necessary changes in task performance or predefined criteria for the task are conducted (Narciss, 2008).

Feedback is one of the top 10 factors that affect achievement in educational environments (Hattie & Gan, 2011). In the synthesis of meta-analysis studies, Hattie (2009) found that the average effect size of feedback is .79, which is twice the average effect size of all factors affecting students' achievement. In addition to the powerful impact of feedback, meta-analyses also reveal that the effect size of feedback varies to a great extent (Hattie & Gan, 2011). It is due to differences in content-related, functional, and formal and technical aspects of feedback that determine the nature and quality of feedback (Narciss, 2008). The content-related aspect of feedback is mostly discussed in regard to its effect on learning performance in peer assessment research.

With respect to the content of feedback, Narciss (2008) states that there are two components of feedback: evaluative or verification and informational. While the evaluative component specifies the performance level achieved, the informational component includes additional information about the task, errors, or solutions (Narciss, 2008). The additional information can address: "(1) task rules, task constraints, and task requirements; (2) conceptual knowledge; (3) errors or mistakes; (4) procedural knowledge; and (5) metacognitive knowledge" (Narciss, 2008, p. 135).

Different from Narciss (2008), Hattie and Timperley (2007) explicitly point out that the content of quality feedback should answer the following three questions to provide feed up, feed back, and feed forward: "Where am I going? (What are the goals?), How am I going? (What progress is being made toward the goal?), and Where to next? (What activities need to be undertaken to make better progress?)" (p. 86). These three questions are formative and self-regulatory (Clark, 2012). To

answer the first question, feedback must have information about the goals determined for the related task or performance (Hattie & Timperley, 2007). For the second question, feedback must give information about teachers' or students' performance, mostly based on prior performance and/or established criteria (Hattie & Timperley, 2007). For the third question, feedback must direct teachers or students to do more for learning so that they can improve their weaknesses, self-regulation skills, fluency, strategies, and assessment of their understanding (Hattie & Timperley, 2007).

In addition to these three questions, Hattie and Timperley (2007) assert that there are four levels of feedback that impact its effectiveness: task, process, self-regulation, and self. Feedback about the task is mostly named as knowledge of results or corrective feedback provided based on some criteria (Hattie & Timperley, 2007). Feedback about processing aims to improve the learning processes and strategies necessary to understand and perform the task (Hattie & Timperley, 2007). Feedback about self-regulation helps teachers/students enhance their self-assessment and confidence in order to increase their engagement on the task (Hattie & Timperley, 2007). Feedback about self carries less information about the task performance and is more related to self or person to which feedback is given (Hattie & Timperley, 2007). The effectiveness of feedback diminishes as feedback is directed to self rather than task (Hattie & Gan, 2011). Finally, Hattie and Timperley (2007) claim that feedback about self-regulation or processing is effective in deep processing and competence at task while feedback about self is not useful enough to improve task performance.

2.3.2 Formative Assessment and Regulation of Learning

Formative assessment is different from other assessment types with respect to its potential to improve self-regulated learning (Clark, 2012). This relationship between formative assessment and self-regulation also makes formative assessment a process beyond an assessment type that promotes the development of essential learning

strategies and life-long learning (Clark, 2012). There are some models that depict how formative assessment or feedback supports self-regulation.

The core model that guided the following models to relate formative assessment with self-regulation is Butler and Winne's (1995) self-regulated learning model. The model specifically emphasizes the role of feedback in self-regulation process. According to this model, first, self-regulated learners interpret tasks' properties and requirements based on domain and strategy knowledge, motivation, and beliefs (Butler & Winne, 1995). Then, learners build their goals based on their interpretations of the task (Butler & Winne, 1995). Through tactics and strategies, learners try to accomplish their goals; as a result, cognitive and behavioral products emerge (Butler & Winne, 1995). While learners monitor the enactment of strategies and actual products, they generate internal feedback to reinterpret task engagement (Butler & Winne, 1995). They can change or improve their goals, tactics, and strategies (Butler & Winne, 1995). If learners receive external feedback, the information provided by that feedback can be in line with, contribute to, or contradict with learners' interpretations and task engagement process (Butler & Winne, 1995). Based on external feedback, learners might change knowledge and beliefs, which also directs their engagement in future tasks (Butler & Winne, 1995).

Building on Butler and Winne's (1995) model, Nicol and Macfarlane-Dick (2006) propose a conceptual model that integrates formative assessment and feedback into self-regulation. The main differences between Butler and Winne's (1995) model and Nicol and Macfarlane-Dick's (2006) model are clear guidelines about how to apply formative assessment to enhance students' self-regulation and increased emphasis on regulation by others including teachers, peers, and employers. The guidelines in the model are to "clarify what good performance, facilitate self-assessment, deliver high-quality feedback information, encourage teacher and peer dialogue, encourage positive motivation and self-esteem, provide opportunities to close the gap, use feedback to improve teaching." (Nicol & Macfarlane-Dick, 2006, p. 203). William and Thompson's (2008) formative assessment framework is also parallel to these guidelines.

Lastly, Andrade (2013) adapted Butler and Winne's (1995) and Nicol and Macfarlane-Dick's (2006) models to reexamine the role of classroom assessment in self-regulation. It is shown in Figure 2.3.

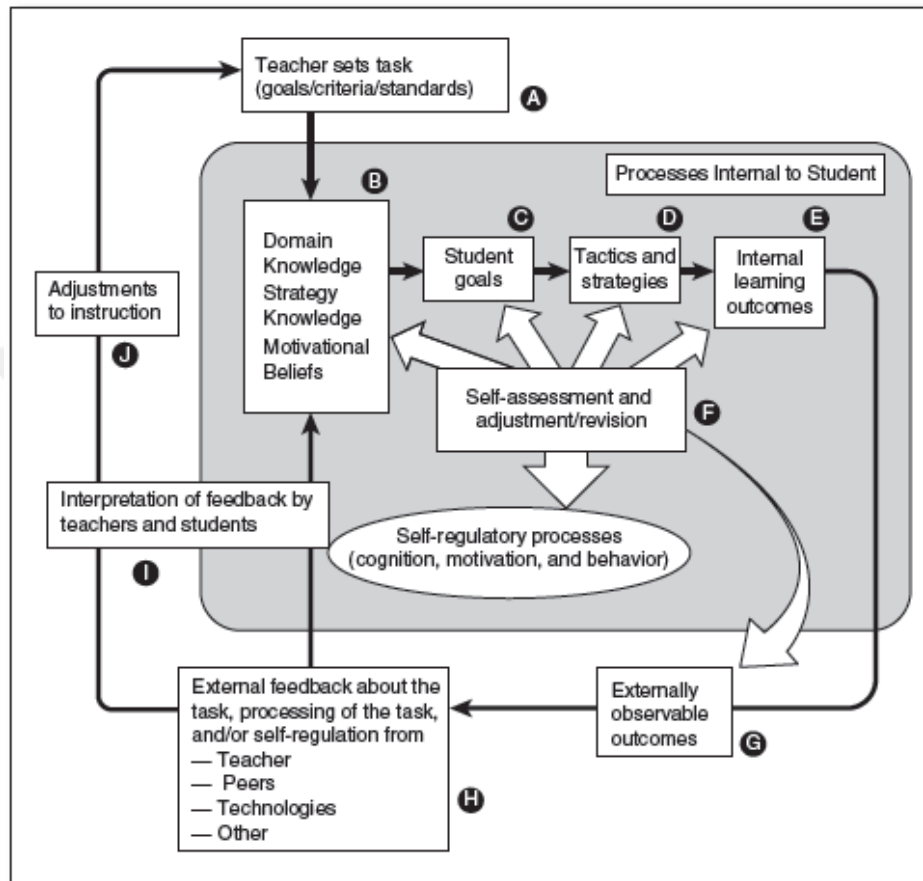


Figure 2.3. Model of assessment as the regulation of learning by oneself and others (Andrade, 2013, p. 22)

Similar to prior models, processes internal to the student in the Andrade's (2013) model are activating domain knowledge, strategy knowledge, and motivational beliefs; determining goals; choosing tactics and strategies; and regulating cognition, motivation, and behavior. However, external feedback given by teachers, peers, technologies, and others is also interpreted to decide following learning attempts in (Andrade, 2013). Moreover, this interpretation leads to adjustments in instruction. Overall, the main developments in the model can be summarized as increased

emphasis on other-regulation through feedback provided by teachers, peers, technologies, and others, the addition of the processes for feedback interpretation, and closure of the feedback loop for teachers (Andrade, 2013). The essential feature of Andrade's model is that students take a core role in the whole assessment process, especially when monitoring their progress toward intended goals and judging the efficacy of the study strategies in attaining these goals (Andrade, 2013). Hence, there is self-assessment in the center of the processes internal to students in the model. It is described in the following section.

2.4 Self-Assessment

Development of students depends on their ownership of aims, goals, and standards, comparisons of their actual performance with standards, and engagement in suitable actions to fill the gaps in the performance and improve it (Sadler, 1989). For students to apply the aforementioned processes, they need to gain experience in evaluating their own performance or self-assessment (Sadler, 1989).

The general definition of self-assessment is a descriptive and evaluative act performed by the students for their own works and academic abilities (Brown & Harris, 2013). According to Brown and Harris (2013), operational definition of self-assessment includes one's analysis of the quality of her/his own work based on a rubric or teachers' feedback, rating of her/his own work, and prediction of her/his potential score on forthcoming tasks and tests. Therefore, this definition covers both evaluation of the quality of work with criteria and self-ratings or self-estimates. However, self-rating and self-testing are criticized as they do not require a higher level of mental engagement (Boud & Brew, 1995; Brown & Harris, 2013). In contrast to the definition by Brown and Harris (2013), Andrade (2019) regards self-assessment as a formative assessment and emphasizes that the purpose of self-assessment is to generate feedback that can improve learning performance.

Andrade (2019) also provides a comprehensive taxonomy of self-assessment (Table 2.1). According to this taxonomy, self-assessment practices are categorized with three main questions. The first question is why self-assess (Andrade, 2019). Self-assessment can be for summative or formative purposes. The second one is what is self-assessed (Andrade, 2019). Competence, processes, and products can be a target for self-assessment. The third one is how to self-assess (Andrade, 2019). One method is whether assessment criteria or standards are included in self-assessment. Example methods are listed in Table 2.1.

Table 2.1 A Taxonomy of Self-Assessment (Andrade, 2019, p. 3)

		Competence		Processes		Products	
				Standards		Standards	
				Yes	No	Yes	No
Formative	Task-specific self-efficacy rating	Judgements of progress toward specific targets	• Traffic lights • Comprehension checks • Self-monitoring; metacognition • Reflective journal writing	• Rubric- or checklist-referenced self-assessment • Self-testing	Open-ended critique of one's own work or understanding		
Summative	Post-task judgements of ability based on performance		Post-task judgements of effectiveness of procedures	• Self-grading	• Self-grading		

This research defines self-assessment as a formative assessment. In particular, self-assessment is a process during which learners reflect on the quality of their task performance, evaluate the degree to which their performance meets expected criteria, and revise their task accordingly (Andrade & Valtcheva, 2009). In parallel with its definition, self-assessment generally consists of three steps: the articulation of expectations, self-assessment, and revision (Andrade & Valtcheva, 2009). First, teachers or students need to elucidate expectations for a task so that students can become familiar with the task and criteria to produce quality work (Andrade & Valtcheva, 2009). Second, students prepare their initial versions of their assignments and check their progress by comparing their current performance with the expected

one (Andrade & Valtcheva, 2009). Third, they revise their assignment based on the feedback they generated (Andrade & Valtcheva, 2009).

Yan and Brown (2017) also proposed a model that reveals inner processes and actions performed by learners in self-assessment. It consists of three actions: determining assessment criteria, self-directed feedback-seeking, and self-reflection (Yan & Brown, 2017). First, students identify performance criteria that can include internal goals, performance of other students, and formal criteria. Second, if students do not have enough information for self-assessment, they seek feedback from external and internal sources. External sources comprise of people (e.g., teachers, peers, and parents) and processes (e.g., past performance records and exam papers) (Yan & Brown, 2017). The internal source is the students themselves, and their emotions, physical sensation, motives, and internal states provide internal feedback (Yan & Brown, 2017). Third, self-reflection occurs while students evaluate the quality of their work and learning process based on feedback and detect their strengths and weaknesses.

2.4.1 Self-Assessment and Regulation of Learning

Self-assessment is closely associated with the self-regulation of learning (Reinholz, 2016). Both self-assessment and self-regulation mainly aim to “provide learners with feedback that they use to deepen their understandings and improve their performance” (Andrade, 2010, p. 91). In particular, self-assessment is quite similar to self-monitoring and self-evaluation sub-processes of Zimmerman’s self-regulation model because students aim to monitor and assess their performance in these processes (Andrade, 2010; Panadero, Jonsson, & Botella, 2017).

Moreover, Yan (2019) explains that self-assessment occurs in all phases of a self-regulated learning process: preparatory, performance, and appraisal. Self-assessment at the preparatory phase leads to awareness of personal and environmental resources, the composition of the attainable learning goal, and the selection of suitable learning

strategies (Yan, 2019). Self-assessment at the performance phase results in monitoring of learning process and self-correction (Yan, 2019). Lastly, self-assessment at the appraisal phase brings about reflection on learning outcomes, identification of strengths and weaknesses, and guidance for future learning (Yan, 2019). Therefore, self-assessment can be regarded as a core component of self-regulation (Andrade, 2013).

In addition, self-assessment can be a factor that affects all self-regulatory phases, including forethought, performance, and self-reflection (Panadero & Alonso-Tapia, 2013). Panadero et al. (2016b) explain how the self-assessment process supports learners' self-regulation in detail. In the forethought phase of self-regulated learning, negotiating assessment criteria with students or giving them assessment criteria for self-assessment can enable students to determine realistic goals, feel motivated, and evaluate their progress during or after their work as literature on formative assessment reveals (Panadero et al., 2016b). In the performance phase, students can check their progression according to assessment criteria, feel less stress due to opportunity to revise their work based on formative feedback to be received, and feel more motivated owing to the opportunity to request help to handle challenging situations (Panadero et al., 2016b). In the self-reflection phase, students can assess their works more validly, detect causes of success or failure more accurately, and improve their performance based on formative feedback (Panadero et al., 2016b).

2.4.2 Benefits and Challenges of Self-Assessment

Self-assessment provides both benefits and challenges in educational settings. It can improve academic achievement, self-regulated learning, and self-efficacy. However, students may have negative perceptions about self-assessment, generate inaccurate self-assessment results, and not feel psychologically safe, which engenders difficulties in self-assessment practices. Both benefits and challenges of self-assessment are explained in this section.

One of the benefits of self-assessment is its contribution to students' academic achievement. In their literature review, Brown and Harris (2013) reported improvement of the academic performance of the students in different K-12 grade levels and subject areas as a result of self-assessment. The design and implementation of interventions accounted for a range of effect sizes of self-assessment. In general, more learning gains were obtained when there were training in self-assessment strategies, use of models or teacher feedback guiding judgments in self-assessment, students' monitoring of the accuracy of their evaluations, and rewarding themselves for accurate evaluations and developments (Brown & Harris, 2013; Ross, 2016).

The relation between self-assessment and self-regulation is also revealed in empirical studies. Brown and Harris (2013), who also reviewed the studies regarding this relationship, found that self-assessment contributed to the development of self-regulated learning skills. Moreover, Panadero, Jonsson, and Botella (2017) conducted a meta-analysis study with 19 studies including 2305 students in total. The authors indicated that self-assessment positively influenced the self-regulated learning of the students at different educational levels with small to medium effect sizes.

Self-assessment also fosters self-efficacy beliefs (Panadero et al., 2017; Ross, 2006). According to the meta-analysis by Panadero et al. (2017), it has a large effect size on students' beliefs to do a particular task successfully. It contributes to self-efficacy in different ways. First, as a result of self-assessment, students can perceive that they have become more capable in the task, which can enhance their self-efficacy and motivate them to continue working (Schunk, 1996). Second, self-assessment training in which example performance is discussed can provide vicarious experience and enhance task performance and self-efficacy (Panadero et al., 2017; Ross, 2006). Third, students' involvement in the assessment process can indicate that their teachers perceive them as competent in assessment, which can be a source of increased self-efficacy (Ross, 2006).

There are also challenges or negative aspects of self-assessments practitioners need to consider. First, students may not have positive perceptions about self-assessment and be recognizant of self-assessment (Brown & Harris, 2013). In particular, they may not consider self-assessment as a legitimate assessment technique since their conceptions of assessment give more value to formal assessments and feedback provided by teachers (e.g., Bourke, 2016; Harris & Brown, 2010; Peterson & Irving, 2008). Self-assessment can be regarded as a waste of time by the students (Bourke, 2016). Moreover, students can be skeptical about the validity and accuracy of their self-assessment (Harris & Brown, 2010), and they may believe that they are not a credible source for their teachers and schools (Bourke, 2016). Students' negative perceptions about self-assessment also result in a challenge for instructors as they need to motivate students to engage with self-assessment (Adachi et al., 2018b).

Another difficulty in self-assessment is related to accuracy. In self-assessment, accuracy means the realism of self-assigned evaluations (Panadero, Brown, & Strijbos, 2016a). It is also referred as a form of validity and determined by calculating agreement between self-judgments and teacher judgments, peer rankings, or objective test results (Ross, 2006). Andrade (2019) proposes the use of consistency term instead of accuracy as ratings of external agents might be unreliable and invalid. In addition, Panadero et al. (2016a) suggest considering the content accuracy of self-assessment when students describe their work with strengths and weaknesses in addition to scores or grades.

Brown and Harris (2013) state that self-assessment is not firmly accurate in the K-12 context as correlation coefficients between self-assessments and other measures ranged from .30 to .50. Similarly, Falchikov and Boud (1989), who analyzed self-assessment research in higher education, found that mean correlation value between self- and teacher marks was .39. There are different factors affecting accuracy in self-assessment. The first one is age confounded with increasing educational experience (Brown & Harris, 2013). Ross (2006) states that over-estimation is more likely to occur for young children because of their incomplete cognitive skills to gauge their abilities and vulnerability to wishful thinking. Correspondingly, the literature review

by Brown and Harris (2013) revealed that younger students were inclined to be more optimistic about their performance, they could make a superficial judgment, and their self-ratings were less correlated with teachers' ratings compared to older students. Second, accuracy is connected to students' academic ability or expertise. The general conclusion is that self-assessment of high performing students is more severe but more accurate (Brown & Harris, 2013; Panadero et al., 2016a). In addition, Falchikov and Boud (1989) emphasize expertise in a field as they found that students in advanced courses were more accurate than the ones in introductory courses. Third, task difficulty hampers accuracy of self-assessment since the investment of more attention and effort in difficult tasks results in fewer resources for monitoring and self-rating of the performance (Brown & Harris, 2013). Finally, the conditions of self-assessment can impact accuracy. For example, teachers' and students' co-construction of task criteria, use of rubrics, and reception of teacher feedback can improve accuracy (Brown & Harris, 2013; Panadero et al., 2016a; Ross, 2006).

The final challenge of self-assessment pertains to the need for psychological safety. Psychological safety is "a shared belief that the team is safe for interpersonal risk taking" (Edmondson, 1999, p. 354). In a psychologically safe environment, students feel comfortable to reveal their progress honestly with their teachers and peers (Harris & Brown, 2010). They can protect their self-esteem in case of negative self-assessment results, and they can learn from their mistakes (Yan, Brown, Lee, & Qiu, 2020). On the other hand, when they are concerned about their peers' reactions to self-assessment results, desire to protect their ego, and avoid negative consequences from their teachers and parents, they can make elevated self-assessments (Harris & Brown, 2010; Harris, Brown, & Dargusch, 2018). Moreover, they may prefer to give depressed self-assessments to prevent disappointment when they receive lower grades from others than their expectations (Harris et al., 2018).

Based on the aforementioned challenges, literature provides conditions for effective self-assessment practices. They are listed below:

- Students should be aware of the value of self-assessment (Panadero & Alonso-Tapia, 2013).
- Students need to participate in the construction of assessment criteria for the task so that they can develop an understanding of expectations and show commitment to them (Ross, 2006).
- It is advisable to teach students how to implement assessment criteria before self-assessment. In particular, teachers' explanations about assessment criteria, their modeling of criteria application, and students' use of criteria for an exemplary performance enhance students' understanding of criteria and credibility of self-assessment (Ross, 2006).
- Guidance should be maintained during self-assessment. The use of rubrics can enhance enactment of self-regulated learning strategies, task performance, and accuracy of self-assessment (Brown & Harris, 2013; Panadero & Romero, 2014).
- Students need to know that it is psychologically safe to reveal low performance in self-assessment (Brown & Harris, 2013; Harris & Brown, 2010).
- There is a need for mechanisms that enable students to compare their self-assessments with other judgements including teacher feedback and peer assessment so as to correct their inaccurate self-perceptions (Brown & Harris, 2013; Panadero et al., 2016a).

2.5 Peer Assessment

Another student-centered formative assessment method is peer assessment that has become prevalent in different educational levels over the past 20 years (Strijbos & Wichmann, 2018). Peer assessment is defined as an “arrangement for learners to consider and specify the level, value, or quality of a product or performance of other equal-status learners” (Topping, 2009, p. 20). Peer assessment practices vary from many perspectives. Recently, Adachi et al. (2018a) extended typologies of peer assessment by Topping (1998) and Gielen, Dochy, and Onghena (2011). There are

six clusters regarding 19 design elements in peer assessment in Adachi et al.'s (2018) typology. They are listed in Table 2.2.

Table 2.2 also indicates how peer assessment in this study was designed. For example, with respect to *cluster I: decisions concerning the use of the peer assessment*, the subject area was Turkish Language and Literature, the assessment type was writing, and formality and weighting were formative. Concerning *cluster II: link between peer assessment and other elements*, peer assessment included self-assessment, and it was a homework contributing to final evaluation and grading. Regarding *cluster III: interaction with peers*, peer assessment was anonymous, peer feedback was qualitative, written, and online, and peers used feedback to revise their writings. With respect to *cluster IV: composition of assessment groups*, peer assessment was individual, and students were randomly matched. Concerning *cluster V: management of the assessment process*, teachers shared assessment criteria and standards, but there was no moderation to check peer feedback before sending it. Finally, regarding *cluster VI: contextual elements*, an online environment was used for peer assessment, training was provided, and the use of peer assessment was supported by the curriculum.

Table 2.2 Design Elements of Peer Assessment (Adachi et al., 2018a, pp. 457-458)

Cluster	Design element	Description	This study as an example
Cluster I: Decisions concerning the use of peer assessment	(1) Subject area	Topic or discipline	Turkish Language and Literature
	(2) Intended learning outcomes (for students)	What should students achieve through this activity?	Peer feedback provision, peer feedback reception, self-assessment, peer cooperation, and writing skills
	(3) Intended objectives (for staff)	What do academics aim to achieve? Time saving? Deeper learning?	Enhanced student learning and skills
	(4) Timing	When, over what period of time, and how much time?	Twice in one semester Approximately four weeks for FPA task via the online environment
Cluster II: Link between peer assessment and other elements in the learning environment	(5) Assessment type	Type of work assessed: product type, process	Writing
	(6) Formality and weighting	Formative or summative?	Formative
	(7) Relationship to other assessments	How does it fit in?	Peer assessment was a homework contributing to final evaluation and grading
	(8) Link to self-assessment	Do students also self-assess at any stage?	Yes, students in the groups W/RS made self-assessment in each FPA activity.
Cluster III: Interaction between peers	(9) Anonymity	Do students know who gave them feedback?	Anonymous
	(10) Feedback information type	Quantitative or qualitative; written, verbal, video; face to face or online	Qualitative, written, and online
	(11) Feedback utilization	How is the feedback information used by the peer?	Students used feedback to revise and improve their writings.

Table 2.2 (continued)

Cluster IV: Composition of assessment groups	(12) Peer configuration	Individual or group assessments?	Individual
	(13) Peer matching	How are students matched?	Randomly
Cluster V: Management of the assessment procedure	(14) Standards used	Rubric, criteria, checklist; are students involved in creating rubrics	Sharing of criteria and standards
	(15) Calibration/task scaffolding	How are students oriented to standards prior to using them?	Standards were shared in the classroom by the teacher and in the online environment.
	(16) Moderation of feedback	Is feedback checked prior to communication?	Students took feedback directly from their peers.
Cluster VI: Contextual elements	(17) Technology use	What technology facilitates it? What support is required to use technology?	Supportive Writing and Peer Assessment Environment (SWAPPER)
	(18) Resources required	Literature, toolkits, team teaching, equipment	Training in writing, peer assessment, and the SWAPPER; time to answer students' questions
	(19) Policy	Within the assessment task To support the use of the peer assessment at the institutional level	Grading of the participation in classroom level The curriculum supported the use of peer assessment

Among the aforementioned design choices, the following parts provide detailed information about peer assessment of writing works, formative peer assessment, and technology use in peer assessment, respectively. Afterward, the benefits and challenges of peer assessment are discussed. Finally, the need for the scaffolding of peer assessment is revealed.

2.5.1 Peer Assessment of Writing

One design decision in peer assessment is related to the type of work assessed (Adachi et al., 2018a). In this study, peer assessment was applied for writing practices, as mentioned earlier.

The current pedagogical approach in classroom assessment of writing practices emphasizes involvement of learners in assessment process through self- and peer assessment to help them understand quality standards and enhance their evaluative judgement skills (Parr, 2013). Furthermore, teacher assessment can be a less feasible way to provide individualized feedback on students' writings, especially in crowded classrooms and in a limited time (Ungan, 2007). On the contrary, peer feedback can be a more viable solution since students can receive information from multiple peers in a shorter time (Wichmann et al., 2018). Moreover, the effect of peer feedback on writing is comparable to teacher feedback and superior to self-assessment (Huisman, Saab, van den Broek, & van Driel, 2019; Topping, 2009). In particular, in the meta-analysis study by Huisman et al. (2019), it was revealed that students improved their writing performance more compared to no feedback and self-assessment conditions, and there was no significant difference between the effect of peer and teacher feedback despite the small number of reviewed studies.

In writing practice, peer feedback can be applied in different ways (Wichmann et al., 2018). For example, after students write their texts, they can receive comments from their peers that indicate their errors and potential solutions. When they perceive feedback relevant and useful to correct problems, they can revise their texts

(Wichmann et al., 2018). Another way to implement peer feedback can be students' scoring of their peers' writings. In this study, the former way was followed in order to apply peer assessment as a formative assessment.

2.5.2 Formative Peer Assessment

This study focusses on formative peer assessment. Formative peer assessment (FPA) intends for students to plan their learning, determine their strengths, weaknesses, and mistakes in their performance, and improve metacognitive and other skills with the feedback they receive from their peers (Topping, 2009). Panadero et al. (2018b) operationalize FPA as students' provision of qualitative information about their peers' performance, including their strengths and weaknesses without a score or grade.

In FPA, students can act as both a feedback provider or assessor and feedback receiver or assessee. Such peer assessment is called reciprocal peer assessment (Tsivitanidou & Constantinou, 2016). Kollar and Fischer (2010) explain four overt activities in reciprocal FPA. These activities are task performance, feedback provision, feedback reception, and revision. First, students perform a task such as writing and building a robot artifact individually or collaboratively. Second, students assess the quality of their peers' performance and provide feedback on products and/or processes. Third, they read or listen to the feedback they received, and they may communicate with their peers to respond to peers' feedback and request further clarification. Finally, students revise their first task performance based on peer feedback.

Although Kollar and Fischer (2010) explain four main activities in FPA with a cognitive perspective, they call for a more comprehensive model. Reinholz (2016) has developed a model for learning through peer assessment, which also aims to enhance the self-assessment of the students. The model includes task engagement, peer analysis, feedback provision, feedback reception, peer conferencing, and

revision activities. All of the activities are linked to self-assessment. However, Reinholz's (2016) model is inadequate to indicate the role of different individual characteristics, interaction among learners and teachers before and during different activities in FPA, and complex cognitive processes. This study goes further by affiliating and describing FPA with self- and co-regulated learning frameworks with an advanced model.

2.5.2.1 Formative Peer Assessment Model for Self-Regulated and Co-Regulated Learning

Formative assessment and self-assessment were associated with the regulation of learning in prior sections of the literature review. Similarly, there is a relationship between FPA and self- and co-regulated learning. To indicate this relationship, the current study modified Andrade's (2013) model of assessment for FPA. It improved it with cognitive and discursive activities that can support self- and co-regulated learning during FPA activities based on literature (Figure 2.4). The new model is called a formative peer assessment model for self-regulated and co-regulated learning. In the following parts, the revisions brought by the new model are explained.

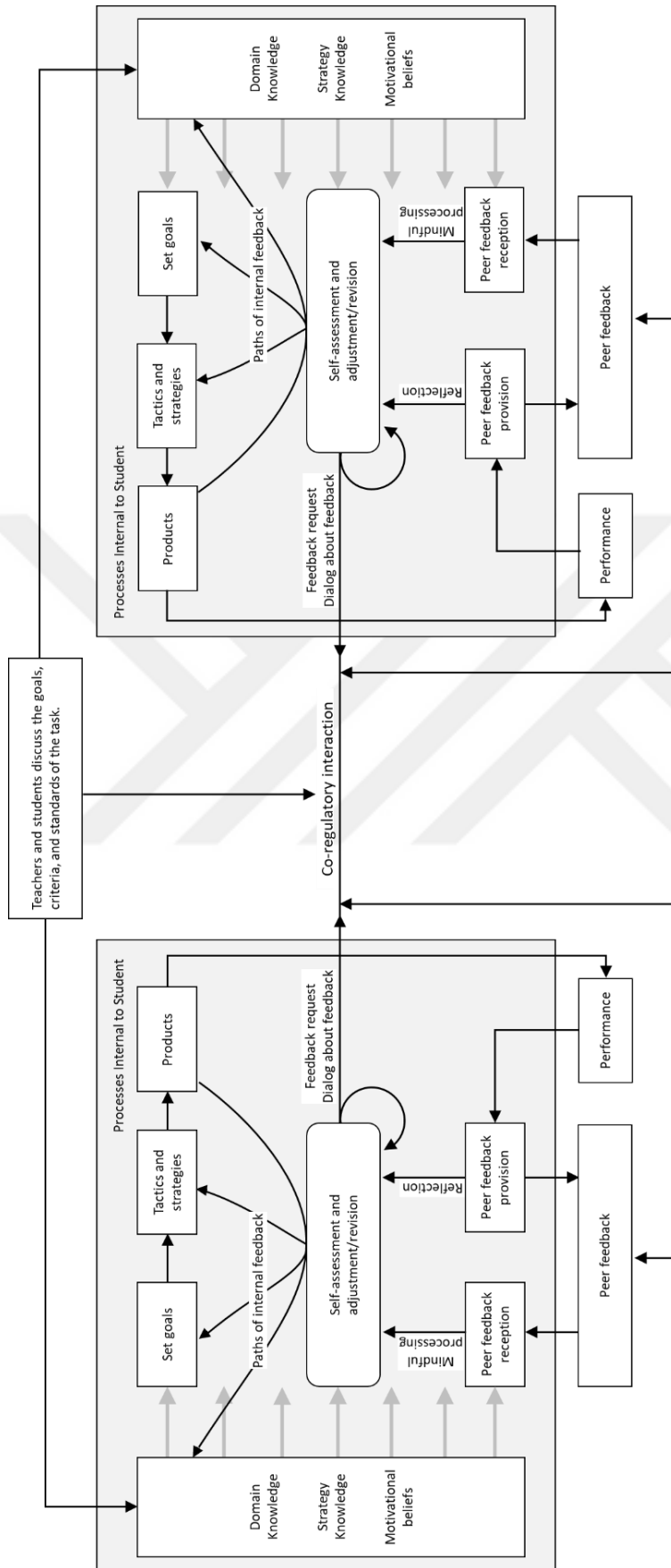


Figure 2.4. FPA model for self-regulated and co-regulated learning

Teachers' and Students' Discussion of Goals, Criteria, and Standards

It is recommendable that assessment criteria be clarified and defined in operational terms before peer assessment (Dochy, Segers, & Sluijsmans, 1999; Topping, 1998). For example, teachers' and students' collaboration to construct assessment criteria is regarded as beneficial to decrease misunderstandings about goals (Nicol & Macfarlane-Dick, 2006), enhance students' engagement in learning and their awareness on course requirements (Prins et al., 2005), mitigate their anxiety, and feel a sense of ownership in their own learning (Topping, 2009). In addition, discussion of criteria and standards decreases discrepancy between students' and teachers' ratings of the performance, which is also related to students' feedback quality and their own task performance (Liu & Li, 2014). With respect to self-regulation, both discussion and sharing of assessment criteria can help students set realistic goals, become motivated, and evaluate their progress during or after task performance (Panadero et al., 2017). It also creates co-regulated learning environments among teachers and peers (Allal, 2010). Therefore, in the new model, teachers do not just set the task, but they discuss task goals, criteria, and standards with students.

Extended Impact of Knowledge and Beliefs in Formative Peer Assessment

Learners' domain, task, and strategy knowledge and beliefs impact self-regulated learning. Narciss (2008) adds more specific individual factors that influence regulatory processes with internal feedback and external feedback. They are (1) self-assessment skill, (2) skill and strategy for processing internal and external feedback, and (3) motivation for applying external feedback (Narciss, 2008). These individual factors are related to internal feedback provision and external feedback reception.

Such individual factors are also considered as a factor affecting both peer feedback provision and reception in reciprocal FPA activities (Panadero et al., 2018b). Regarding the impact of learners' knowledge on feedback provision, Alqassab, Strijbos, and Ufer (2018) indicated that feedback of the students with the moderate and high level of domain knowledge was more at self-regulation level than the feedback of the students with the low level of domain knowledge. The researchers

concluded that domain knowledge is a crucial factor that impacts the provision of peer feedback at higher levels, even if there are instructional scaffolds. Patchan and Schunn (2015) also revealed that students with high ability in writing (i.e., high reviewers) gave more criticism than students with low ability in writing (i.e., low reviewers) whereas low reviewers gave more praise than high reviewers. In addition, high reviewers determined more problems, gave more solutions, and provided feedback on higher-level issues more than low reviewers. Related to domain and task knowledge, students' task performance also affected the quality of their feedback (e.g., Li et al., 2012; Noroozi, Biemans, & Mulder, 2016). Lastly, learners' self-regulated learning skills influence students' engagement with assessment and feedback (Panadero et al., 2018a). For example, Brown, Peterson, and Yao (2016) investigated relationships among students' beliefs, roles of feedback, and self-regulated learning. The authors found a positive correlation among the use of self-regulated learning strategies, conceptions about the active use of feedback, and the help of peer feedback.

In addition to learners' domain, task, and strategy knowledge, their beliefs play a crucial role in peer assessment (Panadero et al., 2018b). For example, students' trust in their own and peers' evaluative capabilities and their perceptions of accuracy of peer evaluation was found related to the value they attribute to peer assessment (Rotsaert, Panadero, Estrada, & Schellens, 2017). Indeed, they may resist participating in peer assessment activities and use peer feedback because of their beliefs in peers' inability to provide fair and unbiased feedback (Ilgen, Fisher, & Taylor, 1979; Smith, Cooper, & Lancaster, 2002). Furthermore, their anxiety during feedback provision and perceptions of their peer feedback message regarding its quality, correctness, and usefulness can affect the accuracy of their peer feedback (Alqassab et al., 2019).

Feedback Requests

Through feedback requests, learners specify the issues on which they desire to receive feedback (Gielen et al., 2010a). Such requests can be considered as a help-

seeking or social form of information-seeking behavior (Zimmerman & Moylan, 2009) because learners aim to adapt or improve their behaviors with the help of others (Winne, 2011). In addition, they are regarded as learners' indirect regulation or co-regulation attempts (Hadwin, Oshige, Gress, & Winne, 2010). In other words, self-regulated learners request feedback from external sources when there is a disparity between actual and expected performance (Butler & Winne, 1995).

Feedback requests sensitize the learners to weaknesses in their performance (Nicol, 2012), and increases their attention to and reception of incoming feedback (Gibbs & Simpson, 2004; Gielen et al., 2010a). At the same time, responding to feedback request “motivates and guides assessors to give useful feedback by raising a feeling of ‘individual accountability’ and ‘positive interdependency’” (Gielen et al., 2010a, p. 149). For example, Tsivitanidou, Zacharia, Hovardas, and Nicolaou (2012) found that students were more likely to receive feedback when they sent feedback requests to their peers. As a result, peer assessment with feedback requests can promote dialogue and collaboration between learners in peer assessment (Deiglmayr, 2018; Nicol, 2014).

Reflection on Feedback Provision

While students provide peer feedback to indicate errors, gaps, misconceptions, and different perspectives, they can also evaluate their own subject knowledge and performance (Nicol, 2012). In fact, feedback provision can help learners to self-assess their performance better, identify their strengths and weaknesses, and make plans for their own work (Bourgeois, 2016; Nicol, 2014; Panadero, 2016; Patchan & Schunn, 2015; Reinholz, 2016; To & Panadero, 2019). In other words, feedback providers can compare their work with their peers' works, reflect on their task performance more impartially when peers' works are considered as external reference points, and give internal feedback to enhance their own product and guide their future knowledge construction processes (Nicol, 2014; van Popta et al., 2017). As a result of such cognitive process, learners can revise their work even before they get peer feedback (Nicol, 2014).

Mindful Cognitive Processing of Peer Feedback

Mindful cognitive processing of peer feedback refers to “how deeply the peer feedback has been cognitively processed and understood” (Bolzer et al., 2015, p. 425). According to Bangert-Drowns et al. (1991), feedback is most effective when it encourages learners' mindful reception by requiring them to deeply process feedback information and decide their actions rather than automatically responding to feedback. The feedback that is not mindfully processed may not bring about its use and improvement of performance (Bolzer et al., 2015). In other words, only when learners “decode the feedback message, internalize it and compare and evaluate it with reference to their own work” (Nicol, 2014, p. 199), feedback influences learners' current and future learning. Although there is a lack of operationalization of mindfulness in peer feedback processes (Bolzer et al., 2015), this study defined mindful processing of peer feedback with three actions based on the literature investigating the process after feedback provision: (1) critical acceptance of peer feedback, (2) interpretation of feedback regarding learning process and products, and (3) improvement of performance.

First, learners critically judge the accuracy of feedback they received, which results in the acceptance of peer feedback or not (Ilgen et al., 1979). Such process can be triggered by asking students whether they agree or disagree with received feedback and why they think so (Kim, 2009). It can contribute to learners' metacognitive awareness, performance, attitudes towards peer assessment, as Kim (2009) reveals. Li et al. (2012) also indicated that there was a significant positive correlation between students' critical acceptance of peer feedback and improvement of their performance. Consequently, Li et al. (2012) emphasized the importance of incorporating accurate peer suggestions and rejecting misleading ones to promote learning performance. Second, it is necessary to interpret peer feedback to plan performance improvement and future learning processes (Andrade, 2013). During the interpretation of feedback, learners can attribute success or failure to (1) technical knowledge or method used for the task, (2) effort allocated for the task, (3) learning method applied for the task, (4) ability, trait, and aptitude, (5) random factors, and

(6) wrong judgment process; after that, they take a self-regulatory action accordingly (Draper, 2009). The learners who attribute success or failure to internal factors identify what they need to improve their performance and adapt their performance based on their action plans (Winstone et al., 2017a). Finally, productive interpretation of peer feedback brings about the improvement of performance.

Dialog about Received Feedback

Social interaction between feedback providers and receivers can maintain by discussing the received peer feedback. To illustrate, feedback receivers can respond to peer feedback, request elaboration of the peer feedback, and agree or disagree with explanations of feedback providers. Feedback receivers' replies to feedback and negotiation with feedback providers after feedback reception foster understanding and acceptance of peer feedback (Agricola, Prins, & Sluijsman, 2020; Strijbos et al., 2009; Zhu & Carless, 2018). Such interaction can be beneficial for feedback providers, too. Their diagnosis of faulty points in peers' performance may be incorrect (Gielen et al., 2010a; Narciss, 2008). Hence, feedback receivers' back-feedback during negotiation can help their feedback providers resolve their misconceptions about the content and misunderstandings about task and assessment criteria. Therefore, a reflective knowledge building process occurs between feedback providers and receivers (Nicol, 2012).

Central Role of Self-Assessment

In Butler and Winne's (1995) self-regulated learning model, learners monitor cognitive and behavioral products and give internal feedback to reinterpret task engagement. In fact, both self-regulation and classroom assessment aim for learners to monitor their progress towards goals and to provide feedback that can enhance their learning and performance (Andrade & Brookhart, 2016). Related to monitoring, self-assessment is in the center of the new model as all FPA activities include self-assessment (Reinholz, 2016). For example, feedback requests originate from learners' self-assessment during the task performance. While reflecting on peer feedback provision, learners can also self-assess their performance, identify their

strengths and weaknesses, and make plans for their own work (Bourgeois, 2016; Panadero, 2016; Patchan & Schunn, 2015; Reinholz, 2016). Self-assessment occurs in mindful processing of peer feedback, too. Students first need to evaluate peer feedback critically, which also requires an understanding of assessment criteria, task- or domain-specific terminologies, and feedback (Winstone et al., 2017a). Students' monitoring of difficulty in feedback evaluation may result in internal feedback to indicate inadequacy in their actual state of learning or understanding. For the peer feedback accepted, feedback receivers can give internal feedback again while reflecting on the quality of their task performance, evaluating their progress towards expected standards, and revising their performance (Andrade & Valtcheva, 2009).

On the whole, this study described a FPA model for self-regulated and co-regulated learning based on the literature. Different from prior models, the new model emphasized teachers' and students' discussion of goals, criteria, and standards, the extended impact of knowledge and beliefs, feedback requests, reflection on feedback provision, mindful cognitive processing of peer feedback, dialog about received feedback, and the central role of self-assessment to enhance self-regulated and co-regulated learning. The model guided the design of regulation scaffolds integrated into the online FPA environment in the study.

2.5.3 Technology Use in Peer Assessment

Another design element in peer assessment is related to technology use. A meta-analysis study by Zheng et al. (2020) indicated that the students experiencing technology-facilitated peer assessment gained higher achievement than the ones in the traditional approach. Similarly, Li et al. (2020) revealed that the effect of technology-assisted peer assessment on learning gains was higher than paper-based peer assessment in their meta-analysis study. These results can be attributed to the affordances of technology that can facilitate the implementation of peer assessment or eliminate its challenges. They are related to teachers' administration and

monitoring of peer assessment, storage of and access to information, and participation in peer assessment.

First, the use of technology mitigates the administrative burden of applying peer assessment procedures for teachers, especially in crowded classrooms (Li, 2017; Russell, Van Horne, Ward, Bettis, & Gikonyo, 2017). The teachers do not need to manually schedule peer assessment stages, collect and distribute students' work and peer feedback owing to the use of computer-based systems (Li, 2017). To illustrate, for the assessment of writing performance, it can facilitate "submission of essays, anonymising and random distribution of essays, making feedback available and calculation of marks" (Mostert & Snowball, 2013, p. 676). It also makes management of the peer assessment process outside the classroom easier (Russell et al., 2017). In other words, teachers can use technology to manage the peer assessment process more efficiently in large classrooms and apply peer assessment more frequently without the restriction of face-to-face class time.

Second, teachers can observe students' performance and intervene in alarming situations more easily through the use of technology. The peer assessment process should be monitored and coached by instructors, especially when there are novice students in peer assessment (O'Donnell & Topping, 1998; Topping, 1998, 2009). The use of technology can be helpful for teachers to monitor their students' learning progression continuously, give formative feedback to them, and motivate them for participation (Chen, 2016; Gikandi et al., 2011).

Third, technology use in peer assessment facilitates the storage of a vast amount of information, immediate access to it, and interaction among peers (Chen, 2016; Tsai & Liang, 2009). LMSs afford to archive assessment process and products in an online environment, which provides students with the opportunity to revisit their own and peers' prior contributions to knowledge construction, and monitor and reflect on their learning (Gikandi et al., 2011; Gikandi & Morrow, 2016). In other words, LMSs can be extended to an online environment in which students record, interpret, review, and act on feedback information coming from different sources at

any time (Carless & Boud, 2018; Law & Baer, 2020). In addition, online tools in LMSs (such as online discussions and chats) can facilitate dialogue and collaboration in peer assessment (Carless, 2016; Gikandi & Morrow, 2016).

Finally, technology-enhanced peer assessment brings about more equal and higher participation of students (Chen, 2016; Guardado & Shi, 2007). The students less proficient, from different cultures, and incompetent at face-to-face interaction may not play an active role in peer feedback provision in classroom environments, whereas the use of online technologies can provide a safer and more comfortable environment (Chen, 2016; Guardado & Shi, 2007; McCarthy, 2017). It can also create a sense of responsibility for them as their contribution to peers' learning becomes more visible by their teachers (Chen, 2016). Moreover, peer feedback given in the online environment can be more critical, in-depth, and related to assessment criteria compared to in-class peer feedback (McCarthy, 2017).

2.5.4 Benefits and Challenges of Peer Assessment

Peer assessment can be applied for the assessment of different student works, with formative or summative function, and through the use of technology. It provides various benefits while students perform as a peer feedback provider and receiver. The benefits include improvement of task performance, higher-order thinking skills, sense of responsibility, and individualized feedback compared to teacher assessment. In addition to the benefits, peer assessment brings about some challenges. They are related to concerns about its reliability and validity, the impact of social demands, and cognitive complexity. Both benefits and challenges of peer assessment are explained in this section.

Concerning benefits of peer assessment, receiving peer feedback and processing it thoughtfully can decrease errors in tasks and positively influence learning (Topping, 2009). Similarly, providing peer feedback can enhance improvement of students' own task performance since it can help learners self-assess their performance better,

identify their strengths and weaknesses, and make plans for their own work as mentioned earlier (Bourgeois, 2016; Nicol, 2014; Panadero, 2016; Patchan & Schunn, 2015; Reinholz, 2016; To & Panadero, 2019). Correspondingly, meta-analysis studies reported a significant and positive impact of peer assessment on academic performance (Double, McGrane, & Hopfenbeck, 2019; Li, Xiong, Hunter, Guo, & Tywoniw, 2020). In fact, the effect size of peer assessment was significantly larger than no assessment (typical instruction) condition, and its effect was not less than teacher assessment (Double et al., 2019; Li et al., 2020).

Second, higher-order thinking skills can improve as a result of both peer feedback provision and reception. For example, while providing peer feedback, students reflect on both their peers' and their own performance, which can contribute to reflective and critical thinking, planning, monitoring, regulation, and deep learning (Gikandi & Morrow, 2016; Hovardas et al., 2014; Novakovich, 2016). van Popta et al. (2017) reviewed the studies that investigated the value of peer feedback from the point of feedback provider in online learning environments. They summarized that feedback provision fostered feedback providers' analysis and evaluative judgment skills, metacognitive skills, critical reflection on their own performance, and regulation of their own learning. Similar to feedback provision, feedback reception by others including peers contributes to learners' self-assessment (Panadero et al., 2017). Peer feedback enables students to view their performance quality from their peers' perspectives and make self-assessment more objectively (Reinholz, 2016). Accordingly, To and Panadero (2019) reported that the undergraduate students adjusted their self-assessment results when they were different from the peer feedback they received. Besides aforementioned skills, self-regulation is another skill peer assessment can enhance as the relation between peer assessment and self-regulated learning is established in prior sections. Correspondingly, Meusen-Beekman, Joosten-ten Brinke, and Boshuizen (2016) revealed the effect of peer assessment on the self-regulation of sixth-grade students. In the study, peer assessment was implemented in line with Black and Wiliam's (2009) five critical strategies for three writing tasks. At the end of the intervention, it was found that

peer assessment improved students' self-regulation. Students' reflections also revealed that the construction of assessment criteria and providing and receiving feedback based on criteria contributed to the development of self-regulation.

Third, providing feedback is related to a sense of responsibility. Students in peer assessment become accountable for allocating time and effort to give their peers feedback and contribute to their learning (Prins et al., 2005; Strijbos et al., 2009). Otherwise, their peers are devoid of feedback to improve their performance (Sluijsmans, 2002). Therefore, peer feedback provision can enhance students' sense of responsibility to help their peers (e.g., Burgess, Roberts, Black, & Mellis, 2013; Papinczak, Young, Groves, & 2007).

Finally, peer feedback enables students to receive quick feedback while they are engaging in task performance without waiting for teacher feedback (Gielen et al., 2010b; Ladyshevsky, 2013). Students can also become more comfortable to share and discuss performance with their peers because they may not feel safe when they indicate their performance to their teachers who can identify their lack of knowledge and mistakes and use this information for evaluation (Ladyshevsky, 2013). In addition, peer feedback is regarded as more individualized and understandable due to shared problems, languages, and knowledge among the students (Cho & MacArthur, 2010; Gielen et al., 2010b; Nicol, 2010; O'Donnell & Topping, 1998; Topping, 2009). Such advantages of peer feedback can make it more preferable compared to teacher feedback.

Peer assessment also includes challenges that need to be considered by practitioners before they implement it. The main concern of instructors regarding peer assessment is its reliability and validity (O'Donnell & Topping, 1998). Instructors can be doubtful about similarity or equality of assessment by students and them (Hattie & Gan, 2011). Moreover, some students may resist to take into account and implement peer feedback owing to their doubts about its quality (Carless, 2016; Hovardas et al., 2014; Kaufman & Schunn, 2011; Liu & Carless, 2006; Li et al., 2012; McCarthy, 2017). They can favor and show commitment to feedback by their teachers due to

their beliefs about teachers' authority and qualification for effective feedback provision (e.g., Harris, Brown, & Harnett, 2014; Miao, Badger, Zhen, 2006; Tsui & Ng, 2000).

In relation to reliability and validity of peer assessment, social demands can be an influential factor. In other words, peer assessment can be affected by "friendship bonds, enmity, or other power processes, the popularity of individuals, perception of criticism as socially uncomfortable" (Topping, 2009, p. 24). For example, students may be unwilling, worried, and anxious to give honest and critical feedback to their peers (Cartney, 2010; Li, 2017; Panadero, 2016). They can give high grades to their friends, their fellow group members, and most active peers in their groups (Strijbos & Sluijsmans, 2010; O'Donnell & Topping, 1998). Such situations imply a bias in peer assessment due to interpersonal processes between students (Strijbos et al., 2009).

Finally, when students are both assessors and assessees, peer assessment becomes more demanding as it requires different skills (Tsivitanidou & Constantinou, 2016). Assessors need to grasp both aims and standards of the performance task, evaluate the performance according to the criteria in order to provide quality feedback, explain evaluation results, and provide suggestions (O'Donnell & Topping, 1998; van Popta et al., 2017). In addition, assessees are expected to critically evaluate the feedback received, think about the reasons behind their performance level based on peer feedback, plan how to improve their performance, and apply the plan by revising their performance (Andrade, 2013; Bangert-Drowns et al., 1991; Bolzer et al., 2015; Kollar & Fischer, 2010; Nicol, 2014). Therefore, peer feedback provision and reception are regarded as a cognitively challenging task (Adachi et al., 2018b; Gravett & Winstone, 2019; Kollar & Fischer, 2010; Nicol, 2012; O'Donnell & Topping, 1998; Patchan et al., 2016). Peer assessment of complex tasks becomes even more demanding as high element interactivity during task performance leaves less cognitive capacity for peer assessment, and students can experience cognitive load (Könings et al., 2019).

2.5.5 Scaffolding Peer Assessment

To overcome with aforementioned challenges, there is a need for instructional scaffolding that can support students in peer assessment activities. Scaffolding is a “process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts” (Wood, Bruner, & Ross, 1976). It is one of the applications of Vygotsky’s ideas about learners’ zone of proximal development and the role of social interactions with others in the development and learning (Schunk, 2012). In parallel to Vygotsky’s ideas, in the scaffolding process, adults or more capable peers interact with the novice learners to help them attain their potential development level in the performance of a task. When novice learners start to develop the skills and they can guide themselves, the amount of scaffolding is decreased (Sharma & Hannafin, 2007). It is called fading, “gradual reduction and eventual elimination of scaffolds” (Sharma & Hannafin, 2007, p. 29).

In addition to adults and more capable peers, scaffolding source can be technology that includes resources and tools integrated to multimedia and hypermedia software (Brush & Saye, 2002). It can provide conceptual scaffolds to guide learners on what to consider, metacognitive scaffolds to guide them on how to think, procedural scaffolds to guide them on how to use resources and tools, and strategic scaffolds to guide them on which alternative approaches to consider in the problem solving (Hannafin, Land, & Oliver, 1999). The scaffolds in technology-enhanced environments can be static and dynamic (Kim & Hannafin, 2011). While static scaffolds provide fixed guidelines, information, or procedures, dynamic scaffolds assess learners’ progress to diagnose learners’ needs and use this information to give individualized feedback (Kim & Hannafin, 2011). Regardless of sources of scaffolding, it needs to be designed based on learners’ developmental and cognitive needs and characteristics of instructional context (Sharma & Hannafin, 2007). Moreover, use of technology together with other scaffolding sources (i.e., peers and adults) contributes to learning more (Lee & Hannafin, 2016).

Instructional scaffolding plays a critical role in peer assessment, as well. It is one of the conditions that influence effectiveness of peer assessment (Panadero et al., 2018b). It aims to help students acquire and develop knowledge and skills to complete performance task and peer assessment successfully (Deiglmayr, 2018). The instructional scaffolds in peer assessment include question prompts, graphic organizers, scripts, and specific tools; however, there are mixed results regarding their effect (Panadero et al., 2018b). As this study aims to enhance students' peer feedback quality, feedback uptake, perceptions, and experiences, the effect of specific instructional scaffolds on these variables was reviewed in the literature to identify common and conflicting findings in detail. In the following sections, these variables are described, and related empirical studies that investigated the impact of certain scaffolds are summarized.

2.6 Peer Feedback Quality

Peer assessment yields quantitative feedback, qualitative feedback, or both of them. While quantitative feedback is in the form of a score, grade, or mark, qualitative feedback provides information about strengths, weaknesses, and necessary improvements in learners' performance. In either quantitative or qualitative peer feedback, quality of feedback is important as it is one of the major factors that determine its acceptance (Ilgen et al., 1979) and effectiveness of peer assessment on achievement and regulation of learning (Narciss, 2008; Hovardas et al., 2014; Panadero et al., 2016).

For the quality of quantitative peer feedback, validity and reliability are considered. While reliability pertains to the consistency of students' grades with teachers' grades, validity focuses on the appropriateness of peer comments and grades (Panadero, 2016). On the other hand, according to Hovardas et al. (2014), the validity of quantitative feedback refers to the correlation between feedback by peer and expert assessor, while reliability is related to heterogeneity among peer assessors. Accuracy term is also used to refer consistency between peers' and teachers' scores (e.g.,

Rotsaert, Panadero, & Schellens, 2018a). Therefore, peer assessment includes terms that are defined differently in the literature similar to self-assessment.

This study focuses on the quality of qualitative peer feedback as formative peer assessment is applied (Panadero et al., 2018b). There are two main indicators of the quality of qualitative peer feedback discussed in the literature: the accuracy and content of peer feedback. Accuracy in qualitative peer feedback refers to the provision of scientifically valid and correct content (Hovardas et al., 2014; Panadero, 2016; Peters, Körndle, & Narciss, 2018). For example, Hovardas et al. (2014) analyzed the accuracy of positive and negative judgments and suggestions in peer feedback to gauge quality. Compared to accuracy, the content of peer feedback has been evaluated more in studies to make inferences about the quality of qualitative feedback. The advantage of the analysis of the content of peer feedback is that it is not limited to a specific domain or task (Gielen et al., 2010a). Different content analysis schemas were used for this purpose. They are explained below.

Prins et al. (2006) developed a rubric to measure the quality of peer feedback. There are three main categories in the rubric: use of criteria, nature of feedback, and writing style. First, the use of criteria requires identification and application of criteria to analyze performance from different aspects. It accounts for 50% of the rubric score. Second, with regard to the nature of feedback (35% of the score), quality feedback includes a balanced number of positive and negative comments, questions triggering reflection, and clear examples and suggestions for the improvement of performance. Third, the writing style of the feedback report is reviewed to assign 15% of the score. The use of clear structure, short descriptions, and the first person in the report is considered as a good achievement in the rubric.

Four levels of feedback proposed by Hattie and Timperley (2007) also guide content analysis of peer feedback. Self, task, process, and self-regulation are four levels as described in the feedback section of the literature review chapter. Hattie and Timperley (2007) suggest that self-level feedback is the least effective one, while feedback about self-regulation or process is more useful to enhance deep processing

and competence. However, research indicates that the majority of students' peer feedback consists of self and task level of feedback (e.g., Gan & Hattie, 2014; Harris, Brown, & Harnett, 2015).

According to Tsai and Liang (2009), a piece of feedback comment is categorized into three categories: affective, cognitive, and metacognitive. Affective comments are the ones in which students praise peers or express their feelings about the performance. Cognitive comments reveal correctness of the performance, provide a general suggestion or personal perspective, or guide peers by directing questions or giving related content. Metacognitive comments orient peers to evaluate, plan, reflect, and regulate their performance. Similar to Hattie and Timperley (2007), affective feedback is less favored as it carries less information about the task compared to cognitive feedback. By using these categories, Tsai and Liang (2009) analyzed peer feedback of the college students who developed science activities for pre-school children, provided feedback to their peers in the online environment three times, and revised their activities. Affective comments were the most dominant comments in peer feedback among the three categories. The amount of affective feedback increased over time in the studies by both Tsai and Liang (2009) and Cheng, Liang, and Tsai (2015). On the other hand, cognitive comments were found more useful to improve performance (Cheng et al., 2015). Accordingly, Tsai and Liang (2009) propose that educators should help students give more cognitive and metacognitive feedback in peer assessment activities.

Hovardas et al. (2014) also provide main indicators of the quality of peer feedback. They are (1) provision of judgments and suggestions for revision, (2) consistency between negative judgments and suggestions, and (3) content accuracy of feedback. When there is both quantitative and qualitative feedback, the authors also suggest examining consistency between them by calculating the correlation between peer score and the number of positive or negative judgments. Hovardas et al. (2014) found that students included more positive judgment and negative judgment without explanation or suggestion, but less suggestions for change in their peer feedback compared to experts (Hovardas et al., 2014). The authors called researchers, teachers,

and policymakers for investigating how to support students to prevent such inadequacies in feedback.

The most recent coding schema to analyze peer feedback content belongs to Gielen and De Wever (2015c). The complete schema focuses on style, type, and focus of peer feedback messages. Concerning peer feedback style, feedback segments are classified as verification, elaboration, or general. A balanced proportion of verifications and elaborations is indicated as more beneficial by the authors. With regard to verification type, feedback segments in verification style are also divided into positive, negative, and neutral. The authors suggest a balance between negative and positive verifications. Regarding elaboration type, feedback segments in elaboration style are also categorized into informative and suggestive. The balance between informative and suggestive elaborations is another indicator of quality peer feedback. Finally, the focus of verifications and elaborations is analyzed with two categories: general or specific. Criteria specific feedback is valued more than general feedback for quality feedback provision. Overall, Gielen and De Wever (2015c) provide a coding schema that enables researchers to analyze peer feedback content in detail and any context.

On the whole, there are different requirements for quality peer feedback. Fulfilling these requirements in feedback provision is a cognitively challenging activity for students (Kim, 2009; Kim & Ryu, 2013; O'Donnell & Topping, 1998). They need to grasp the aim of task performance and assessment criteria, detect errors in peers' performance, identify different perspectives and evaluate them critically, explain evaluation results, and provide suggestions (O'Donnell & Topping, 1998; van Popta et al., 2017). On the other hand, aforementioned studies about peer feedback quality (e.g., Gan & Hattie, 2014; Harris, Brown, & Harnett, 2015; Hovardas et al., 2014; Tsai and Liang, 2009) reveal that students are not competent enough to provide peer feedback at high quality. Moreover, when students perform complex tasks, they have a restricted amount of cognitive capacity for feedback provision, which may result in cognitive load (Könings et al., 2019). As the content of peer feedback mainly determines the effectiveness of feedback (Wanner & Palmer, 2018), it is crucial to

investigate instructional interventions that can enhance the quality of peer feedback (Gielen & De Wever, 2015c; Hovardas et al., 2014; Patchan, Schunn, & Correnti, 2016; Walker, 2015; Zheng, Cui, Li, & Huang, 2018).

2.6.1 Instructional Scaffolds to Improve Peer Feedback Quality

The specific scaffolds to improve peer feedback quality include training, anonymity, structure of peer feedback form, feedback request, practice, and dialog about peer feedback. In the following parts, the studies that investigated the effect of the aforementioned scaffolds on peer feedback quality are summarized.

Training

Discussion of assessment criteria and standards and training in peer assessment are recommended to optimize learning in peer assessment (Dochy et al., 1999; Topping, 1998, 2009). There are empirical studies that investigated the validity of this suggestion. The recent ones regarding peer feedback quality are explained below.

Leenknecht and Prins (2018) investigated the effect of training about assessment criteria and standards on primary education students' peer assessment skills. In training, the students in the experimental group discussed assessment criteria and standards for brochure design and examined an example by applying criteria. Afterward, students in both the experimental and control group gave feedback to a peer, received peer feedback on their brochures, and improved them. The authors revealed that the experimental group got significantly higher scores on the test regarding knowledge of assessment criteria and standards than the control group. On the other hand, they provided more positive judgments in their peer feedback, and they used a more authoritative style in peer feedback provision. In other words, they were more oriented to give positive judgments rather than prescriptions and advice. The authors concluded that although primary education students gained knowledge about assessment criteria, they rarely used elaboration and suggestion in their peer

feedback. They suggested continuing to support students during feedback provision with structured feedback forms to enhance feedback quality.

Alqassab, Strijbos, and Ufer (2018) examined the effect of domain knowledge and training regarding peer feedback on pre-service teachers' peer feedback levels. The task was generating solutions to geometric construction tasks. After the measurement of initial domain knowledge and peer feedback levels, the students were trained about peer feedback and their levels. They benefitted from evaluation rubric, prompts to use different levels of feedback, and worked examples about the task in training. After the post-measures, the authors indicated that training improved the only provision of the self-regulation level of peer feedback for the students with medium and high domain knowledge. They inferred that training could be useful to analyze peers' performance at deeper levels, but domain knowledge is required to provide the highest level of peer feedback with the help of training. Finally, Alqassab et al. (2018) suggested considering domain knowledge of the students when designing peer assessment activities even if instructional scaffolds are provided.

The critical role of domain knowledge in the provision of quality peer feedback with the help of training was emphasized in the study by Alqassab et al. (2018). Afterward, Könings et al. (2019) conducted a study to support students' domain and peer assessment knowledge and skills. In particular, Könings et al. (2019) examined the effect of scaffolding domain-specific and peer assessment learning on the accuracy of students' performance in learning and test tasks, time spent on these tasks, and cognitive load. In the study, secondary school students participated in one of the four conditions differing in the scaffolds provided in the learning process. These conditions were no scaffolding, domain-specific scaffolding, peer assessment scaffolding, both domain-specific and peer assessment scaffolding. Scaffolds included worked examples and guided assignments for both domain-specific and peer assessment learning. After scaffolded or non-scaffolded learning, the students answered open-ended questions to assess domain-specific and peer assessment learning as a final step of learning tasks. Moreover, test tasks were administered to assess these skills again. With regard to peer assessment, the results revealed that the

groups with peer assessment scaffold performed higher on peer assessment accuracy in the learning tasks, but not in test tasks. In addition, peer assessment scaffold together with domain-specific scaffold brought about the highest peer assessment accuracy in the learning tasks. On the other hand, peer assessment scaffold either with or without domain-specific scaffold harmed domain-specific accuracy in test tasks. Although peer assessment scaffold did not change time on task, it increased mental effort in learning tasks. The authors concluded that peer assessment scaffolds could help students assess their peers' performance, but their long-term effects are questionable. Moreover, they suggested using peer assessment scaffolds after students have mastered the performance task; otherwise, they can have a deteriorating impact on students' learning of task content.

Anonymity

One of the design elements in peer assessment is related to anonymity (Adachi et al., 2018a). In anonymous peer feedback provision, students do not know to whom they are giving feedback. Interpersonal processes between peers and social demands challenge reliable and valid peer feedback provision (Li, 2017; Panadero, 2016; Topping, 2009). Anonymity is indicated as one of the effective ways to offer a safe learning environment where students don't feel afraid to give accurate and constructive peer feedback (Li, 2017). A number of studies supported its impact on peer feedback.

Howard, Barrett, and Frick (2010) examined the effect of anonymity on quantity, content, and patterns of peer feedback. Undergraduate students in the study gave anonymous or non-anonymous feedback to their peers' website design. The authors revealed that the students in the anonymous group wrote significantly more words and statements in their feedback than the non-anonymous group. The anonymous group was more critical in their feedback than the non-anonymous group. With regard to patterns of peer feedback, the anonymous group wrote more positive reaction continuing with critical feedback, negative reaction continuing with a

suggestion, and suggestion continuing with its reasons. The authors concluded that anonymity is a scaffold to help students provide more critical feedback.

Regarding the effect of anonymity on peer feedback, Lin (2018) also conducted a study. A Facebook-based learning application was used to ensure anonymity. The participating pre-service teachers were assigned to either an anonymous or non-anonymous group to give and receive peer feedback on videotaped microteaching performance. Lin (2018) found that participants in the anonymous group provided less affective feedback but more cognitive feedback, suggestions in particular. As a result, the authors supported anonymity in online peer assessment design.

Concerned with face-to-face peer interaction in real-world with known identities, Rotsaert, Panadero, and Schellens (2018a) made the transition from anonymity to non-anonymity in their peer assessment practices. They analyzed the impact of this transition on undergraduate students' peer feedback quality. Students presented a workshop as a group, provided feedback to their peers based on a rubric, discussed peers' performance, and received reports with peer feedback. This peer assessment approach was practiced for four weeks. Feedback providers were anonymous in the first two weeks, whereas they were non-anonymous in the final two weeks. The results revealed that negative verifications and informative and suggestive elaborations increased in the second week of anonymous sessions. Feedback quality between anonymous and non-anonymous peer assessment practices was similar, although there were some differences in the number of informative elaborations and negative verifications. The authors concluded that practice is an essential factor as peer feedback quality increases over time, and transition from anonymity to non-anonymity does not cause a decrease in feedback quality.

Kobayashi (2020) also examined the effect of anonymity on the quality of peer feedback. There were three conditions in the study to which pre-service teachers were randomly assigned: anonymous, partially anonymous, and non-anonymous. The task was writing reflections on videos and articles provided by the course instructor on four different topics. After students wrote their reflections, they

assessed the writings of their two peers in a LMS. Quality of peer feedback was measured in terms of the total number of words in peer feedback and the percentage of negative comments. Kobayashi (2020) found that the number of words in peer feedback increased over time in all conditions. On the other hand, there was no effect of condition on peer feedback quality. The amount of negative comments was relatively less than positive and neutral comments in all conditions, as well. The author concluded that practice is more effective than anonymity to enhance engagement in online peer assessment.

Structure of Peer Feedback Form

In addition to training before peer assessment practices, students need support during peer feedback provision (O'Donnell & Topping, 1998; Leenknecht & Prins, 2018; Topping, 1998). A list of criteria and prompts and questions regarding how to give feedback can be provided to students to enhance feedback quality. The studies summarized below reveal their positive impact in diverse contexts.

Gan and Hattie (2014) used question prompts to scaffold feedback provision in FPA. The prompts asked students to give feedback on what was done well and poorly and how to improve peers' performance. Participants of the study were secondary school students who wrote laboratory reports in the chemistry course. One treatment received question prompts, while the other condition did not. The authors revealed that the two conditions did not differ with regard to the use of assessment criteria, but the condition with question prompts provided significantly more knowledge of errors, suggestions for improvement, process level feedback in their peer feedback. They concluded that question prompts helped students provide peer feedback that can address learning gaps and show how to improve performance.

Gielen and De Wever (2015b) investigated the effect of time and peer feedback templates in different structures on feedback and product quality. The researchers designed three feedback templates that include (1) the only list of criteria (no structure), (2) two guiding questions together with the list of criteria (basic structure), and (3) feed up, feed back, and feed forward questions together with the list of criteria

(elaborate structure). The participants of the study were pre-service teachers who were expected to write a draft abstract for scientific articles three times. To measure feedback quality, the authors used an adapted version of Prins et al.'s (2006) rubric. The results indicated that students' feedback and product quality improved regardless of their groups over time; however, students in elaborate structure group had higher feedback quality than the ones in other groups, and students in both elaborate and basic structure group had higher product quality than the ones in no structure condition. The authors concluded that multiple practice opportunities could enhance feedback quality and product quality; also, providing feedback template based on feed up, feed back, and feed forward framework of Hattie and Timperley (2007) can improve the effectiveness of peer assessment in the first performance attempts.

Gielen and De Wever (2015c) also examined the effect of the structure of feedback template on the content of peer feedback. There were three research groups receiving no structure, basic structure, or elaborated structure in peer feedback template similar to Gielen and De Wever's (2015b) study. The task for peer assessment was writing an abstract of three scientific articles. It was revealed that the group with an elaborated structure wrote significantly more peer feedback segments. On the other hand, the proportion of elaborations of the basic structure group was significantly more than the no structure group when the number of feedback segments was controlled. The proportion of negative verifications of the elaborated structure group was significantly higher than the basic structure group. There was no significant difference between the groups with regard to the proportion of suggestive elaborations. The authors concluded that varying structure of peer feedback template could influence the content of peer feedback and suggested the use of a list of assessment criteria, feedback, and feed-forward components in the peer feedback template as in their previous study.

Finally, Peters, Körndle, and Narciss (2018) conducted a study to analyze the effect of formative assessment script (FAS) on vocational students' feedback for their peers' and own performance on a technical planning task. Moreover, the impact of

peer feedback provision on internal feedback provision was investigated. There were four groups in the study: peer and then internal feedback provision (1) with FAS support or (2) without FAS support; and only internal feedback provision (3) with FAS or (4) without FAS support. FAS support included guidelines on how to give feedback, what to consider as assessment criteria, and prompts to provide elaborated feedback. The results revealed that the students with FAS support gave more peer feedback comments, determined more missing aspects in peers' performance, proposed more suggestions, and perceived their peer feedback as more satisfactory. With regard to the impact of FAS on internal feedback provision, the authors indicated that the students with FAS support generated more internal feedback and had more comments on their errors, but there was no effect on the detection of missing aspects and provision of internal suggestions. Unexpectedly, the peer feedback provision did not have an additional impact on learners' internal feedback provision. The authors concluded that FAS support robustly enhanced peer feedback provision, but its contribution to internal feedback provision is equivocal.

Feedback Request

Feedback requests sent by assessees can motivate and guide assessors to provide useful feedback (Gielen et al., 2010a). Therefore, feedback requests have become one potential way to improve peer feedback quality. Two studies used feedback requests as scaffolds and revealed their positive impact on feedback quality.

First, Gielen and De Wever (2015a) investigated the effect of scaffolds for both assessors and assessees on undergraduate students' peer feedback quality, product quality, and perceptions about peer assessment. Performance task was writing a draft abstract for scientific articles three times, similar to prior Gielen and De Wever's (2015b, 2015c) studies. There were four conditions with different scaffolds: (1) only peer feedback template, (2) both peer feedback template and peer feedback request form, (3) both peer feedback template and content checklist form, and (4) peer feedback template, peer feedback request form, and content checklist form. Through the feedback request form, assessees could state their specific questions to their

assessors. Checklists were used by assessors to organize information in the research paper according to assessment criteria before providing peer feedback. The results indicated that students' feedback and product quality improved regardless of their groups over time and they were satisfied with the provided feedback; however, filling peer feedback request form significantly increased the quality of provided feedback from time 1 to time 3 and product quality from time 1 to time 2. The authors concluded that multiple practice opportunities could enhance feedback quality and product quality; moreover, providing scaffolds, peer feedback request form for assesseses in particular, can enhance the effectiveness of peer assessment in the first performance attempts.

Voet et al. (2018) also investigated the effect of feedback requests and content checklists on assessors' feedback content. The task for peer assessment was writing a research abstract. The participants were freshman students who wrote an abstract, provided peer feedback, and revised their abstracts based on peer feedback three times. There were four conditions to which participants were randomly assigned: (1) control condition not receiving any support, (2) feedback request condition, (3) content checklist condition, and (4) combination condition using both feedback requests and content checklists. The results revealed that feedback request and combination conditions wrote "significantly higher proportion of informative elaborations and significantly lower proportion of verifications in feedback messages" (Voet et al., 2018, p. 159). The authors proposed that the feedback request enabled assessors to provide more focused feedback messages and enhanced feedback content.

Practice

Peer feedback quality can increase with multiple practice opportunities. Even if students receive only assessment criteria and there is no additional scaffold, students' feedback quality can enhance successive peer assessment activities, as indicated by Gielen and De Wever (2015a, 2015b). Rotsaert et al. (2018a) also revealed that peer

feedback quality was enhanced in the second implementation of anonymous peer assessment.

The effect of practice on peer feedback quality was investigated by Rotsaert, Panadero, Schellens, and Raes (2018b), as well. Moreover, the authors examined the impact of a scaffold supporting students to filter out peer feedback they received. Eleventh-grade secondary school students made presentations about their projects as a group in two semesters. They were assessors 10 times and assessees two times. Peer feedback quality was measured on three occasions. The results revealed that negative verifications and informative and suggestive elaborations in peer feedback increased over time. On the other hand, the scaffold for filtering out peer feedback did not have a significant effect on the improvement of peer feedback quality. As all students received a report about the received peer feedback, the authors suggested that an extra scaffold for filtering-out might have been unnecessary. On the whole, the authors concluded that peer assessment practice enhances students' expertise for providing sound feedback on their peers' work.

Dialog about Peer Feedback

Dialog about received peer feedback can be beneficial for both assessors and assessees, as mentioned earlier. For example, Zheng, Cui, Li, and Huang (2018) conducted a study to investigate the impact of synchronous discussion between feedback providers and receivers in an online peer assessment environment. The assessors and assessees in the experimental group discussed peer feedback provided on essays, while the control group did not. Then, students revised their essays. Finally, students assessed their peers' revised essays. The results revealed that there was a high correlation between peer scores and teacher scores. In addition, it was indicated that the experimental group improved their writing performance, meta-cognitive awareness, and writing self-efficacy significantly more than the control group. With regard to peer feedback quality, the students who discussed peer feedback and writing performance provided a significantly higher amount of affective and metacognitive feedback later on. The authors attributed this finding to

increased social presence and metacognitive skills through online discussion. They proposed the use of synchronous discussion to promote interaction among students and enhance the quality of feedback in peer assessment.

Technology Use

Technology use is another design element that practitioners need to consider in peer assessment activities (Adachi et al., 2018a). There are different online tools whose educational affordances for peer assessment vary. They can be compared with regard to their impact on peer feedback provision. Correspondingly, one of the aims in the study by van der Pol et al. (2008) was to investigate the effect of different online tools on the nature of feedback. The online tools were Blackboard in which peer feedback appeared in a threaded discussion board and Annotation system in which the assessed document and peer feedback comments were displayed, and the locations peer feedback referred to in the document were signaled with anchors. There were two groups in the study that provided and received peer feedback on the documents regarding course materials via either Blackboard or Annotation system. The results revealed that the students using the Annotation system provided less feedback with evaluative feedback function, but more suggestive function. The authors concluded that peer feedback was more critical in Blackboard, while it was more constructive in the Annotation system.

2.7 Peer Feedback Uptake

In reciprocal peer assessment, students receive feedback on their own performance after they provide feedback to peers. If the peer assessment has a formative purpose, students can also revise their performance based on peer feedback. In this study, peer feedback uptake term is used to refer to feedback reception and revision activities in FPA. In particular, feedback uptake is the process in which individuals take into account feedback, evaluate performance based on feedback, and use feedback to improve task performance (Wichmann et al., 2018). In other words, it includes both

an accurate understanding of the received feedback and its use by revising the performance (van der Pol et al., 2008). It is also named as proactive recipience of feedback and defined as learners' active engagement with feedback processes (Winstone et al., 2017a).

Winstone et al. (2017a) summarized that there are four higher-order skills and processes that support proactive recipience of feedback. First, self-appraisal enables students to assess their own strengths and weaknesses in feedback reception actively. Second, assessment literacy is required to understand the grading process and apply this understanding to assess their own performance. Third, goal-setting and self-regulation enhance feedback reception as learners can identify the areas in their knowledge and skill requiring development, convert the goals into action plans, and adapt their behaviors accordingly. Finally, engagement and motivation trigger learners to read and understand feedback.

The feedback receivers who have and apply the aforementioned skills and processes become successful in feedback uptake. It also indicates the role of characteristics of feedback receivers in feedback uptake. However, several factors are interplaying in feedback uptake. Winstone et al. (2017a) reviewed the literature related to receiving, engaging with, and applying feedback. In parallel to the interpersonal communication model, they indicated three other factors influencing feedback uptake. They are characteristics and behavior of the sender, characteristics of the message, and characteristics of the context.

With regard to the senders, learners' perceptions about senders' credibility, attention, and attitude are influential in feedback perception (Winstone et al., 2017a). For example, Hovardas et al. (2014) indicated that students regarded expert feedback as more useful and considerable for revision than peer feedback (Hovardas et al., 2014). Berndt et al. (2018) also revealed that students deemed feedback coming from a highly competent peer as more adequate and reported more willingness to improve their performance.

Characteristics of the message is another factor in feedback reception (Winstone et al., 2017a). Clear, detailed, and constructive feedback with correct advice is suggested in the review by Winstone et al. (2017a). Correspondingly, van der Pol et al. (2008) found that the comments with concrete suggestions were more likely to lead students to the revision of their performance. Moreover, elaborated specific feedback resulted in more positive affect for the feedback receiver (Berndt, Strijbos, & Fischer, 2018) and it was more likely implemented by the students (Wu & Schunn, 2020). Gielen et al. (2010a) also indicated that justified peer feedback comments enhanced the writing performance of the students who had low scores in the initial writing performance.

Finally, contextual factors account for feedback reception (Winstone et al., 2017a). Lack of dialogic feedback cycles, lack of training about how to use feedback, and delayed feedback can be contextual constraints for effective feedback reception (Winstone et al., 2017a). On the contrary, potential ways to foster feedback uptake in peer assessment are the provision of training, anonymity (Li, 2017), question prompts (Jurkowski, 2018), back feedback forms (Gielen et al., 2010a, 2010b; Kim, 2009; Wichman et al., 2018), and dialog about peer feedback (Kim & Ryu, 2013). The intervention studies using these ways are discussed in the following section.

To fulfill the potential of peer assessment, it is crucial for learners to successfully receive peer feedback (Gielen et al., 2010a; van der Pol et al., 2008; Winstone et al., 2017a). On the other hand, students are generally reported as incapable of using peer feedback (Wichmann et al., 2018; Winstone et al., 2017a). Accordingly, studies reveal that learners use only about half of the peer feedback or less (e.g., Jurkowski, 2018; Gao, Schunn, & Yu, 2019; Guardado & Shi, 2007; Walker, 2015). As a result, there is a need for instructional supports to improve feedback uptake (Wichmann et al., 2018; Winstone, Nash, Rowntree, & Parker, 2017b). However, there is limited information for educators about how to make students active receivers of feedback (Winstone et al., 2017a).

Wichmann et al. (2018) guide the design of supports for feedback uptake. According to them, these supports should engage feedback receivers with three reflection processes: planning, monitoring, and evaluation. In particular, support should guide assessees to determine whether they comprehended the received feedback (planning), decide whether there is a disparity between their own intentions and the assessor's intentions (monitoring), and to appraise whether feedback is usable (evaluation) and how they will use it to improve the performance (Wichmann et al., 2018). Winstone et al. (2017a) also listed intervention components that can enhance feedback reception. They are gathered under four clusters: (1) internalizing and applying standards, (2) sustainable monitoring, (3) collective provision of training, and (4) manner of feedback delivery. They are provided and described in Table 2.3 in the following page.

Despite the general suggestions by Wichmann et al. (2018) and Winstone et al. (2017a), there is a need for more empirical research that investigates the effect of specific instructional scaffolds to foster feedback uptake (Gielen et al., 2010a; Walker, 2015; Winstone et al., 2017a). In most of the studies regarding feedback reception, the source of feedback was a teacher; therefore, learners' engagement with peer and self-feedback is less-known (Winstone et al., 2017a). Moreover, prior research regarding the effect of interventions on students' engagement with feedback mainly relied on self-reports and used higher education students as participants; hence, there is a need for more objective data that are obtained from younger learners and used to analyze students' actual behaviors (Patchan et al., 2016; Voet et al., 2018; Winstone et al., 2017a).

Table 2.3 Description of Interventions Supporting Feedback Uptake (Winstone et al., 2017a)

Cluster	Intervention	Description
Internalizing and applying standards	Peer assessment	Reception of peer feedback and/or provision of feedback to peers' performance to enhance engagement with expected standards
	Self-assessment	Expecting or motivating students to assess and give feedback on their own performance to enhance engagement with expected standards
	Engaging with grading criteria	Giving structured procedures or resources to enhance learners' understanding of grading criteria
	Dialogue	Expecting or motivating students to communicate with their educators and seek feedback besides or instead of written feedback
Sustainable monitoring	Action planning	Expecting or motivating students to determine specific goals based on their feedback and to make action plans guiding working to attain the goals
	Portfolio	Gathering students' feedback in a folder in order that students can review it and monitor their progress over time
Collective provision of training	Feedback workshop	Providing structured sessions in which students are informed about how to process and use feedback
	Feedback resources	Giving students guiding documents that help them enhance their strategies for using feedback
	Exemplar assignments	Giving students example assignments to indicate characteristics of low or quality of performance
Manner of feedback delivery	Formative assessment/resubmission	Giving students opportunities to receive feedback and revise their work
	Feedback without grade	Giving grades after students have processed qualitative feedback
	Tailored feedback	Enabling learners to indicate on which aspect of their work they desire to receive feedback and then providing feedback addressing their preferences
	Presentation of feedback	Determining how feedback is presented to learners with regard to visual layout, presentation medium, and level of detail, etc.
	Technology	Using technologies to facilitate feedback use

2.7.1 Instructional Scaffolds to Improve Peer Feedback Uptake

The specific scaffolds to improve peer feedback uptake include training, anonymity, question prompt, back-feedback form, and dialog about peer feedback. In the following parts, the studies that investigated the effect of the aforementioned scaffolds on peer feedback uptake are summarized. To make inferences about peer feedback uptake, students' final performance quality after feedback reception, implementation of peer feedback, and agreement with peer feedback were measured in these studies.

Training and Anonymity

Training and anonymity were used to enhance peer feedback quality in related studies. In addition, they were indicated as potential ways to improve peer feedback uptake. For example, Li (2017) investigated the effect of training and anonymity on students' performance and perceptions of peer assessment. Peer assessment was applied for pre-service teachers' WebQuest projects in a technology application course. There were three conditions in the study: non-anonymous, anonymous, and training group. Although all pre-service teachers participated in training about assessment criteria, expectations and procedure of the peer assessment, and provision of constructive feedback, training group conducted activities to control negative impacts of non-anonymous peer assessment as well. The participants also had the opportunity to revise their project after they received feedback from two peers. The authors determined that the post-project quality of the students in the anonymous and training group was higher than the ones in the non-anonymous peer assessment group after pre-project quality was controlled. The author attributed this finding to the reduced peer pressure and increased comfort level during peer assessment, which enables students to engage with the improvement of their task performance more. Moreover, it was revealed that the training group had higher perceptions regarding the value/usefulness of peer assessment, but lower perceptions regarding pressure/tension in peer assessment. It was concluded that training can be preferable to influence students' perceptions and beliefs compared to anonymity.

Feedback Request

Feedback requests were also used to enhance feedback uptake. To illustrate, one of the research aims of Voet et al. (2018) was to analyze the effect of feedback requests and content checklists on assesseses' agreement with peer feedback. The authors could not find the effect of the scaffolds. This result was attributed to students' potential disbeliefs about their peers' competency in providing useful feedback. The authors also suggested investigating feedback reception with different measures (e.g., use of the feedback) rather than agreement with feedback and analyze the effect of feedback requests on feedback reception with those measures.

Question Prompt

Support for peer feedback uptake was also provided through question prompts. For instance, Jurkowski (2018) examined the impact of the question prompt on students' consideration and integration of peer feedback and their performance. The participants in the study submitted the initial version of their term paper, provided feedback to one peer, received feedback from their peers about their term paper, and uploaded a revised version of their papers in an online environment. When students received peer feedback, the ones in the experimental group could see question prompt under each peer comment that asked them to justify their decision about whether they would use it or not. However, both the experimental and control group reported whether they considered peer feedback after the revision was completed. The results revealed that the number of correct peer comments integrated by the experimental group was higher than the control group; moreover, incorrect comments were used less frequently by the experimental group. The experimental group's self-reports about consideration of peer feedback were higher than the control group, as well. On the other hand, the experimental group did not differ from the control group in terms of the increase in the quality of term paper after peer feedback reception. The authors concluded that question prompt facilitated students to pay attention to peer comments, consider them, and differentiate correct and incorrect ones. They also suggested extending the question prompt for students to

elaborate on how they will integrate peer comments into their paper. Finally, they extrapolated that extended question prompt can enhance the improvement of performance.

Back-Feedback Form

A more common way to enhance peer feedback among the related research was by providing back-feedback forms for students to answer questions about received peer feedback. Its contribution to feedback uptake and performance improvement was generally noted in several studies.

First, Kim (2009) aimed to make assesseees more active during peer assessment with back-feedback activities and investigate such treatment on metacognitive awareness and performance. The participant group was pre-service teachers who took the Educational Technology course and were expected to prepare a concept map. Different from the ones in the control group, the pre-service teachers in the treatment group completed a back-feedback form to state agreements/disagreements with the received feedback and their reasons behind their decisions. Then, the participants revised their concept maps. The author reported that students in the experimental group attained higher metacognitive awareness and performance scores in their final concept maps. Kim (2009) concluded that back-feedback form could be beneficial for students to evaluate their learning process in-depth, understand assessment criteria better, and enhance their performance.

Second, Gielen et al. (2010b) designed specific scaffolds for assesseees to improve learning from peer assessment. Participants were 7th-grade students who were expected to write essays in Dutch language writing classes for four months. Four research groups completed three writing assignments in the course. One experimental group completed feedback request form to state their specific feedback needs, one group filled back feedback form to reflect on the received feedback, one group took only peer feedback, and one group took only teacher feedback. Pre- and post-tests were administered to measure the writing performance of the students before and after the writing assignments with teacher or peer feedback. Participants

in the back-feedback group made more progress than the ones in the only peer feedback group. Moreover, the authors found that the participants in the peer feedback request group made more progress in their learning performance than the ones in only peer feedback and teacher feedback groups. As a result, Gielen et al. (2010b) provided further evidence regarding the positive impact of back-feedback forms.

Third, the effect of back-feedback was investigated in the study by Gielen et al. (2010a). Peer assessment was conducted with 7th-grade students in the Dutch language writing course. One participant group in the study completed “a posteriori reply form” to reflect on the provided feedback and submitted it to the teacher. In contrast to Kim’s (2009) and Gielen et al.’s (2010b) findings, the authors did not find a significant effect of back-feedback on their final writing performance when initial writing performance was controlled. The authors attributed the insignificant result to lack of short-term impact of posterior reply form, and they suggested that it could be beneficial to improve writing performance in the long term.

Finally, Wichman et al. (2018) aimed to enhance feedback uptake by supporting students to make sense of the received peer feedback and reflect on the feedback information more deeply. In particular, they investigated the effect of a sense-making support tool for feedback reception on learners’ feedback-based revisions and revision skills. The experimental group receiving sense-making support answered questions regarding the understandability of peer feedback comments, agreement with feedback, their plan to use feedback, their plan on how to improve their text, whether they used feedback, and the importance of comments. After analyzing the revisions of the participants, the authors found that the experimental group implemented incorrect feedback comments and made new errors less than the control group. However, the groups did not differ in the number of changes based on correct feedback. With regard to revision skills, problem detection and correction skills of the two groups were compared with pre- and post-tests. According to problem detection results, the experimental group improved more than the control group in highlighting true problems and labeling problems correctly, although both groups

obtained low scores. On the other hand, problem correction skills of the two groups remained similar in the post-test. It was concluded that sense-making support raised awareness of the students about the identification of incorrect peer feedback, and it enhanced problem detection skills to some extent. Moreover, the authors drew attention to the possible extra workload brought by the use of sense-making support during the revision of writings.

Dialog About Peer Feedback

In addition to forms, back-feedback can be provided during dialog about peer feedback. Kim and Ryu (2013) revealed the positive impact of such dialog on peer feedback uptake. In particular, Kim and Ryu (2013) developed a web-based peer formative assessment platform to guide learners in the different stages of peer assessment and provide opportunities for communication between assessors and assessees to reflect on the feedback. Participants of the study were pre-service teachers who were enrolled in the Educational Technology course and required to develop solutions to instructional design problems. The researchers divided participants into three groups for the study: self-assessment, traditional peer assessment, and web-based peer assessment with an instant messaging feature for peers to give and take back-feedback messages. The study revealed that the web-based peer assessment group had higher self-regulatory skills, level of reflection on task, task performance score, and confidence and satisfaction with peer assessment. Regarding task performance, the authors suggested that peer interaction might have supported students to enhance their awareness of what they needed to do in the task.

2.8 Perceptions and Experiences Regarding Peer Assessment

According to Ilgen et al. (1979), the first stage of feedback processing is perceiving feedback. Source, message, and recipient of feedback shape how feedback is perceived. Accordingly, in peer assessment, learners' perceptions affect peer feedback uptake and are affected by a number of factors related to interpersonal

communication (Winstone et al., 2017a). This study focuses on students' perceptions and experiences in whole FPA activities to provide a more comprehensive explanation. Prior studies elucidated how students perceived benefits of peer assessment and what they experienced as a difficulty or challenge.

The benefits of peer assessment were explained in prior sections of this dissertation. They include the development of academic performance, higher-order thinking skills, sense of responsibility, and individualized and understandable feedback. Some studies also provided an in-depth description of students' perceptions and experiences regarding the learning benefits of peer assessment.

For example, Özdemir (2016) investigated the opinions of pre-service teachers about peer assessment. After their peers gave a lecture in the class, pre-service teachers assessed their performance based on a criteria form and provided verbal feedback. Peer assessment contributed to the students in different ways. First, pre-service teachers gained affective development by being fair and open to criticism and feeling empathy and motivation to perform better. Second, they developed academically as they attended more to their performance, gained peer assessment skills, and enhanced critical thinking skills. Third, pre-service teachers could use metacognitive strategies to perform better in class. Fourth, they benefitted from listening feedback provided to their peers in the classroom, and they could determine strengths and weaknesses in peers' performance with the help of assessment criteria.

In the study by Wanner and Palmer (2018), both self-assessment and peer assessment were integrated into two university courses. Then, they analyzed students' perceptions of these assessments with surveys and focus group interviews. With regard to peer assessment, students reported that they could engage with assessment criteria, compare their works with peers' works, gain self-confidence in their work, and improve their work. On the other hand, some students regarded it as a waste of time and not beneficial.

As indicated by Wanner and Palmer (2018), students can also resist peer assessment due to their doubts about the usefulness of peer assessment. In fact, different factors

are related to students' unwillingness to participate in peer assessment. They are students' perceived knowledge and skill, confidence in their own and peers' capabilities in quality feedback provision, and psychological safety.

Concerning the knowledge and skills required for peer assessment, students can perceive themselves unqualified. For example, in the study by Wanner and Palmer (2018), some of the students expressed that they did not have enough knowledge and skill. They suggested increasing teachers' monitoring and guidance in the assessment process. For a writing task in a specific genre, Yu (2021) investigated peer feedback provided by master's students, their sources of knowledge and skills, and challenges encountered in peer feedback provision. First-year or second-year master's students in the study gave feedback on their peers' theses and revised their theses based on the received peer feedback multiple times. Yu (2021) revealed that the majority of peer feedback was correct and appropriate; however, the students could not address all genre-related aspects equally in their feedback. Correspondingly, students reported that they had limited knowledge and skills for providing genre-based feedback; as a result, they used books on academic writing, peers' theses as models, their prior works, and more knowledgeable others as information resources for feedback provision. The author suggested that a lack of genre knowledge can cause a higher cognitive load to assessors and hamper the provision of quality feedback.

Students' low perceptions regarding their knowledge and skills are also linked to low self-confidence in the provision of correct and useful peer feedback (Yu, 2021). In addition, they can have doubts about peers' evaluative capabilities (Kaufman & Schunn, 2011; Özdemir, 2016). Students' comparison of their peers with their teachers and beliefs about teachers' authority bring about such doubts (Hovardas et al., 2014; Özdemir, 2016). Correspondingly, Kaufman and Schunn (2011) revealed that students had the most negative perceptions regarding the online peer assessment system when instructor evaluation was not available in addition to peer evaluation. Low quality of the received peer feedback is another factor that influences students' doubts about and resistance to peer assessment. For example, McConlogue (2015) found that a student felt disappointed when the received feedback did not include

suggestions, and some of the comments were not understandable, which caused her to lose trust in her peers. Students' lack of trust in their own and peer's evaluative capabilities also yields less value attributed to peer assessment (Rotsaert et al., 2017).

Finally, in peer assessment, students need to perceive the learning environment psychologically safe to take interpersonal risks for the improvement of their and peers' performance and collaborative learning (van Gennip, Segers, & Tillema., 2009). However, students generally feel uncomfortable when they assess their friends (e.g., Özdemir, 2016; Seifert and Feliks, 2019). They can be worried about hurting feelings and emotions of feedback receivers (Yu, 2020). Moreover, some students may not be open to criticisms and feel the anxiety of being assessed (Özdemir, 2016).

On the whole, peer assessment is a challenging learning activity that requires cognitive and social competence. Students can perceive learning benefits when they act as a feedback provider and receiver; however, students also need to perceive that both they and their peers have the necessary knowledge, skill, and competence, and it is safe to provide and receive critical peer feedback.

2.8.1 Instructional Scaffolds to Improve Perceptions and Experiences Regarding Peer Assessment

Students' perceptions and experiences regarding peer assessment were another research focus on the studies that used different scaffolds. These scaffolds include training, anonymity, practice, feedback request and back-feedback form, dialog about peer feedback, and technology use. In the following parts, the related studies that investigated perceptions and experiences in peer assessment activities are summarized.

Training

Training has been an effective way to enhance peer feedback quality and uptake, as indicated in prior sections. Students' overall experiences and perceptions were also

investigated after training and peer assessment activities were conducted. Results of the related studies generally revealed contributions of the training.

For example, Burgess, Roberts, Black, and Mellis (2013) investigated medical students' experiences when they provided and received peer feedback on performance in clinical assessments. Before peer assessment, they were trained about assessment criteria and how to provide peer feedback following Pendleton's positive critique method in one hour. In Pendleton's method, assessors first ask assessee what went well, upon which assessee tells what went well. Then, assessors ask assessee what could be improved, upon which assessee tells what could be improved. The results of the study revealed that a considerable number of students did not feel confident in giving negative and accurate peer feedback. However, they deemed providing feedback as a useful learning activity. In particular, they reported that the provision of negative feedback was the most challenging aspect of the activity due to social discomfort; however, they appraised Pendleton's method as useful to mitigate this discomfort. On the whole, providing peer feedback was beneficial according to the students in the research to assess their own knowledge and skills and enhance their professional experience and practice.

Nicol et al. (2014) investigated university students' attitudes and perceptions regarding the benefits of peer feedback provision and reception. The students prepared a document that gave information about the product they would design, gave feedback to two of their peers anonymously and based on criteria, reviewed their own documents, and revised them. Before peer assessment, they received lectures about the construction of the document and used an example document. The authors found that students generally had positive attitudes towards engagement with peer assessment and deemed the quality of feedback they gave and received as high. They attributed this finding to organization and guidance provided in peer assessment and lack of peer grades that cause student dissatisfaction. The students also reported that they gained learning benefits from both providing and receiving peer feedback. According to students, receiving peer feedback helped them determine deficiencies and areas requiring improvement in their performance,

realize other readers' perspectives, and feel motivated. Providing peer feedback also helped learners think critically, feel a responsibility in the feedback process, understand assessment criteria better, reflect on their own work, objectively judge it, and improve it.

Usefulness and learning benefits of peer assessment were also echoed in the study by Li (2017), who integrated training into peer assessment as well. On the other hand, low confidence in providing peer feedback regardless of training was a concern in Burgess et al.'s (2013) study. It was indicated in the study by Alqassab et al. (2018), too. As mentioned earlier, Alqassab et al. (2018) examined the effect of training about peer feedback and domain knowledge on pre-service teachers' peer feedback levels and beliefs. With regard to students' beliefs, the authors found that there was a decrease in beliefs about learning from peer feedback provision, confidence regarding peer feedback provision, and engaging in reasoning during peer feedback provision for all students even though they were trained. They attributed this result to task difficulty and overestimation of their ability in pre-tests.

Anonymity

Anonymity was the most common intervention to increase the effectiveness of peer assessment. Its positive impact on peer feedback quality and uptake was exemplified with related studies in prior sections. Survey studies or qualitative inquiries also indicated its role in students' perceptions and experiences. Overall, anonymity was favored in related studies as students perceive less pressure and fear and feel more comfortable and positive attitudes towards peer assessment compared to non-anonymous condition.

For example, Vanderhoven, Raes, Montrieux, Rotsaert, and Schellens (2015) compared anonymous and non-anonymous peer assessment with respect to their social effects in the secondary education context. Accordingly, the participants assessed their peers' presentations, either anonymously or non-anonymously based on assigned condition. The ones in anonymous condition used classroom response technology (CRT), whereas the ones in non-anonymous condition raised cards to

indicate their ratings. The authors found that secondary education students felt less peer pressure, less fear of disapproval by their peers, and a more positive attitude towards peer assessment when they used anonymous CRT. Teachers of the participants admitted the value and advantages of peer assessment compared to traditional assessments. They favored the use of the CRT for anonymity especially when students were (younger) teenagers and not mature to handle peer pressure.

Lin (2018) also investigated the effect of anonymity in a Facebook-based learning application on perceived learning and attitude toward the application. Similar to the study by Vanderhoven et al. (2015), Lin (2018) found that participants in the anonymous group perceived significantly more learning from peer assessment and had a more positive attitude toward the application. As a result, the authors supported anonymity in online peer assessment design. Anonymity was favored by the students in Kobayashi's (2020) research, as well. Moreover, perceptions of the students revealed that the majority of them agreed with the educational value of peer assessment and felt confident in their peer assessment skills (Kobayashi, 2020).

Different from the aforementioned research in which students experienced either anonymous or non-anonymous peer assessment, Rotsaert et al. (2018a) made the transition from anonymity to non-anonymity. The importance attributed to anonymity decreased after non-anonymous sessions. However, qualitative data indicated that the majority of the students preferred anonymous peer assessment as they felt more comfortable in anonymous peer assessment. Moreover, they reported that they had hesitation and fear to provide peer feedback freely in non-anonymous peer assessment.

Practice

The positive effect of practice on the quality of peer feedback was reported in prior sections. Multiple practice opportunities in peer assessment were mainly found beneficial to lead positive perceptions and experiences for students, as well. In particular, its influence on students' self-confidence in feedback provision was noted by different studies.

Rotsaert et al. (2018a) applied peer assessment for four weeks in their study. As mentioned earlier, feedback providers were anonymous in the first two weeks, whereas they were non-anonymous in the final two weeks. Students' perceived peer feedback skills and trust in their own evaluative capabilities increased after the second week, but remained the same in the following weeks. The authors emphasized practice as an important factor in enhancing students' evaluative skills.

A similar result was echoed in the study by Law and Baer (2020). They used technology-based peer assessment to develop university students' writing, revision, and feedback skills. The students were expected to write an essay and anonymously assess peers' essays four times in a semester. Analysis of pre- and post-test survey data revealed that students significantly improved their revision and writing skills. With regard to feedback skills, students' confidence in giving quality, non-critical, and criterion-related feedback increased significantly. The authors concluded that structured, repeated, and technology-enabled peer assessments can enhance students' learning and skills.

Regarding the effect of practice on students' learning perceptions, Mercader et al. (2020) used two different instructional design. In the first instructional design, students received two-hour training session, provided and received peer feedback on their annual projects three times, and had two weeks to revise their projects. On the other hand, in the second instructional design, the students received guidance during the peer assessment process, provided and received peer feedback on a one-semester project once, and had one week for revision. Afterward, they completed a survey to rate their perceived learning from both peer feedback provision and reception. The first instructional design was favored significantly higher to contrast previous knowledge with new knowledge, accept mistakes and improve self-esteem by providing peer feedback, and increase faith in peers by receiving peer feedback. The authors concluded that peer assessment with multiple loops is beneficial to enhance perceived learning, feedback uptake, and improvement of their performance, especially in long-term assignments.

Although the practice is beneficial for the development of students' self-confidence in feedback provision, Kaufman and Schunn (2011) found a drop in students' perceptions regarding the quality of their peers' feedback. In particular, Kaufman and Schunn (2011) investigated undergraduate students' perceptions before and after two peer assessment cycles. The students used an online system to submit their initial and final versions of their writings and give and receive quantitative and qualitative peer feedback. Students' perceptions regarding fairness, usefulness, and validity of their peers' feedback decreased after the first peer assessment activity. Drops in perceptions of fairness were mainly related to negative perceptions of the usefulness of peer feedback. The authors suggested providing training and ongoing support that enable students to give more constructive and useful peer feedback and perceive peer assessment as fair.

Feedback Request and Back-Feedback Form

Feedback request and back-feedback form were one of the instructional scaffolds to enhance peer feedback quality and uptake, respectively. Their impact on students' perceptions and experiences was also investigated. There were contradictory findings that both advocate their use and report students' ongoing concerns in peer assessment.

To illustrate, Kim (2009) used back-feedback activities for students in experimental condition to state agreements/disagreements with received peer feedback and their reasons behind their decisions. Kim (2009) found that students in the experimental group had more positive attitudes towards peer assessment. However, many students expressed superficiality of the received peer feedback and doubts about their own and peers' ability to provide useful feedback regardless of the experimental conditions.

Gielen et al. (2010b) used both back-feedback form and feedback requests in peer assessment. Two groups in the study used these scaffolds. Questionnaire results regarding the perception of peer feedback revealed that the majority of the participants did not appraise peer assessment as effective and did not desire to

continue using peer feedback. On the other hand, the study revealed that the participants in the peer feedback request group reported helpfulness of received feedback more frequently than the ones in the other groups. It was also noted that the use of back-feedback form caused less intention to use peer feedback due to increased working.

Dialog About Peer Feedback

Dialog about peer feedback was used in two studies as a scaffold to enhance the effectiveness of peer assessment. Students' perceptions and experiences regarding the use of this scaffold revealed its usefulness to increase students' interaction and engagement in peer assessment.

To illustrate, a web-based peer assessment group in the study by Kim and Ryu (2013) used an instant messaging feature to give and receive back-feedback comments. The students in the group regarded peer assessment as useful and liked peer interaction due to the sharing of different opinions. However, they reported that they encountered difficulty in providing peer feedback and considered peer feedback they received as superficial. The authors recommended the use of web-based peer assessment systems with peer interaction to enhance students' engagement in learning.

Similar results were also echoed in the study by Zheng et al. (2018). In this research, one group of students discussed peer feedback provided on essays. Interviews with the students revealed that discussion between assessors and assessees helped students understand peer feedback more thoroughly, receive more feedback and suggestions about writing skills, and deeply reflect on writing processes. The authors proposed the use of synchronous discussion to enhance interaction among students and the quality of feedback in peer assessment.

Technology Use

Peer assessment activities have been designed in online environments in some studies, and students' experiences were explored in particular online contexts.

Blackboard LMS and Facebook are two examples of online environments for peer assessment that were used in the studies by Guardado and Shi (2007) and Demir (2018), respectively.

Guardado and Shi (2007) investigated experiences of 22 English as second language learners in online peer assessment. They used the discussion board of Blackboard LMS to share their initial version of essays, provide and receive peer feedback anonymously, and submit the final version of their essays. During feedback provision, they were guided through instructions and checklists. In feedback reception, they could use the board to ask for clarification and explain their feedback comments. It was found that there was a balance between positive and negative comments in their peer feedback. On the other hand, only 10 students out of 22 revised their essays based on peer feedback. They reported that both providing and receiving peer feedback were helpful for their own writing. The students also favored anonymity as they could give and receive unbiased and honest feedback and feel comfortable in criticizing peers' essays and being criticized by their peers. They also revealed that they experienced difficulty in giving negative or critical feedback due to their cultural backgrounds and limited language proficiency. As a result, some students complained about the reception of only positive feedback. Finally, the students emphasized limited and delayed interaction in the online environment compared to face-to-face peer feedback, which left some feedback comments unclarified. Extra time and energy required in online interaction were also indicated as a reason for limited interaction by some students.

Demir (2018) also conducted a study to analyze pre-service teachers' perceptions about the use of Facebook for online peer assessment. The pre-service teachers prepared instructional materials for middle school science course after they were informed about assessment criteria. Then, their materials were uploaded to Facebook so that pre-service teachers could give peer feedback. The course instructor was a facilitator in this process to monitor and guide their participation. As a result of interviews with the participants, Demir (2018) found that use of Facebook for educational purposes was novel to the pre-service teachers and it was regarded as

useful to promote enjoyable and collaborative learning, self-confidence, motivation, knowledge, realization of their strengths and weaknesses, and improvement of their materials. The students also reported that they could provide objective feedback as they were not affected by friendship among them. Lastly, the pre-service teachers advocated the participation of the course instructor as a moderator to establish authority and facilitate learning in peer assessment activities. On the whole, Demir (2018) concluded that Facebook could be used as a tool in learning environments to support peer assessment.

2.9 Summary of the Related Literature

This research on peer assessment has theoretical roots in self- and co-regulated learning. According to these theoretical frameworks, learners plan, enact, and adapt their cognition, metacognition, motivation, and behaviors on their own or by interacting with their teachers, peers, and instructional tools. Formative assessment is one of the instructional tools that can both affect and be affected by self- and co-regulated learning. As an active role is given to learners in the current conceptualization of formative assessment activities, self-assessment and peer assessment become more prominent compared to teacher assessment. Both of them are closely linked to the regulation of learning. However, the relationship between FPA and self- and co-regulated was defined with an updated model in this study to explain how task performance, feedback provision, feedback reception, and revision activities in FPA can support regulation of learning.

Both self-assessment and peer assessment are also indicated as beneficial to enhance academic achievement, higher-order thinking skills, and affective development. On the other hand, some challenges hinder the successful implementation of self-assessment and peer assessment. They are related to the complex cognitive and social structure of these assessment methods. Focusing on FPA, this study reviewed the literature on the specific instructional scaffolds that can mitigate the demanding nature of FPA activities. In particular, the ones that have a potential effect on peer

feedback quality, peer feedback uptake, perceptions, and experiences were analyzed and summarized in Table 2.4.

Considering results of the literature review, this study developed an online FPA environment with various instructional scaffolds and investigated the effect of online regulation scaffolds. As a result, it can reveal how a combination of different scaffolds influences FPA activities in contrast to previous research (van den Berg, Admiraal, & Pilot, 2006). Use of regulation scaffolds that enable students to plan, monitor, and evaluate their learning and performance in each FPA activity is also novel, which can bring new perspectives in the instructional design of FPA. Consequently, the study can contribute to both literature and practice that need research-based guidelines regarding how to optimize effectiveness of FPA.

Table 2.4 Potential Instructional Scaffolds to Enhance Peer Feedback Quality, Peer Feedback Uptake, and Perceptions and Experiences in Peer Assessment Activities and Summary of the Related Research Findings

Variable	Instructional Scaffold	Summary of the related research findings
Peer feedback quality	Training	The training aims to inform students about assessment criteria, peer feedback, and performance tasks. There are conflicting results regarding the long-term effect of training on feedback quality. The role of domain knowledge is emphasized to reveal the impact of training (Alqassab et al., 2018; Kónings et al., 2019).
	Anonymity	Anonymity was generally found useful to provide more critical, informative, and suggestive feedback (Howard et al., 2010; Lin, 2018; Rotsaert et al., 2018a).
	Structure of feedback form	Structured feedback forms enhanced provision of more knowledge about errors and missing aspects in peer feedback (Gan & Hattie, 2014; Gielen & De Wever, 2015b, 2015c; Peters et al., 2018).
	Feedback request	Assessee's feedback requests had a positive impact on the feedback quality provided (Gielen & De Wever, 2015a; Voet et al., 2018).
	Practice	With multiple practice opportunities, students' feedback quality increased (Gielen & De Wever, 2015a, 2015b; Rotsaert et al., 2018a, 2018b).
	Dialog about peer feedback	Assessors' and assessee's dialog about received peer feedback positively influenced the provision of more affective and metacognitive feedback in the next FPA activities (Zheng et al., 2018).
	Technology use	Affordances of online technologies can influence the content of peer feedback. For example, use of an annotation system displaying related locations of feedback in a document led to provision of more suggestions in the study by van der Pol et al. (2008).
Peer feedback uptake	Training and anonymity	Training about assessment criteria and peer assessment and anonymity enabled students to prepare better project after feedback reception (Li, 2017).
	Feedback request	There was no empirical evidence regarding the positive effect of feedback requests on agreement with peer feedback (Voet et al., 2018).

Table 2.4. (continued)

Perceptions and experiences	Question prompt	Question prompt guiding students to use feedback was useful to enhance consideration of feedback and the amount of feedback integrated to revised performance (Jurkowski, 2018). Back feedback form with questions about received feedback increased quality of performance after feedback reception (Gielen et al., 2010b; Kim, 2009) and decreased occurrence of new errors in revisions (Wichman et al., 2018). Dialog about received peer feedback yielded higher task performance (Kim & Ryu, 2013). Training facilitated feedback provision (Burgess et al., 2013; Nicol et al., 2014). In addition, it was revealed that students generally perceived peer assessment as beneficial for learning, although Alqassab et al. (2018) presented contradictory findings. Anonymity was favored as students perceived less pressure and fear and feel more comfortable and positive attitudes towards peer assessment compared to non-anonymous condition (Kobayashi, 2020; Lin, 2018; Rotsaert et al., 2018a; Vanderhoven et al., 2015). Practice generally contributed to students' self-confidence in feedback provision (Law & Baer, 2020; Mercader et al., 2020; Rotsaert et al., 2018a). However, Kaufman and Schunn (2011) revealed a drop in students' perceptions regarding the quality of their peers' feedback. Receiving a response to feedback request can enhance perceptions regarding the helpfulness of peer feedback (Gielen et al., 2010b); on the other hand, back-feedback forms may not be perceived positively by the students or it may not mitigate challenges of peer assessment (Gielen et al., 2010b; Kim, 2009). Dialog about peer feedback was perceived positively by the students to enhance interaction and engagement in peer assessment (Kim & Ryu, 2013; Zheng et al., 2018). The use of technology for peer assessment can be novel to students (Demir, 2018), but new challenges, including limited and delayed interaction, may emerge (Guardado & Shi, 2007).
Back-feedback form		
Dialog about peer feedback		
Training		
Anonymity		
Practice		
Feedback request and back-feedback form		
Dialog about peer feedback		
Technology use		

CHAPTER 3

METHODOLOGY

This chapter explains the methodology of the study. After research questions are listed, research design to answer the questions is justified. Then, the following components of the methodology are described: participants, context, data collection instruments, researcher's position, and the online FPA environment. Finally, this chapter explains the procedure of the study, development of the online FPA environment, data analysis, validity and reliability, assumptions, and limitations of the study.

3.1 Research Questions

The primary purpose of this study was to investigate the impact of the regulation scaffolds on online FPA activities in writing tasks. In particular, the first stage of the research aimed to examine the effect of the regulation scaffolds on peer feedback provision, feedback uptake, and perceived contributions of the online FPA environment. The second stage was intended to describe students' use of the regulation scaffolds and experiences in online FPA activities. In line with these aims, two experimental groups using an online FPA environment W/ORS or WRS were created. Then, answers of the following research questions were sought:

1. Is there a significant mean difference between the groups W/ORS and WRS with respect to peer feedback provision in two writing tasks?
 - a. Is there a significant mean difference between the groups W/ORS and WRS with respect to the number of feedback segments in two writing tasks?

- b. Is there a significant mean difference between the groups W/ORS and WRS with respect to a set of quality variables regarding peer feedback content in two writing tasks?
2. Do the groups W/ORS and WRS significantly differ in feedback uptake in two writing tasks?
 - a. Do the groups W/ORS and WRS significantly differ in reading peer feedback in two writing tasks?
 - b. Do the groups W/ORS and WRS significantly differ in revision in two writing tasks?
 - c. Is there a significant mean difference between the groups W/ORS and WRS with respect to the implementation rate of peer feedback in two writing tasks?
3. Is there a significant difference between the groups W/ORS and WRS with respect to the perceived contributions of the online FPA environment?
4. How is the use of regulation scaffolds in FPA activities of the group WRS in two writing tasks?
5. What are students' experiences in FPA activities?

3.2 Research Design

Mixed methods research design was chosen to address the research questions of this study. In this method, both quantitative and qualitative data were collected, analyzed, and mixed in a study or consecutive studies to understand the research problem and question better (Creswell & Plano Clark, 2011). When either quantitative or qualitative method is not enough to answer all research questions or alternative perspectives are required to obtain an in-depth understanding of a problem, the use of a mixed-methods design is reasonable (Creswell, 2012). In this study, the research questions included both quantitative and qualitative questions. While the quantitative ones focus on group differences, qualitative ones aim to enhance understanding of

the intervention process and explain quantitative findings. As a result, the use of the mixed-method research design was suitable for the current study.

The specific mixed-method research type chosen for this study was the embedded design. In embedded design, both quantitative and qualitative data are collected and analyzed within the scope of a traditional quantitative or qualitative research design because different research questions need different types of data (Creswell & Plano Clark, 2011). However, one data set plays a secondary role to support the primary data in this design (Creswell & Plano Clark, 2011). For instance, in embedded experimental mixed methods design, quantitative data are primary data to investigate whether an intervention has a significant impact, and qualitative data is secondary to answer the other questions related to but different from the main purpose of the intervention (Creswell & Plano Clark, 2011). The secondary data are collected and analyzed before, during, and/or after collection and analysis of primary data (Creswell & Plano Clark, 2011). Then, the results of quantitative and qualitative data analyses can be interpreted together to explain how one type of data set reinforces or complements the other one (Creswell, 2012).

The design of the present study is in line with embedded experimental mixed methods design. Quantitative and quantified data were obtained during and after the intervention to answer the first three research questions regarding whether there are significant differences between the groups using the online FPA environment W/ORS and WRS. Quantitative data were also collected before the intervention to describe the participants in experimental groups. On the other hand, mainly qualitative data were gathered for the last two questions to understand the intervention process and explain (in)significant differences obtained in the first three research questions. The collection of qualitative and secondary data occurred both during and after the intervention in the study to provide a more in-depth description of how the intervention worked. Figure 3.1 illustrates specific data collected before, during, and after the intervention in this embedded experimental mixed methods study.

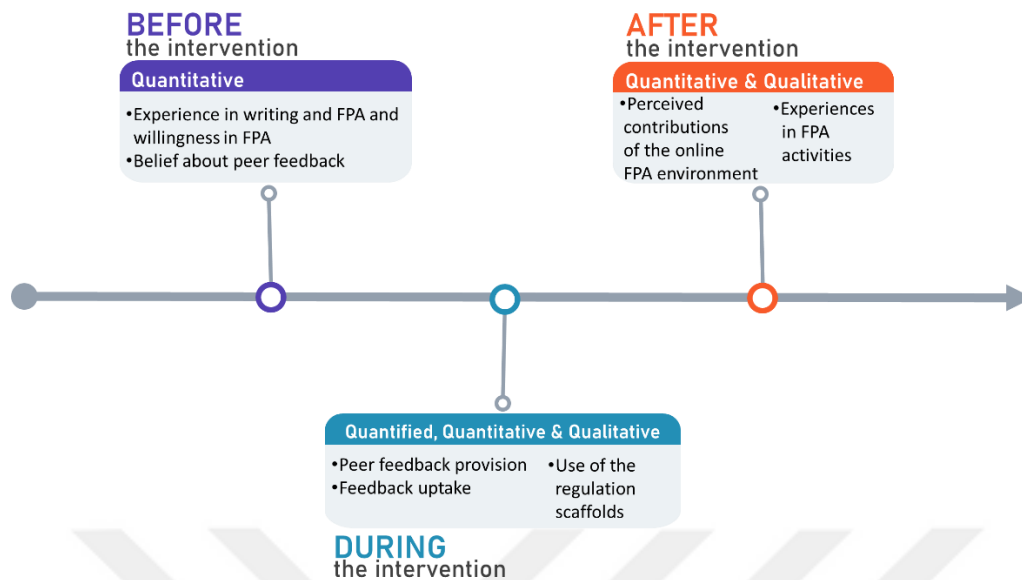


Figure 3.1. Data collected before, during, and after the intervention

The particular design of the quantitative strand of this study was also determined. It was a quasi-experimental design (Creswell, 2012). The use of true experimental design was not possible since there were intact groups in the research site, whose students could not be assigned randomly to experimental groups. Instead of the students, the three intact groups were randomly assigned to either the group W/ORS or group WRS. As a result, the group WRS consisted of two intact groups, while the group W/ORS included only one intact group. Then, the data collection procedure shown in Figure 3.1, except data collection regarding the use of the scaffolds, was implemented for both experimental groups.

The intervention differed in the groups W/ORS and WRS. Figure 3.2 depicts the intervention applied in the experimental groups.

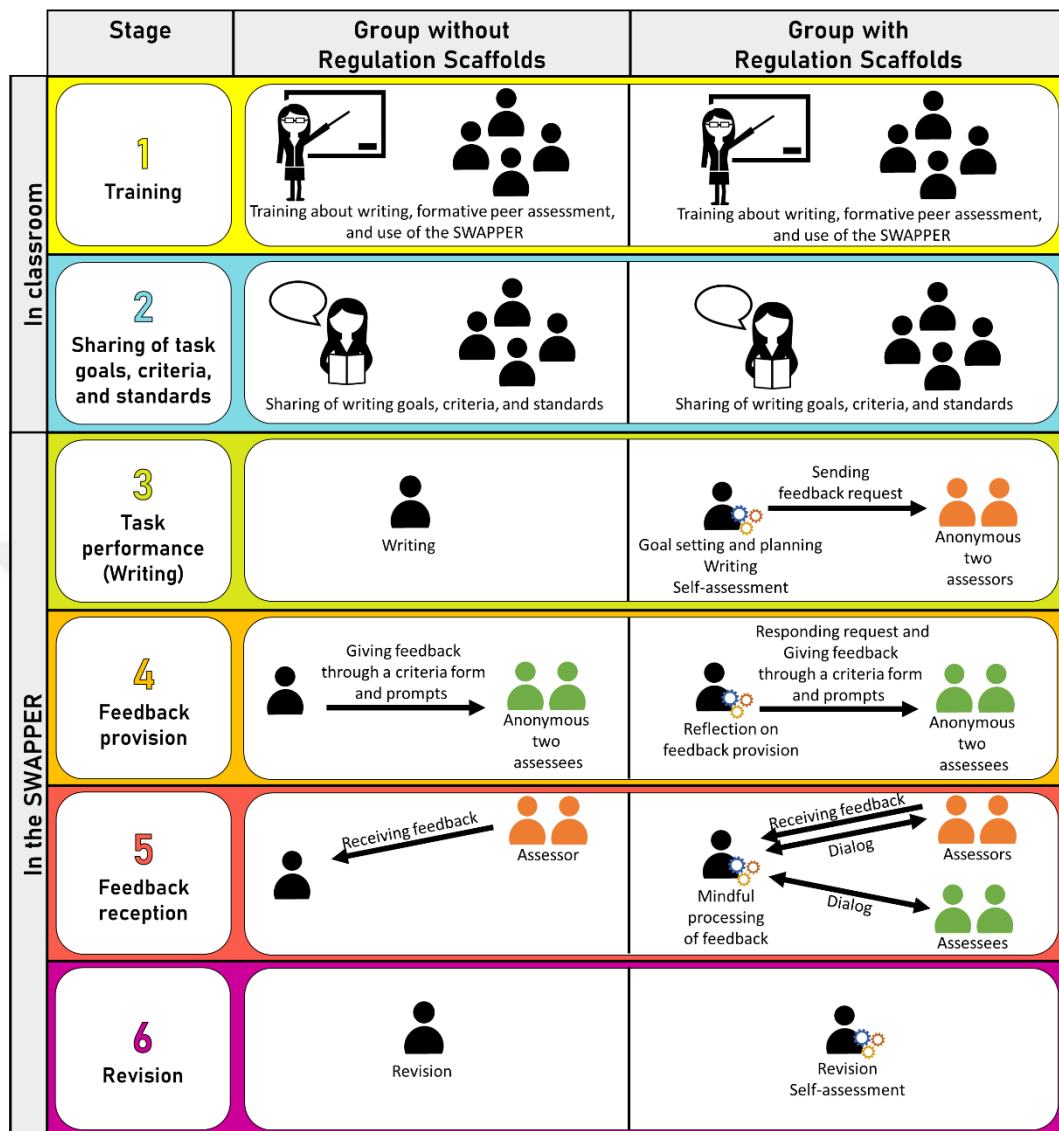


Figure 3.2. Intervention applied in the experimental groups

In the first stage of the intervention, both groups were trained about writing, FPA, and use the online FPA environment, called Supportive Writing and Peer Assessment Environment (SWAPPER), in the classroom. Second, writing goals, criteria, and standards were shared with all participants. Then, the groups started to use the SWAPPER, either W/ORS or WRS. Third, both groups composed their writings in the SWAPPER, but the group WRS had the scaffolds for goal setting and planning, self-assessment, and feedback request. Fourth, all participants were expected to give

feedback to two anonymous peers by using criteria form and prompts regarding how to provide peer feedback. The group WRS could also see and respond to their peers' feedback requests and reflect on feedback provision. Fifth, the students in both groups read the peer feedback they received. In addition, the group WRS could use the scaffold for mindful processing of feedback and establish a dialog with their assessors and assesses. Finally, the groups could revise their writings. The self-assessment scaffold was also available for the group WRS. In this study, there were two writing tasks: story and poem writing. Therefore, all stages, except training, were repeated in the second writing task. There were a total of eight online FPA activities in the study as each writing task consisted of four online FPA activities.

3.3 Participants

The target population of this study was the ninth grade students at a high school in Turkey. High school students were targeted because most of the existing studies on peer assessment were conducted with higher education students (Tenório et al., 2016; Topping, 2010; van Zundert et al., 2010). Research with high school students can provide new perspectives to peer assessment literature. Among high school grades, ninth grade was selected to improve writing skill in Turkish language and peer assessment skill at younger ages and to better prepare students for more complex learning activities in the next grades.

The accessible population was the ninth grade students in Ankara due to the researcher's convenient reachability to the research site. While choosing a high school in Ankara, the following two criteria were applied: (1) having computer laboratory so that the students can use the SWAPPER when they cannot access to computer or Internet connection at their homes during intervention; and (2) existence of TLL teachers who regularly implement writing tasks in the ninth grade curriculum and are willing to incorporate FPA activities into their lessons. One of the social sciences high schools in Ankara met these criteria and was selected for this study. In fact, three TLL teachers in the school became a volunteer for the study.

Three, intact, and ninth grade classes of the volunteer teachers participated in the study. There were a total of 70 ninth-grade students with a mean age of 14.97 ($SD = .45$) at the beginning of the intervention. However, subject lost was encountered during the FPA activities of the second task. For the administration of the post-measures and interviews, there were 56 students who completed six or more online FPA activities out of eight in the intervention as a requirement of the study. The random assignment of the students to two experimental groups was not possible at the beginning of intervention since there were intact groups. Even if an online FPA environment was used outside the school setting and hours, assigning students in the same classroom to different experimental groups could affect students' attitudes to the intervention including additional scaffolds or not. In other words, the students who realized the differences in the online FPA environment in the same classroom might have a positive or negative attitude. It might distort the internal validity of the scores. Therefore, the students could not be randomly assigned to the experimental groups. However, the assignment of the intact groups to experimental groups occurred randomly. Consequently, one class was the group W/ORS, whereas two classes became the group WRS.

There were 26 students (19 females and seven males) in the group W/ORS and 44 students (35 females and nine males) in the group WRS at the beginning of the intervention. Information about the two groups' computer and Internet use is presented in Table 3.1. The majority of the students in both groups had desktop or laptop computers and the Internet at their homes. Moreover, all of them (except one) had a smartphone connected to the Internet. Their computer and Internet use experience was mostly four and more than four years. In addition, almost all of them used the Internet every day. As a result, it was concluded that whole students could access the online FPA environment and might not encounter difficulty in utilizing it as they had the necessary devices and experience in computer and Internet use.

Table 3.1 Frequency Distribution Regarding Gender and Computer and Internet Use by Group

Category	Group W/ORS		Group WRS	
	<i>n</i>	%	<i>n</i>	%
Gender				
Female	19	73.08	35	79.55
Male	7	26.92	9	20.45
Computer and Internet ownership				
Desktop/Laptop	21	80.77	33	75.00
Tablet	14	53.85	15	34.09
Smart phone	26	100.00	43	97.73
Internet	25	96.15	40	90.91
Computer experience				
More than 7 years	11	42.31	21	47.73
4-6 years	9	34.62	16	36.36
1-3 years	3	11.54	2	4.55
None	3	11.54	5	11.36
Internet experience				
More than 7 years	18	69.23	25	56.82
4-6 years	6	23.07	19	43.18
1-3 years	2	7.69	-	-
Internet use frequency				
Every day	25	96.15	43	97.73
A few times in a week	1	3.85	1	2.27

Individual differences can influence peer feedback provision and regulatory processes with internal and peer feedback (Narciss, 2008; Panadero et al., 2018b) as defined in the theoretical model of this study. To account for individual differences between experimental groups and enhance the transferability of the findings, participants of this study were described with regard to different characteristics. Students' experiences in writing and FPA were examined at first. More than half of the students in the groups W/ORS (%65.38) and WRS (75.00%) composed writing more than 10 times in a course until ninth grade (Table 3.2). Concerning FPA, the

majority of the students in the groups W/ORS (%84.62) and WRS (70.45%) provided peer feedback in a course (Table 3.2). The group W/ORS (80.77%) and the group WRS (%59.09) also received peer feedback. On the other hand, more than half of the students in both groups did not get training on how to provide and receive peer feedback. Moreover, it was noticeable that all percentages of the group W/ORS were higher than the group WRS' percentages. Chi-square tests of independence revealed that the groups did not differ significantly at $df = 1$ and $p = .05$ with regard to peer feedback provision experience, $\chi^2 = 1.78$, $p = .18$; training experience on peer feedback provision, $\chi^2 = 1.00$, $p = .32$; and training experience on peer feedback reception experience, $\chi^2 = .10$, $p = .75$. However, the difference in peer feedback reception experience was marginally significant, $\chi^2 = 3.48$, $p = .06$.

Table 3.2 Frequency Distribution Regarding Experiences in Writing and FPA by Group

Category	Group W/ORS		Group WRS	
	<i>n</i>	%	<i>n</i>	%
Writing experience				
More than 10	17	65.38	33	75.00
7-10 times	4	15.38	3	6.82
4-6 times	1	3.85	7	15.91
1-3 times	4	15.38	1	2.72
Peer feedback provision experience				
Yes	22	84.62	31	70.45
No	4	15.38	13	29.55
Peer feedback reception experience				
Yes	21	80.77	26	59.09
No	5	19.23	18	40.91
Training experience on peer feedback provision				
Yes	12	46.15	15	34.09
No	14	53.85	29	65.91
Training experience on peer feedback reception				
Yes	8	30.77	12	27.27
No	18	69.23	32	72.73

Participants' willingness to provide and receive feedback on writings in the TLL course was also investigated through two items with a five-point Likert scale (Table 3.3). The mean scores of the two items in the groups were between 3.61 and 3.83 out of five. It implied that they nearly agreed on the desire of peer feedback provision and reception before the intervention. Mann-Whitney *U* test was conducted to investigate whether there is a significant difference in these variables between the two groups. Parametric tests were not performed since the normality assumption was violated (Appendix I). Mann-Whitney *U* test indicated that the groups did not differ significantly with regard to willingness to provide peer feedback, $U = 569.00$, $z = -.04$, $p = .97$; and receive peer feedback, $U = 570.00$, $z = -.03$, $p = .98$.

Table 3.3 Descriptive Statistics Regarding Willingness in Peer Assessment by Group

Item	Group W/ORS		Group WRS	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I would like to provide feedback to my classmates' writings in the TLL course.	3.67	.92	3.61	.99
I would like to receive feedback on my writing from my classmates in the TLL course.	3.83	.88	3.72	1.09

In addition to willingness, students' beliefs about peer feedback to be provided and received on writings in the TLL course were analyzed. Table 3.4 provides descriptive findings for the groups W/ORS and WRS. With regard to peer feedback they would provide, the students nearly agreed or agreed that it would be accurate, fair, kindly-formulated, and useful because their mean scores were about six on a seven-point Likert scale. On the other hand, they partially agreed with the items about the detailedness and informativeness of the feedback they would give. With regard to peer feedback they would receive, the students only partially agreed that it would be detailed, informative, accurate, fair, kindly-formulated, and useful as their mean scores ranged from 4.59 to 5.58 out of seven. Therefore, it can be inferred that the students were somewhat doubtful about the quality of their peers' feedback.

Table 3.4 Descriptive Statistics and Results of Mann-Whitney *U* Tests Regarding Peer Feedback Beliefs by Group

Dimension / Item	Group W/ORS		Group WRS			U	Z	p
	M	SD	M	SD	SD			
Peer Feedback to be Provided								
1. The feedback I will provide will be detailed.	4.79	1.20	4.64	1.71	553.00	-.24	.81	
2. The feedback I will provide will be informative about the characteristics of a good composition.	5.25	1.30	4.98	1.61	526.50	-.57	.57	
3. The feedback I will provide will be accurate.	5.83	1.38	5.75	1.38	559.50	-.16	.87	
4. The feedback I will provide will be fair.	6.29	.82	6.02	1.49	566.00	-.08	.94	
5. The feedback I will provide will be kindly-formulated.	6.04	1.51	5.80	1.77	546.50	-.34	.74	
6. The feedback I will provide will be useful.	5.79	1.23	5.64	1.43	561.00	-.14	.89	
Peer Feedback to be Received								
1. The feedback I will receive will be detailed.	4.88	1.34	4.59	1.56	547.00	-.31	.76	
2. The feedback I will receive will be informative about the characteristics of a good composition.	5.08	1.32	5.02	1.47	555.00	-.21	.83	
3. The feedback I will receive will be accurate.	5.50	1.36	5.19	1.48	498.00	-.92	.36	
4. The feedback I will receive will be fair.	5.46	1.92	5.36	1.63	521.50	-.63	.53	
5. The feedback I will receive will be kindly-formulated.	5.58	1.74	5.25	1.73	491.00	-1.01	.31	
6. The feedback I will receive will be useful.	5.54	1.52	5.41	1.54	543.50	-.36	.72	

Although the mean values of the two groups were close to each other, the differences between the scores were compared through Mann-Whitney *U* tests. The use of parametric tests was not appropriate due to the violation of the normality assumption (Appendix I). Mann-Whitney *U* tests indicated insignificant differences between the groups with regard to beliefs' about peer feedback to be provided and received, as shown in Table 3.4.

The qualitative phase of the study also required participant selection. All students in the group WRS were used to describe the use of the regulation scaffolds for the fourth research question. On the other hand, some students were chosen to explore their experiences in FPA activities with focus group interviews for the fifth research question. While selecting participants for the interview, purposeful sampling was used because the aim was to choose the cases that can provide detailed information about their experiences (Patton, 2002). In addition, maximum variation sampling was preferred among purposeful sampling strategies to identify common and core patterns across the participants who had different characteristics from each other.

Some criteria were determined to ensure variation in the sample of interview participants. First, the participants were from both experimental groups. However, the ones in the group WRS were selected more since their group size was higher and they had experience in both FPA activities and the use of the regulation scaffolds. Second, different criteria were applied while choosing the students from the groups W/ORS and WRS. In the group W/ORS, the total number of FPA activities completed in two writing tasks was considered in participant selection. It is important to note that the students completing less than six online FPA activities out of eight were not included in the post-measures and interviews. Moreover, the ones who did not read the received peer feedback in the group W/ORS was mainly selected to explain the related quantitative finding.

In the group WRS, the number of regulation scaffolds was taken into account. Accordingly, the participants were categorized into three groups with regard to their

use: low users, moderate users, and high users. Out of 36 students who completed the study, 4 were low users, 11 moderate users, and 21 high users. The participants were selected from each group; however, more participants were chosen from the high group as they could give more information about the regulation scaffolds. Third, male students were included in the sample to represent the minority group in the quantitative phase of the study. As a result of maximum variation sampling, 27 students were determined for the focus group interviews. Eight of them were from the group W/ORS, whereas 19 were from the group WRS. Table 3.5 describes the characteristics of the participants in the interviews.

Table 3.5 Frequency Distribution Regarding the Characteristics of the Participants in the Interviews

Group	Category	<i>n</i>
W/ORS	Gender	
	Female	7
	Male	1
	Number of FPA activities completed	
	Six activities	3
	Seven activities	2
WRS	Eight activities	3
	Gender	
	Female	16
	Male	3
	Use of regulation scaffolds	
	Low	1
	Middle	5
	High	13

3.4 Context

The selected school was a social sciences high school in Ankara. Teachers who have at least three years of teaching experience in the related subject area can apply to

work in social sciences high school according to the regulations of the Ministry of National Education in 2015. The students are accepted to this school if they get a certain score in the high-school entrance exam. Before the ninth grade level, they have to study for one academic year in an English preparatory class. The students in this school also have the opportunity to get an international baccalaureate diploma if they were selected based on academic criteria at the tenth grade and completed program requirements.

The school consisted of 533 students in total. There were four ninth-grade classes in the school. Three of them participated at the beginning of the study, whereas one of them attended in the middle of the study. Therefore, data of three classes were used to answer the research questions. For the other class, a questionnaire was administered at the end of the study to measure the perceived contributions of the online FPA environment.

The FPA activities were conducted within the scope of the TLL course. In the ninth grade of the social sciences high school, TLL course had seven lesson hours in a week. The course aimed to improve students' Turkish listening, reading, writing, and speaking skills. The curriculum of the TLL course included units related to a certain genre, such as story, poem, and novel. It was a spiral curriculum in which each genre or unit was revisited to increase knowledge in upper grades. At the end of each unit, specific writing tasks were offered. FPA was also suggested as one of the assessment methods by the TLL curriculum to give students feedback about their learning process and performance. This study was conducted in the fall semester of the 2019-2020 school year. The writing genres taught in this semester were story and poem. Therefore, FPA activities for the writing tasks were performed for these genres in the research. They were assigned as performance homework by the TLL teachers. The teachers graded students' completion of each activity in the SWAPPER.

In school, there were one computer laboratory and one enriched library including computers. Students could use them both in and outside the lesson hours. Hence, the

participants in this research who had difficulty in access to computers and the Internet could benefit from the resources of the school.

3.5 Data Collection Instruments

In this mixed methods research, different data collection instruments were used. They were (1) participant information form, (2) peer feedback beliefs questionnaire, (3) online records, (4) feedback implementation checklist, (5) perceived contributions of the online FPA environment questionnaire, and (6) interview protocol. Each instrument is explained in the following sections.

Participant Information Form

The researcher developed a participant information form with three parts and 18 questions in total (Appendix C). The first part was related to demographics that asked gender, age, class, and e-mail address of the participants. The second part pertained to computer and Internet use. In particular, the questions were regarding experience in computer and Internet use, frequency of Internet use, and ownership of desktop/laptop computers, tablet computers, smartphones, and the Internet. The third part was concerning experience in writing and FPA. There was a question concerning how many times they composed writing in a course. Then, peer feedback was defined in this part. Afterward, the following questions asked students' experiences in peer feedback provision, peer feedback reception, reception of training about them in courses, and willingness to provide and receive peer feedback on writings in the TLL course. The researcher did not encounter any problem related to the understandability of the questions.

Peer Feedback Beliefs Questionnaire

Leaners' motivational characteristics about peer feedback are one of the individual factors that can affect both peer feedback provision and use (Panadero et al., 2018b). To describe the participants and compare two experimental groups in this regard, one of the motivational factors was determined before the intervention of the current

study. It was the beliefs about peer feedback to be provided and received on the writings in TLL course. The researcher developed a questionnaire with 12 items to measure students' beliefs about peer feedback.

In the development process of the questionnaire, several characteristics of peer feedback were identified in the related literature to account for students' beliefs (e.g., Alqassab, Strijbos, & Ufer, 2019; Brown, Petterson, & Yao, 2016; Kaufman & Schunn, 2011; Strijbos, Narciss, & Dünnebier, 2010). They were related to usefulness, fairness, validity, accuracy, and positive nature. As a result, six items regarding these characteristics were written to measure belief about peer feedback to be provided, and six items were written to measure belief about peer feedback to be received. The rating scale of the questionnaire ranged from 1 (Strongly disagree) to 7 (Strongly agree). Moreover, at the beginning of the questionnaire, peer feedback was defined, and a case in which they would give and receive peer feedback on the writings in TLL course was provided. Students were expected to respond to the items considering the definition and case.

Expert reviews and cognitive interviews were conducted to evaluate and improve the clarity and interpretability of the items. The person in the expert review was the advisor of this dissertation. She suggested changing the "criteria" word in one item since it might not be understandable for high school students. Accordingly, the item was rewritten more clearly. Then, the researcher conducted a cognitive interview with a ninth-grade student. The student encountered difficulty in understanding the use of positive language and objectivity in two items. She proposed suggestions about the wording of these items after the researcher explained their meaning. The suggestions were applied in the questionnaire later on. Five students were also interviewed with the revised questionnaire. There was not any problem regarding the interpretation of the items. In other words, the researcher's intentions in writing items were aligned with participants' interpretation.

Before the actual study, the questionnaire (Appendix D) was administered to 112 ninth-grade students (57 females and 55 males) in Ankara. Cronbach's alpha

coefficient was calculated to examine the internal consistency of the scores. It was .83 for both aspects: the beliefs about peer feedback to be provided and received. For the total items, it was .89. In the actual study, the two aspects had .86 and .90 Cronbach's alpha, respectively. For the total items, it was .92. As all coefficients were higher than .80, adequate reliability of the scores was obtained based on Nunnally's (1978) benchmarks.

Online Records

Online records of the students in the SWAPPER were the main data source of this research. They included students' peer feedback, logs, and initial and revised writings to answer three research questions regarding peer feedback provision, feedback uptake, and use of regulation scaffolds. For the first research question, students' peer feedback on stories and poems in the SWAPPER was collected. They were copied from the SWAPPER and pasted into a document for analysis. For the research question regarding feedback uptake, students' logs in the SWAPPER were examined. Logs enabled the researcher to determine whether students read peer feedback they received, and they revised their stories and poems. Moreover, students' initial and revised writings were downloaded from the SWAPPER to analyze revisions and then calculate the implementation rate of peer feedback. For the research question regarding the use of regulation scaffolds, online records were the data source as well. Records of each student in the SWAPPER were reviewed to describe how many regulation scaffolds they used in FPA activities and analyze their responses and messages in the regulation scaffolds.

Feedback Implementation Checklist

A checklist (Appendix E) was developed by the researcher to determine the implementation of peer and self- feedback on revised writings. The checklist included areas to indicate comments regarding shortcomings, specific and accurate comments, implemented comments, total number of these comments, and revision based on self-feedback. In particular, the first column in the checklist belongs to peer feedback comments addressing a shortcoming in writing. They are listed one by one

for each student who received peer feedback. In the following column, each comment is classified as specific and accurate or not. Specific comments give details about the wrong, missing, redundant, or unclear aspects instead of just expressing that there are errors regarding the assessment criterion. Moreover, these comments should be accurate according to writing rules and genres. In the checklist, an implementation column also exists to control whether the comment was implemented in the revised writing or not. Afterward, the total numbers of peer feedback comments addressing shortcomings, specific and accurate ones, and implemented ones are calculated. Finally, there is a checkbox to indicate revision based on self-feedback. It is checked when there are revisions in the writing that are not directly connected to the peer feedback.

Perceived Contributions of the Online FPA Environment Questionnaire

A questionnaire with 20 items was developed by the researcher to measure participants' perceived contributions of the online FPA environment. It focused on contributions of the online FPA environment to self-assessment (five items), peer feedback provision (five items), peer feedback uptake (four items), peer cooperation (three items), and learning outcomes on writing (three items).

In the development process of the instrument, first, an item pool was created to measure the aforementioned aspects or dimensions based on their definitions. A seven-point Likert scale ranging from strongly disagree to strongly agree was chosen for the questionnaire. Then, the advisor of this dissertation, an expert on scale development, reviewed the items. She suggested revising the wording of two items, two unclear items, one item including too many judgments, and two items inconsistent with other items' sentence structure. Based on her suggestions, the questionnaire was improved.

Another two experts in scale development and assessment rated 21 items with regard to their clarity and representativeness of contributions of the online FPA environment. They used a four-point scale to indicate the level of representativeness and clarity of the items. In the four-point scale, 1 referred to the items not

representative and clear, 2 referred to the ones that needs major revisions to be representative or clear, 3 referred to the ones that needs minor revisions, and 4 referred to the items representative and clear. Moreover, the experts evaluated the relevance of the items with a specific aspect or dimension. The instructions provided by Rubio, Berg-Weger, Tebb, Lee, and Rauch (2003) were followed to ensure the content validity of the questionnaire in this step. The experts did not report any major problem concerning representativeness and clarity and did not propose any suggestion regarding the deletion and addition of an item; therefore, content and clarity indexes of the whole questionnaire were 1. Factorial validity indexes (FVIs) were also calculated. For the self-assessment aspect, two items out of six were not matched with the accurate aspect by one expert. As a result, the average FVI of this aspect was .83. In addition, one item in the provision of quality feedback could not be assigned to its corresponding factor by two experts. Consequently, this dimension had .80 average FVI. On the other hand, other items were correctly matched with the respective aspects. The problematic items were revised according to suggestions of the reviewers in order to enhance FVIs.

In addition to expert reviews, cognitive interviews were conducted with two students who used the SWAPPER. Interpretations of one student regarding two items in the self-assessment dimension were not aligned with the researcher's intention. In addition, one item in the peer cooperation dimension was not clear for one student. Therefore, three problematic items were reviewed. One item was deleted, and the wording of the two items was revised to improve their clarity. As a result, there were 20 items in the final form of the questionnaire (Appendix F).

Internal consistency of the scores obtained from the questionnaire was also investigated. It was administered to 87 students (68 females and 15 males) who had experience in the use of the SWAPPER. The five aspects (self-assessment, peer feedback provision, peer feedback uptake, peer cooperation, and learning outcomes on writing) had .83, .77, .69, .67, and .70 Cronbach's alpha, respectively. The number of items in five aspects ranged from three to five. As "the most important single factor influencing test reliability is the number of test items" (Symonds, 1928, p. 75),

Cronbach's alpha coefficients below .80 can be attributed to the number of items in the dimensions. On the other hand, Cronbach's alpha was calculated as .90 for the whole questionnaire. Therefore, it can be concluded that there was adequate reliability of the scores regarding the perceived contributions of the online FPA environment.

Interview Protocol

An interview protocol with 10 questions was prepared by the researcher to explore students' experiences in FPA activities and explain quantitative findings. FPA activities consisted of preparatory activities, writing, peer feedback provision, peer feedback reception, and revision. Accordingly, interview questions were written to ask experiences in these FPA activities. In addition, detail-oriented and elaboration prompts were added to the questions in order to enhance the richness and depth of answers (Patton, 2002). Some prompts were for the participants from the group WRS as they were related to regulation scaffolds.

There were 10 open-ended questions in the first form of the interview protocol. They were reviewed by the advisor of this dissertation, who conducted qualitative studies. She indicated one question as ambiguous, proposed to change the wording of the prompts in the questions, and suggested to add a question regarding the contribution to writing skill. Her suggestions were implemented to improve the interview protocol. After that, it was piloted with two students who used the SWAPPER. The researcher realized that it was necessary to ask a question concerning information resources in the SWAPPER and delete one question as it was answered in prior questions by the students. It was also observed that the students did not encounter any difficulty in understanding questions. As a result, the interview protocol was revised to add a new question and remove an existing one. The final form of the interview protocol is available in Appendix G. The researcher used this protocol to conduct focus group interviews with the students. Exact wording and order written in the protocol were not followed during whole interviews; therefore, interviewing was semi-structured in this study.

3.6 Researcher's Position

The researcher was an instrument in the collection of qualitative data in this mixed methods research, according to Patton (2002). She collected and quantified peer feedback the participants wrote and implemented. Moreover, she gathered data about the use of regulation scaffolds from the SWAPPER and conducted focus group interviews. She also interacted with the students from the groups W/ORS and WRS to announce FPA activities and answer their questions regarding the use of the SWAPPER via WhatsApp groups and e-mails. She was more active in the first writing task because students asked more questions about the use of SWAPPER. After the analysis of data, she interpreted whole findings. During this process, the researcher became reflexive. In other words, she was attentive to and aware of her theoretical orientation, potential biases, and assumptions (Merriam, 2009). As a result, she did her best to control or eliminate them as much as possible in data collection and analysis. However, in this part, they are unveiled in relation to the study to enhance the trustworthiness of the study (Guba, 1981).

The researcher had a more social constructive perspective in formative assessment, although she advocated elective approach in the design of learning environments. In particular, she believed the need for learners' involvement and responsibilities in formative assessment activities. Therefore, peer assessment was one of the main formative assessment methods according to her. She also agreed that FPA was a cognitively and socially challenging activity requiring scaffolds to optimize learning. She assumed that the more scaffolds students received, the more effectively they would complete the FPA activities. As a result, she designed scaffolds integrated into each FPA activity. However, she was skeptical about the usefulness of some scaffolds as they were novel in FPA literature and high school context, and there was not enough empirical evidence about their impact on FPA. Hence, she considered the possibilities that there would be insignificant differences between the groups with regard to some variables, unnecessary scaffolds, and problems in the use of some scaffolds.

3.7 The Online Formative Peer Assessment (FPA) Environment

In this study, an online FPA environment named SWAPPER was developed and used. This section introduces the teacher interface of the SWAPPER at first. Then, its student interface for the groups W/ORS and WRS are explained separately.

Teacher Interface

In the development of the SWAPPER, the workshop plugin in Moodle was modified and improved for this study. Teachers and other practitioners can integrate the new plugin into their own Moodle systems to create FPA activities. Figure 3.3 is a sample screen shown when teachers add a FPA activity. In this screen, different settings are provided to teachers in order that they can determine instructions, the scaffolds they would like to enable or disable, options in the scaffolds, and due dates of the activities. Therefore, teachers can customize content and components of FPA activities via the new plugin.

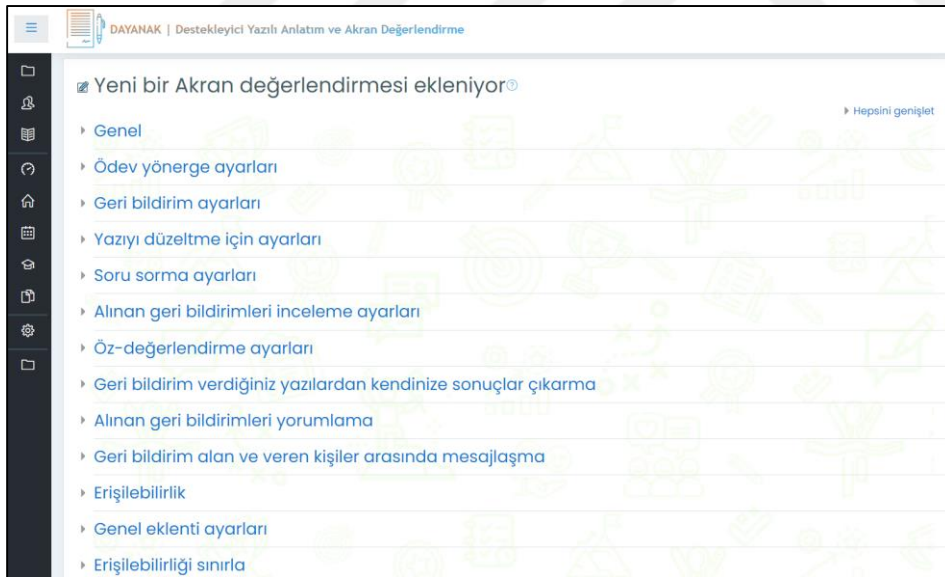


Figure 3.3. Screenshot of the settings in the FPA plugin

Teachers who use this plugin are also expected to define the assessment criteria for the FPA activity. As a result, students give peer feedback based on those criteria. Moreover, for the peer feedback provision activity, teachers need to select how

students will be assigned for peer assessment. There are manual and random assignment options. In other words, teachers can assign specific assessors and assees for each student manually, or assessors and assees are assigned randomly by the system. In the random assignment, teachers can also determine how many writings will be assigned to each student.

Finally, teachers have access to a report page where they can read students' initial and revised writings and peer feedback they provided and received (Figure 3.4).



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Figure 3.4. Screenshot of the report page in the SWAPPER

Student Interface

This part explains how the groups W/ORS and WRS used the SWAPPER step by step. The students in the research firstly had to log in to the SWAPPER and access to the course page for the link of FPA activities (Figure 3.5). They could use the help section on the right part of the pages to learn how to use the environment and complete FPA activities with documents and videos.

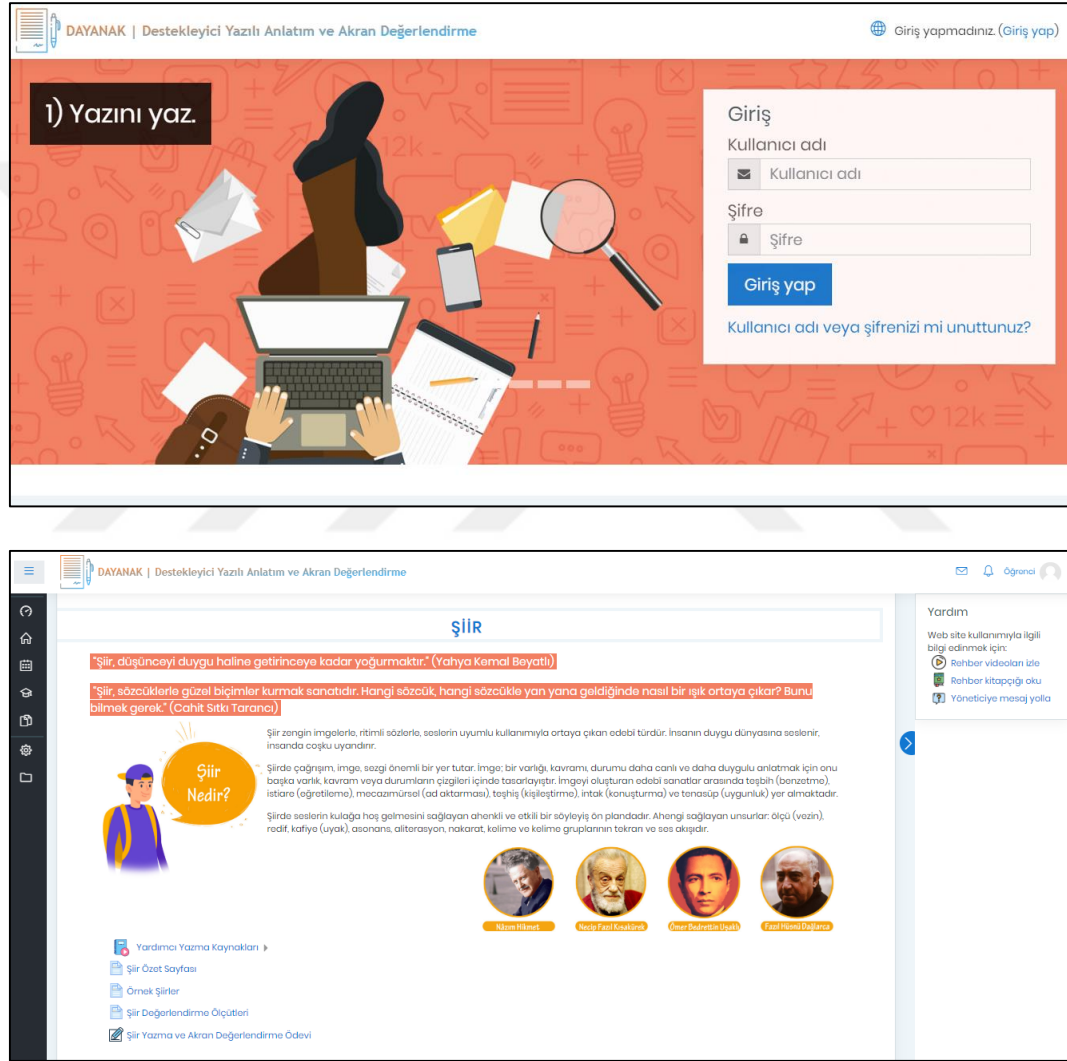


Figure 3.5. Screenshots of the home and course page of the SWAPPER

FPA activities had the main page that displayed the current activity and tasks in the activity in a table (Figure 3.6). There were gray tick signs in front of the tasks that

were turned into green signs when tasks were completed. Under the table, the students could access to the buttons of the tasks.

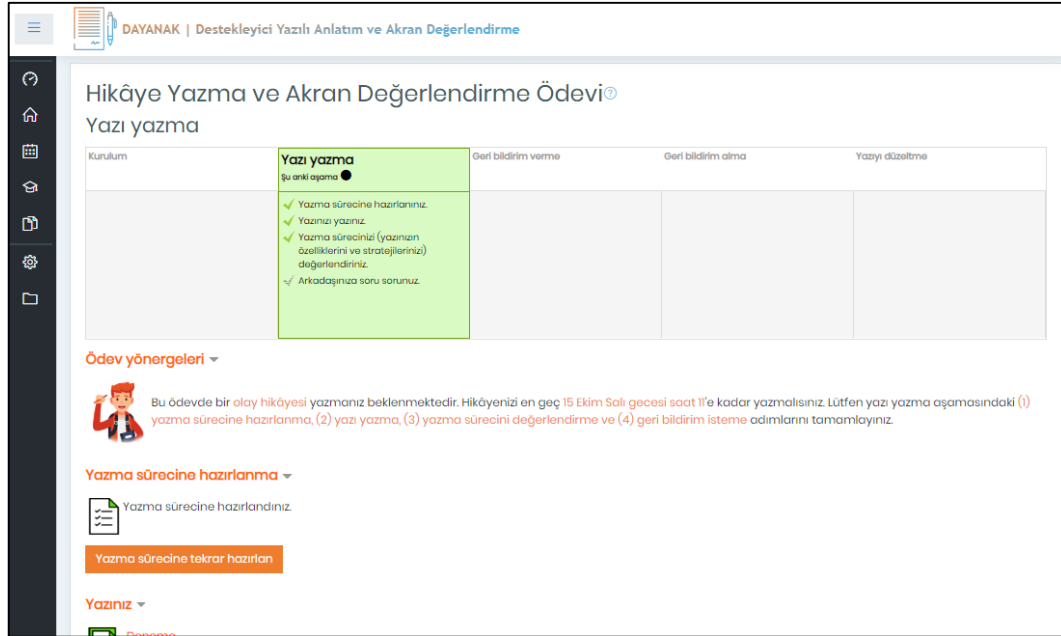


Figure 3.6. Screenshot of the main page of FPA activities

The SWAPPER included a variety of scaffolds for FPA activities. They are presented in Table 3.6. However, the experimental groups differed in the scaffolds available for them in the SWAPPER. While the group W/ORS could access to only information resources and basic scaffolds in feedback provision activity, the group WRS could use all of the scaffolds listed in Table 3.6. In the following parts, the design of the SWAPPER for the groups W/ORS and WRS is explained separately.

Table 3.6 List of the Scaffolds in the SWAPPER and Their Availability in the Groups W/ORS and WRS

FPA activity	Scaffold	Availability	
		W/ORS	WRS
All	Information resources	✓	✓
Writing	Goal setting and planning		✓
	Self-assessment		✓
	Feedback request		✓
Peer feedback provision	Anonymity	✓	✓
	Criteria form	✓	✓
	Prompts regarding how to give feedback	✓	✓
	Reception of feedback request		✓
	Reflection on feedback provision		✓
Peer feedback reception	Mindful processing of feedback		✓
	Dialog about received feedback		✓
Revision	Self-assessment		✓

The Group W/ORS

The group W/ORS had access to information resources on the course page. It included a summary of the characteristics of the writing genre, sample writings, related web resources, a video about writing strategies, an infographic about writing stages, and assessment criteria and explanations. They were available in all FPA activities.

In *writing* activity, there was no scaffold for this group. In *feedback provision*, criteria form and prompts regarding how to give feedback existed to support the students (Figure 3.7). The criteria form included assessment criteria and input fields for students to write their feedback under related criteria. Prompts were guiding students to describe strengths and weaknesses in their peers' performance with justifications and give suggestions. Moreover, the anonymity of assessors and assessees was enabled in the SWAPPER. As a result, students could not see the authors of the writings on which they gave feedback. Moreover, they were not

informed about who was providing feedback to them. In *feedback reception*, the students could read anonymous peer feedback they received. In *revision*, they could revise their writings based on the peer feedback listed under the writing area.



Figure 3.7. Screenshot of the feedback provision page in the group W/ORS

The Group WRS

Information resources were available in all FPA activities for the group WRS, as well. In *writing* activity, the SWAPPER of the group WRS had the scaffolds for goal setting and planning, self-assessment, and feedback request. The scaffold for goal setting and planning firstly asked students to remember knowledge about writing genre. It directed them to the page with information resources if students want to check it. When they chose that they remembered knowledge, the scaffold provided three sub-scaffolds (Figure 3.8): writing goal and self-evaluative standards, writing strategies, and planning of writing. In the scaffold for writing goal and self-evaluative standards, the students could identify the genre, topic, target group, length, and composition duration of their writings. Then, they could decide self-evaluative standards among the choices constructed based on the assessment criteria.

In the scaffold for writing strategies, the students could determine the writing strategies listed in the SWAPPER or write their own strategies. Finally, in the scaffold for planning for writing, they planned their writing with the guidance of open-ended question prompts.

The figure consists of three screenshots of the DAYANAK scaffolding interface, which is titled "DAYANAK | Destekleyici Yazılı Anlatım ve Ekran Değerlendirme".

Screenshot 1: Yazma sürecine hazırlanma (BÖLÜM 1/3)
This section is titled "Yazma sürecine hazırlanma (BÖLÜM 1/3)". It contains a question: "1. Bu yazma çalışmasının sonunda ulaşmayı istediğiniz hedefiniz nedir? *". Below the question, there are several input fields and a button: "Hikâye" (dropdown), "Sorumluluk duygusunun önemi" (text input), "İlköğretim öğrencileri" (dropdown), "1 paragraf" (text input), "2 gün" (text input), and a button "Hedef cümlesi oluştur".

Screenshot 2: Yazma sürecine hazırlanma (BÖLÜM 2/3)
This section is titled "Yazma sürecine hazırlanma (BÖLÜM 2/3)". It contains a question: "3. Yazınızı daha iyi yazmak için hangi stratejileri kullanacaksınız? *". Below the question, there are several checkboxes and a button: "Ortami düzenleme" (checked), "Zaman planlamasi" (checked), "Araştırma yapma" (unchecked), "Örnek yazıları/yazarları inceleme" (unchecked), "Diğer" (text input), "Özet çıkartma" (checked), "Zihinde canlandırma" (checked), "Taslak/Plan oluşturma" (unchecked), "İç konuşma" (unchecked), "Diğer" (text input), "Sesli ifade etme" (unchecked), "Kendi yazını değerlendirme" (unchecked), "Kendine ödül verme" (unchecked), "Başkasından yardım alma" (unchecked), and "Diğer" (text input). At the bottom, there are buttons: "Önceki sayfaya git", "Kaydet ve düzenle", "Kaydet ve sonraki sayfaya git", and "Ödev sayfasına dön".

Screenshot 3: Yazma sürecine hazırlanma (BÖLÜM 3/3)
This section is titled "Yazma sürecine hazırlanma (BÖLÜM 3/3)". It contains a question: "3. soruda belirlediğiniz stratejilerinden uygun olanlarını şimdiki uygulamaya başlayabilirsiniz. Stratejilerinizi uyguladıktan sonra hazır hissettığınızde yazınızı aşağıdaki sorulara göre planlayınız." Below the question, there are three text input fields: "Hikâyenizdeki çatışma nedir? *", "Hikâyenizdeki kişiler kimler olacaktır? Özellikleriyle açıklayınız. *", and "Anlatıcının kullandığı bakış açısı ne (hâkim, kahraman, gözlemci) olacaktır? *".

Figure 3.8. Screenshots of the scaffold for goal setting planning in the writing activity

The self-assessment scaffold in writing activity included two sub-scaffolds: writing performance and writing strategies. In the scaffold for writing performance, the students could assess their writing performance based on their self-evaluative standards and determine what they could do to accomplish them (Figure 3.9). In the scaffold for writing strategies, the students could evaluate the usefulness of their writing strategies. Moreover, they could explain how the strategies contributed to them.

Yazma sürecini değerlendirme

▼ Yazınızın özelliklerini değerlendiriniz.

Hedefiniz: Hedefim, hikâye türünde sorumluluk duygusunun önemi ile ilgili ilköğretim öğrencileri için bir yazı yazmaktır. Yazımın yaklaşık uzunluğu 1 paragraf olacaktır. Yazımı yazmak için 2 gün ayıracam.

Yazınız için belirttiğiniz özelliklere ulaştınız mı?
Eğer tamamen ulaşamadığınız özellikler varsa bu durumun üstesinden gelmek için neler yapmanız gerektiğini seçebilirsiniz/belirtebilirsiniz.

Özellik	Tamamen ulaştım	Kısmen ulaştım	Ulaşamadım	Yazınız için belirttiğiniz özelliğe ulaşmak için neler yapmalısınız?
Yazım kurallarına uyma	☐	☐	☒	Stratejilerimi değiştirmeliyim
Noktalama kurallarına uyma	☐	☒	☐	Üniteye tekrar çalışmalıyım
Kelime, cümle ve paragraf kullanımının uygun olması	☒	☐	☐	Seçim yapın
Hikâye türüne uygun anlatım teknik ve özelliklerin kullanımı	☐	☒	☐	Boş kollarından yardım almalıyım

Kaydet Soru sor

Geçmiş seçimleriniz ▶

► Stratejilerinizin yararlılığını değerlendiriniz.

Figure 3.9. Screenshot of self-assessment scaffold in the writing activity

In the scaffold for feedback requests in writing activity, the students could express their specific needs and questions to their prospective feedback providers (Figure 3.10). They were expected to write their requests under the related assessment criteria so that their peers could see them under related criteria in the criteria form while giving feedback to them.

DAYANAK | Destekleyici Yazılı Anlatım ve Akran Değerlendirme

Soru sorma yönergeleri

Aşağıda belirtilen ölçütleri göz önüne alarak yazınıza ilgili emin olmadığınız veya yazınızda eksik olduğunu düşündüğünüz yerler konusunda yazınıza geri bildirim verecek arkadaşınıza soru sorabilirsiniz.

Sorularınızda belirgin noktalara değinmeniz daha detaylı geri bildirim almanızı kolaylaştıracaktır. Örnek sorular şunlardır:

- "Son cümlede anlatım bozukluğu olduğunu düşünüyorum ama bir türlü düzeltemedim. Sence nasıl olmuş? Nasıl düzeltebilirim?"
- "Başlığımı karar verirken zorlandım. Şu anki başlığım sence dikkat çekici mi? Değilse nasıl bir başlık seçmem daha iyi olur?"
- "Hikâyemin düğüm bölümünde kullandığım betimlemeler sence nasıl olmuş? Olayın anlaşılmasını kolaylaştırıyor mu?"

Arkadaşa soru sorma

Ölçüt 1: Yazım kuralları

Soru

Ölçüt 2: Noktalama kuralları

Soru

Figure 3.10. Screenshot of feedback request scaffold in the writing activity

In *peer feedback provision* activity, the SWAPPER WRS had anonymity, criteria form, and prompts regarding how to give feedback similar to the SWAPPER W/ORS. However, there were two additional scaffolds in the SWAPPER WRS in this activity. They were reception of feedback requests and reflection on feedback provision. As a result, the students could see their peers' feedback requests under related criteria in feedback provision form. Moreover, in the scaffold for reflection on feedback provision, the students could rate their writing performance, choose reasons behind their writing performance, decide whether they would revise their writings, and determine how to revise their writings or writing process by considering the writings they gave feedback on (Figure 3.11).

Soru	Cevabınız
* Geri bildirim verdiğiniz yazıları düşündüğünüzde kendi yazınızı nasıl değerlendiriyorsunuz?	İyi
* Yazınızla ilgili bu düşünceye varmanızı neler etkilemiş olabilir?	☒ Metin türüyle ilgili bilgimin yeterli olması ☒ Uygun yazma stratejileri kullanmam
* Geri bildirim verdiğiniz yazıları düşündüğünüzde kendi yazınızda veya yazma sürecinizde (örn. hedefiniz, stratejileriniz) düzeltmeler yapacak mısınız?	☒ Evet ☐ Hayır
* Nasıl düzeltmeler yapacaksınız?	Eğer anlatım bozuklukları varsa onları tekrar gözden geçireceğim.

Kaydet Kaydet ve ödev sayfasına dön Ödev sayfasına dön

Figure 3.11. Screenshot of the scaffold for reflection on feedback provision

The scaffolds of *peer feedback reception* activity in the SWAPPER WRS were mindful processing of feedback and dialog about received feedback. In the scaffold for mindful processing, students could evaluate the clarity of the received feedback, agreement with feedback, and their writing performance. They could also plan their revision based on the received feedback (Figure 3.12).

Soru	Cevabınız
* Aldığınız geri bildirim anlaşılır mı?	Çoğu anlaşılır
* Aldığınız geri bildirim katılıyor musunuz?	Çoğuna katılıyorum
* Aldığınız geri bildirimleri düşündüğünüzde kendi yazınızı nasıl değerlendiriyorsunuz?	İyi
* Yazınızla ilgili bu düşünceye varmanızı neler etkilemiş olabilir?	☒ Metin türüyle ilgili bilgimde eksiklerin olması
* Yazınızda veya yazma sürecinizde (örn. hedefiniz, stratejileriniz) düzeltmeler yapacak mısınız?	☒ Evet ☐ Hayır
* Nasıl düzeltmeler yapacaksınız?	Yazım kuralları hatalarımı en baştan gözden geçireceğim.

Kaydet Kaydet ve ödev sayfasına dön Ödev sayfasına dön

Figure 3.12. Screenshot of the scaffold for mindful processing of feedback

In the dialog scaffold, the students could interact with their feedback providers and receivers about the received feedback via a messaging window (Figure 3.13). There

was also a prompt in this scaffold to guide students on how to use it. They could thank for the feedback, ask unclear points in the feedback, and discuss the faculty points in the feedback.

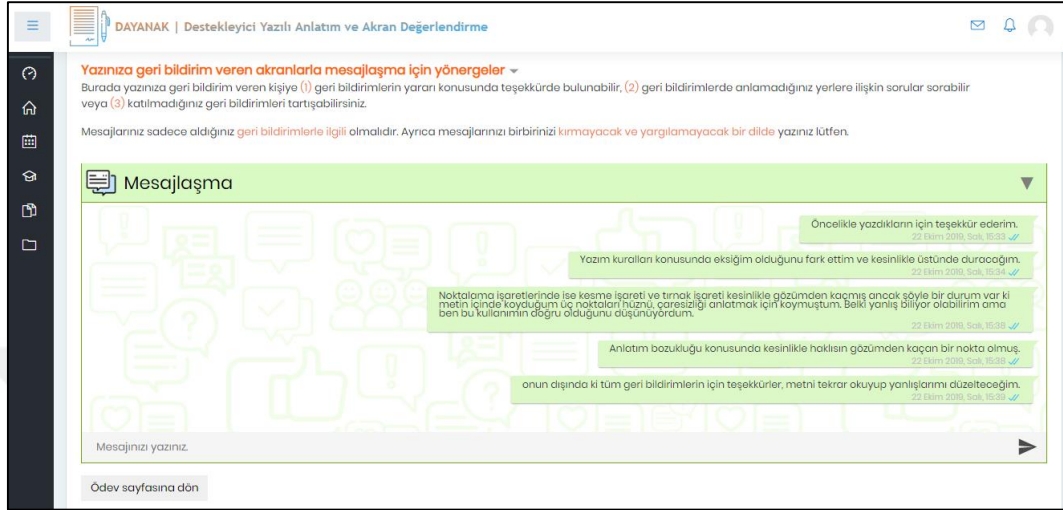


Figure 3.13. Screenshot of the dialog scaffold

In the *revision* activity of the SWAPPER WRS, there was also a self-assessment scaffold. Students could re-assess their writing performance and writings strategies.

3.8 The Procedure of the Study

This study required several steps to fulfill the research aim and respond to research questions. Figure 3.14 illustrates the whole process of the study starting from February 2018 and ending in December 2020. Each step of the study is explained in this section.

First, there was a need to design and develop an online FPA environment described in the prior section. As a result, the researcher conducted design-based research (DBR) study, including problem analysis, development, and three cycles to evaluate and improve the online FPA environment. The online FPA environment was called SWAPPER, as stated previously. Instructional designers, TLL teachers, and ninth-grade students participated in the development process of the SWAPPER.

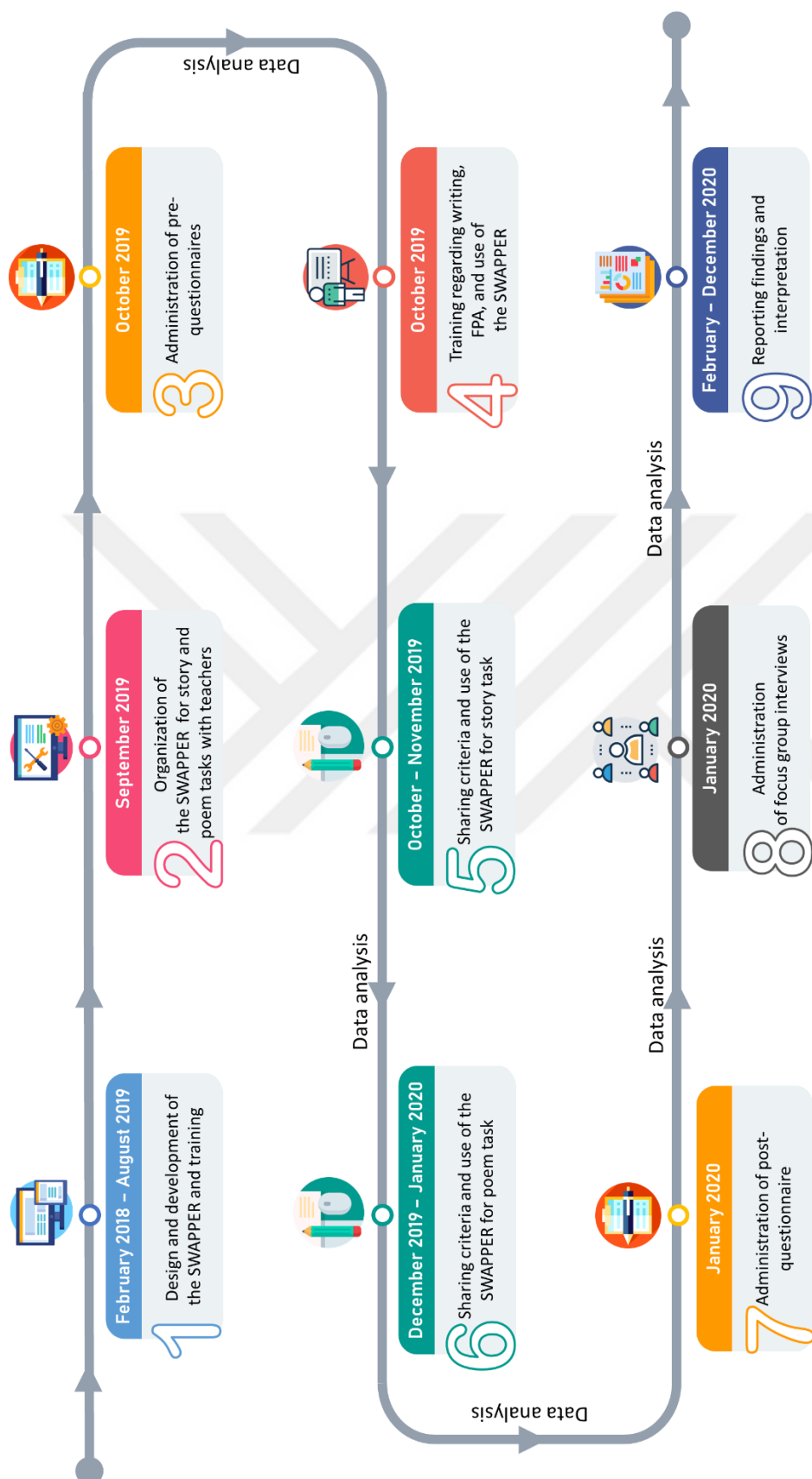


Figure 3.14. Timeline of the study

Second, the SWAPPER was organized for story and poem writing tasks for the actual study with the help of TLL teachers in the research school. In fact, it was developed for story and fairy tale genres in the DBR study. However, in the school semester, when the actual study was conducted, two units in TLL curriculum would be taught. They were story and poem units. As a result, the researcher collaborated with the TLL teachers to both review and revise story writing task and materials in the SWAPPER and prepare it for the poem writing task. Moreover, the assessment criteria of two writing tasks and their explanations were constructed by the researcher and TLL teachers in this step of the study.

Third, after the students were informed about the study and consent was given for their participation, pre-questionnaires were conducted in three classrooms. They were the participant information form and questionnaire regarding peer feedback beliefs. Approximately 20 minutes were allocated to the administration of the questionnaires. Afterward, the data obtained from pre-questionnaires were analyzed to describe the participants in the two groups.

Fourth, the researcher provided two-hours training about writing, FPA, and use of the SWAPPER in three classrooms. Content, instructional strategies, and materials of the training are summarized in Table 3.7. In training, the researcher used a presentation to emphasize the main issues and illustrate them with visuals. She discussed why writing is important with students at first. Afterward, peer feedback was asked and then defined by the researcher. She addressed the important points of how to give effective peer feedback, explained each point with an example, and shared reactions of the students in the DBR study when they received ineffective feedback. Moreover, the benefits of peer feedback were discussed in the classrooms. To apply the knowledge about peer feedback, a group-work activity on peer feedback was also conducted. In the activity, each group filled a form to give peer feedback to a fictitious writing. Then, the groups read their peer feedback one by one, and the researcher and other groups listening to them provided feedback on their peer feedback.

Table 3.7 Content and Instructional Strategies and Materials of Training

Main Topic	Subtopics	Instructional strategies	Instructional materials
Why is writing important?	In high school	Discussion and presentation about the importance of writing	Presentation
	In daily life		
	In future		
	What is peer feedback?	Questions and presentation about what peer feedback is and how to give it	Presentation
Peer feedback	How to give effective peer feedback?	Demonstration of how to give feedback to a writing	Worksheets for group work
	Is peer feedback beneficial?	Discussion of benefits of peer feedback	
	Peer feedback activity	Group work on peer feedback provision	
		Presentation of writing stages	Presentation
A sample writing process with peer feedback	Composing writing	Demonstration of writing	Video about writing strategies
	Giving peer feedback	strategies and peer feedback reception	
	Receiving peer feedback	Questions about writing strategies	
	Revising writing		
Use of the SWAPPER	Login to the SWAPPER	Demonstration of how to use the SWAPPER	Video
	Access to course and activity pages		Booklet
	Completion of FPA activities		

After the peer feedback topic, a sample writing process was examined. The process was explained based on the theoretical model of the study to better prepare students for self- and co-regulated learning in writing. In addition, the researcher used a video to share writing strategies and discuss them with students. Other issues highlighted in this part of the training were the effective reception of peer feedback and revision of writing by considering the feedback. Finally, the use of the SWAPPER W/ORS or WRS was demonstrated with a video. Then, the researcher answered students' questions about the writing tasks in the SWAPPER. Instructional materials of the training are available in this link for the ones who want to check and use them by crediting the researcher: <http://tiny.cc/0bfxoz>.

Fifth, after the training, the story writing task started. The TLL teachers shared the five assessment criteria of the story writing task and their explanations. They were also written in a document. Its hard copy was distributed to the students, as well. Then, 70 students in the group W/ORS and WRS wrote an event story in the SWAPPER in two weeks. After the composition of the stories, two anonymous peers were randomly assigned to each student for peer feedback provision. The students had one week to write their peer feedback. Feedback reception from two anonymous peers was the next activity in the SWAPPER. One week was allocated to this activity, as well. Finally, the students could revise their stories in a week according to self- and peer feedback. While students were completing the aforementioned activities, the researcher collected data about peer feedback, feedback uptake, and use of the regulation scaffolds and started to analyze these data.

Sixth, the SWAPPER was used for the poem writing task. Four assessment criteria of the poem writing task and their explanations were shared with the students beforehand. The paper that included information about them was also distributed to the students. Students had shorter times to complete the FPA activities for the poem writing task because the teaching of main topics in the poem unit finished toward the end of the semester. They wrote their poems in three days, provided peer feedback in one week, and received peer feedback in three days, and revised their poems in three days. Six students who wrote their stories in the group WRS did not write their

poems. In feedback provision activity, three students from the group W/ORS and five students from the group WRS did not write their peer feedback. Data collection and analysis about peer feedback, feedback uptake, and use of the regulation scaffolds continued in the poem writing task, too.

Seventh, the post-questionnaire regarding the perceived contributions of the SWAPPER was conducted after the poem writing task was completed. The researcher accepted responses of the students completing six or more online FPA activities out of eight in both groups to ensure that the students in both groups had enough and a similar amount of experience regarding the SWAPPER. Then, the results of all data analyses were reviewed to determine the students who would participate in focus group interviews with purposeful and maximum variation sampling.

Eighth, six focus group interviews were conducted with 27 students from the groups W/ORS and WRS. The number of students in the focus groups ranged from three to six. The students in the groups had common characteristics regarding the use of the SWAPPER. In the interviews, students' experiences in preparatory activities, writing, peer feedback provision, peer feedback reception, and revision were asked. Students' responses were audiotaped after their permission was obtained. The interviews lasted for 30 minutes on average. Then, interview data were transcribed on a document and analyzed.

Finally, all data analyses were repeated by the researcher to check the reliability and consistency of the results. Afterwards, quantitative and qualitative findings were reported and interpreted by establishing connections between two types of findings. As a result, the main steps of the research process have been completed.

3.9 Development of the Online FPA Environment

The first step of this study is to design and develop an online FPA environment with scaffolds, as stated in the previous section. DBR stages indicated by Reeves (2006)

were followed for the development of the environment. These stages are (1) identifying complex problems in educational contexts by collaborating with practitioners, (2) combining existing design guidelines with technological affordances to devise potential solutions, (3) testing and refining innovative learning environment iteratively, and (4) reflecting to produce design principles (Reeves, 2006). Correspondingly, first, the researcher determined problems in both FPA and writing by reviewing literature and interviewing with students and teachers. Second, the initial version of the online FPA environment or SWAPPER was designed considering the theoretical model, related literature, and problems and suggestions of the students and teachers in the first stage. Third, the online FPA environment was tested three times with the participation of students, teachers, and instructional designers. After each test, it was improved based on findings. Fourth, the researcher reflected on the whole DBR process and proposed tentative design guidelines for the development of online FPA environments. The summary of the procedure is illustrated in Figure 3.15. The following sections also explain findings in each stage in detail.

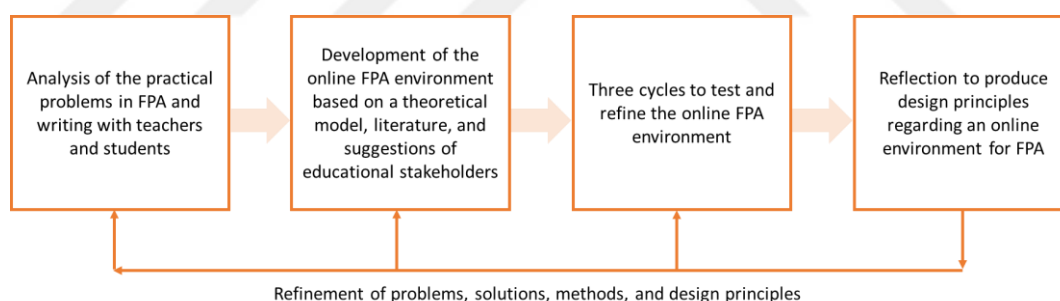


Figure 3.15. Four main stages of this DBR study (adapted from Reeves, 2006)

3.9.1 Analysis of Practical Problems

In this stage, the researcher conducted semi-structured and individual interviews with eight ninth-grade students (four females, four males) with a mean age of 15.63 ($SD = .52$) and nine TLL teachers (seven females, two males) with teaching experience ranging from four to 27. The researcher developed and used two

interview protocols with nine questions regarding experiences in writing and peer assessment activities in the lessons. As a result of the analysis of interview data, the problems in FPA and writing were identified. In the following sections, they are explained with potential solutions.

Problems in FPA and Potential Solutions

Different problems were found to have prevented effective FPA activities. They were related to students' characteristics, feedback characteristics, and context. Table 3.8 provides specific codes regarding these problems.

Table 3.8 Frequency Distribution Regarding the Problems in FPA

Theme	Code	n_{teacher}	n_{student}	n_{total}
Student characteristics	Intolerance to negative feedback	4	3	7
	Worry about being assessed	-	4	4
	Unwillingness to provide detailed feedback	1	1	2
	Unawareness of the responsibilities	-	2	2
	Inadequate knowledge and skill	-	2	2
	Low value on peer feedback	1	-	1
Feedback characteristics	Biased comments	1	5	6
	Harsh criticism	-	4	4
	Inaccurate feedback	1	-	1
Context	Inadequate classroom time	-	4	4
	Testing culture	-	2	2
	Crowded classrooms	-	1	1

Regarding *students' characteristics*, intolerance to negative feedback was mentioned by both students and teachers ($n_{\text{total}} = 7$). It was a problem that also influenced feedback providers negatively. As a result, one student said that he preferred to give feedback to his intimate peers due to other's adverse reaction to his feedback. While some students disliked being criticized, some were worried about being assessed ($n_{\text{teacher}} = 4$) because they might be humiliated and not be liked by their peers in their classrooms. In addition, one student and one teacher mentioned unwillingness to

provide detailed peer feedback due to competition in class and much effort necessary for the provision of elaborated feedback. Two teachers also expressed that some students were not aware of their responsibilities as a feedback provider and receiver. Students' inadequate knowledge and skill in the task for FPA ($n_{\text{teacher}} = 2$) was another problem. The last problem was low value students attribute to peer feedback ($n_{\text{student}} = 1$).

Feedback characteristics were also problematic according to the participants. Students' biased comments ($n_{\text{total}} = 6$) because of friendship effects were emphasized in the interviews. In other words, the degree of intimacy or social relations between peers was found to have influenced the amount of positive or negative peer feedback independent of performance quality. Close friends might prefer to provide more positive feedback, whereas peers who do not like each other might be inclined to give more negative feedback. Harsh criticism in peer feedback was also highlighted by four teachers. One student also mentioned the possibility of inaccurate feedback reception in FPA.

There were *contextual problems* that impeded the successful implementation of FPA, as well. The first of them was an inadequate class time ($n_{\text{teacher}} = 4$). According to teachers, the TLL curriculum was intense with regard to the content they needed to teach; therefore, they did not have enough time to conduct FPA activities in the classroom context. Moreover, two teachers mentioned testing culture among the students since they preferred to solve tests in order to prepare for the university entrance exam. Finally, the crowded classroom was an obstacle as it was not time-efficient for each student to read their writings in crowded classrooms and receive peer feedback according to one teacher.

For the aforementioned problems, participants proposed suggestions, too. The most highlighted solution was guidance about peer assessment. In particular, teachers ($n_{\text{teacher}} = 9$) proposed to guide students about how to give feedback, why not to worry about being assessed, and acknowledgment of negative feedback before FPA activities are conducted. Teachers also suggested conducting more peer assessment

activities ($n_{\text{teacher}} = 3$), explain assessment criteria before peer assessment ($n_{\text{teacher}} = 2$), and make peer assessment anonymous ($n_{\text{teacher}} = 1$) to ensure objective and quality feedback provision in courses. In addition, one student recommended receiving feedback from more than one peer to produce more quality performance. Finally, one student suggested for assessors to give a response on provided feedback to defend their performance.

Problems in Writing and Potential Solutions

Participants in the interviews also expressed problems in writing tasks. They were divided into two main themes: student characteristics and context. Table 3.9 lists all specific problems related to these themes, and they are summarized below.

Table 3.9 Frequency Distribution Regarding the Problems in Writing

Theme	Category	Code	n_{teacher}	n_{student}	n_{total}
Student characteristics	Knowledge	Low knowledge of spelling rules	3	-	3
		Low knowledge of vocabulary	2	1	3
		Low knowledge of grammar	3	-	3
	Interconnected skills	Low reading habit	9	-	9
		Limited imagination	4	-	4
	Practice	Difficulty in expressing thoughts and feelings	5	1	6
		Lack of writing practice	4	-	4
		Difficulty in writing description	1	1	2
		Lack of writing plan	2	-	2
	Affective characteristics	Unwillingness to write	7	1	8
		Low self-confidence	2	-	2
		Fear of writing	1	-	1
Context	Inadequate classroom time		4	-	4
		Testing culture	3	1	4
		Noisy classrooms	-	1	1

The *student characteristics* theme was related to students' (1) knowledge, (2) interconnected skills, (3) writing practice, and (4) affective characteristics. First, students' low knowledge of spelling rules ($n_{\text{teacher}} = 3$), vocabulary ($n_{\text{total}} = 3$), and grammar ($n_{\text{teacher}} = 3$) were expressed as a problem in a successful writing process mainly by teachers. Second, the problems in the skills interconnected to writing were emphasized. The skills that affected and were affected by writing were reading ($n_{\text{teacher}} = 9$) and imagination ($n_{\text{teacher}} = 4$) according to participants. Accordingly, low reading habits and limited imagination were obstacles hindering writing performance. Third, problems regarding writing practice were addressed. Lack of writing practice ($n_{\text{teacher}} = 4$) and specific difficulties during writing were mentioned. The difficulties were in expressing thoughts and feelings ($n_{\text{total}} = 6$), writing a description ($n_{\text{total}} = 2$), and using a writing plan ($n_{\text{teacher}} = 1$). Fourth, the affective characteristics of the students were a problem in writing. In particular, students' unwillingness to write ($n_{\text{total}} = 8$), low self-confidence ($n_{\text{teacher}} = 2$), and fear of writing ($n_{\text{teacher}} = 1$) prevented them from writing.

There were also contextual problems that obstructed the successful implementation of writing tasks. They were quite similar to the ones in FPA. They were related to inadequate classroom time ($n_{\text{teacher}} = 4$), testing culture ($n_{\text{total}} = 4$), and noisy classrooms ($n_{\text{student}} = 1$) distracting students during writing.

In addition to problems in writing, participants proposed several suggestions to prevent these problems. First, participants ($n_{\text{total}} = 9$) emphasized that the more writing practice students did, the more successfully they wrote. Another most frequently stated suggestion was reading books ($n_{\text{total}} = 9$). Three teachers also suggested students' participation in intellectual activities such as watching theatre and cinema film, making observation, and having conversations on controversial issues. Moreover, two teachers expressed that students should be encouraged to write through verbal persuasion. Finally, students proposed that teachers should inform students of why writing is critical and use attention-getting techniques for writing activities such as the use of virtual environments.

At the end of stage 1 of this DBR study, specific problems in FPA and writing were determined by the researcher. They were related to student characteristics, feedback characteristics, and context. Participants' suggestions were also valuable to identify potential solutions. The findings of this stage were considered in the development of the online FPA environment.

3.9.2 Development of the Online FPA Environment

The second stage of this DBR served for the design and development of the initial version of the online FPA environment or SWAPPER. In this stage, the researcher took into account the theoretical model, related literature, and problems and suggestions of the students and teachers.

In the development process, first, specific scaffolds to be integrated into FPA activities were selected and designed. Second, the platform of the SWAPPER was chosen. Third, the storyboard of the SWAPPER was prepared based on the selected scaffolds and platform. It was also revised according to suggestions of two TLL teachers and three scholars in the thesis monitoring committee. Fourth, the first prototype of the SWAPPER was developed. All these steps are explained in the following parts.

Selection and Design of the Scaffolds

The scaffolds planned by the researcher are listed in Table 3.6. There were scaffolds for goal setting and planning, feedback request, and self-assessment in *writing* activity; anonymity, criteria form, prompts regarding how to give feedback, and reflection on feedback provision in *feedback provision* activity; mindful processing of feedback and dialog about received feedback in *feedback reception* activity; and self-assessment in *revision* activity.

The scaffolds were mainly for students to regulate both their own and peers' learning. In the design of these scaffolds, the researcher decided to use question prompts. Question prompts are a strategy that asks learners to set goals, use effective study

strategies, and monitor progress towards their goals so as to encourage self-regulated learning (Sitzmann, Bell, Kraiger, & Kanar, 2009). Through this strategy, learners are also guided to perform tasks like experts, and they can realize which questions need to be asked in learning and problem-solving activities (Xie & Bradshaw, 2008). Consequently, question prompts are beneficial for grabbing learners' attention to crucial aspects of problems in problem-solving tasks, activating their schema, obtaining their explanations, and directing learners for self-monitoring and reflection (Ge, Chen, & Davis, 2005; Xie & Bradshaw, 2008). In FPA, question prompts in self-assessment format can help students become aware of their performance by giving themselves internal feedback and close the gap between actual and intended performance by revising their tasks (Reinholz, 2016). If these prompts are encouraging for experiencing self-regulation processes as well as products, self-assessment brings about higher learning outcomes, cognitive processing, and self-regulation skills in task engagement phase (Brown & Harris, 2013; Deiglmayr, 2018).

The following parts reveal justifications regarding the selection of the scaffolds in each FPA activity and their design in detail.

Scaffolds in Writing Activity

The scaffolds in writing activity included goal-setting and planning, feedback requests, and self-assessment. All of them were also regulation scaffolds provided to the group WRS.

The scaffold for *goal setting and planning* aimed for students to initiate self-regulatory actions. It can facilitate and enhance writing performance as the interventions developing self-regulation skills were found to be effective on writing quality (Graham & Harris, 2000). Moreover, because of the support provided for task performance, students can have room in the working memory for peer assessment (van Zundert et al., 2012a). However, novice writers rarely set goals (Zimmerman & Risemberg, 1997) and need help to develop effective goals (Bereiter & Scardamalia, 1987). Therefore, in the current study, a question prompt was given to help students

write an effective goal. Learners can also determine more specific outcomes since they were informed about success criteria by their teachers in the class (Andrade, 2013). In this way, they can have self-evaluative standards for their writings (Zimmerman & Risemberg, 1997). To have students create these standards, a question prompt was provided to students as well. Finally, the scaffold aimed to guide students to select strategies for writing task and plan their writing in parallel to the theoretical model.

The writing activity also included a *self-assessment* scaffold. Self-assessment during task performance can help students become aware of their performance and close the gap between actual and intended performance (Reinholz, 2016). It can also increase students' attention to the received feedback since students compare their self-assessment with external assessment (Gibbs & Simpson, 2004). Consequently, they can support or disconfirm their self-assessment based on the external assessment, select a suitable action to improve the erroneous or deficient area in their performance, and execute their action (Panadero et al., 2016). In this study, questions were planned for students to assess their progress towards self-evaluative standards and reflect on what they need to do. The researcher also prepared question prompts for the self-assessment of the strategies because such self-assessment brings about higher learning outcomes, cognitive processing, and self-regulation skills in task engagement phase (Brown & Harris, 2013; Deiglmayr, 2018).

The final scaffold was for *feedback request*. Boud and Molloy (2013) suggest enhancing students' capacity and disposition to seek feedback effectively because their readiness for seeking information is low. Therefore, it is necessary to design interventions that can increase and encourage feedback-seeking events (Winstone et al., 2017a). In this study, students had the opportunity to request feedback through a scaffold. The students were expected to express the issues on which they would like to receive feedback in the writing activity. They needed to write their requests in a form including assessment criteria and input fields for the requests related to the criteria. As a result, assessors could see their peers' requests under corresponding criteria in the criteria form of feedback provision activity.

Scaffolds in Peer Feedback Provision Activity

The scaffolds in feedback provision activity consisted of anonymity, criteria form, prompts regarding how to give feedback, and reflection on feedback provision.

The SWAPPER was designed to enable the *anonymity* of assessors and assessees in feedback provision and reception. This decision stemmed from several reasons. Most of the students are unwilling to provide honest and critical feedback to their peers (Li, 2017). In addition, students may feel worried to provide honest feedback, and they may fear to receive negative feedback from their peers (Panadero, 2016). In stage 1 of this DBR, similar problems were pronounced: biased comments in feedback because of friendship and students' worry about being assessed. Anonymity is one of the effective ways to offer a safe learning environment where students do not feel afraid to give accurate and constructive peer feedback (Li, 2017). Therefore, the researcher decided to have an option to enable anonymity in the SWAPPER.

Criteria form was the scaffold through which students can write their feedback under related assessment criteria. In writing practices, knowledge about the success criteria of a specific genre helps writers to identify problems and revise them accordingly (MacArthur, 2007). However, the mindsets of younger and novice writers regarding evaluation criteria of writings are insufficient (MacArthur, 2007). Therefore, it is essential for students to have and grasp assessment criteria in peer assessment. This also enhances the validity and reliability of peer assessment (Strijbos et al., 2009). Therefore, the researcher decided to provide criteria form to the students.

Prompts regarding how to give feedback were also designed as a scaffold in this activity since guiding assessors on how to provide feedback enhances feedback quality (Gielen & De Wever, 2015b; Noroozi et al., 2016; Prins et al., 2006). The prompts in this study oriented students to express both positive and negative aspects of peers' performance with explanations and provide suggestions to improve performance.

The last scaffold was the *reflection on feedback provision*. It was also one of the regulation scaffolds. Nicol, Thomson, and Breslin (2014) suggest that reflecting on their work after peer review can occur automatically for university students. However, it may not be valid for high school students who use fewer and less sophisticated self-regulatory processes in online environments (Azevedo, Johnson, Chauncey, & Graesser, 2011). Also, even if they reflect on provided feedback on their own, there is a risk of making unproductive causal attributions such as relating failure with ability, trait, and random factors (Andrade, 2013). Therefore, the researcher prepared a scaffold for reflection on feedback provision with question prompts. The questions aimed for high school students to reflect on their performance during feedback provision and make constructive attributions to support beneficial self-regulatory process.

Scaffolds in Peer Feedback Reception Activity

The scaffolds in feedback reception activity were for mindful processing of feedback and dialog about received feedback. Both of them were regulation scaffolds.

The scaffold for *mindful processing of feedback* was designed since students' uptake of peer feedback is problematic (Wichmann et al., 2018). In particular, students inexperienced in writing encounter difficulty in considering peer feedback, evaluating their text, and making revisions based on received feedback to improve their text (Wichmann et al., 2018). This may result from insufficient engagement with a reflection on received feedback by themselves (Wichmann et al., 2018). Therefore, it is necessary to design tools scaffolding students' engagement with and constructive interpretation of feedback (Andrade & Brookhart, 2016). It can also result in the development of a mindset of proactive recipience since students are supported to take responsibility and an active role in feedback reception (Winstone et al., 2017a). As a result, the researcher decided to prepare a scaffold to address the aforementioned issues. The sense-making support tool in Wichmann et al.'s (2018) study was considered in the design of the scaffold. There were question prompts in the scaffold asking clarity of the peer feedback, agreement with the feedback, self-

assessment of the writing performance based on the received feedback, causal attribution of the writing performance, and plan for revision activity.

The SWAPPER also included scaffold for *dialog about received feedback*. Dialog in which students discuss the received feedback and their revision plans enhances understanding and acceptance of peer feedback (Strijbos et al., 2009), reflective knowledge building, self-evaluation, and self-regulation (Nicol, 2012; Panadero et al., 2018a; Reinholz, 2016). In this study, a messaging page was provided for students to discuss the received feedback. In addition, a prompt was prepared to guide students about the function of messaging. Students can send messages to their feedback providers to thank for the feedback, ask the points in the feedback that are not understood well, and discuss the points in the feedback that are not agreed.

Scaffolds in Revision Activity

The revision activity included only a *self-assessment* scaffold for students to make final self-reflection after revising their writings. This scaffold was also available in the writing activity. Students could compare their performance with their goals or standards to make self-evaluations and attribute the discrepancies between expected and existing performance to some causes. Moreover, they could evaluate the effectiveness of their writing strategies.

Selection of the Platform for the SWAPPER

After the decisions regarding the scaffolds to be integrated into the SWAPPER, the researcher searched for the potential platforms to develop them. Five platforms with peer assessment activities were examined: Workshop plugin in Moodle, Blackboard, Open EdX, Turnitin, and Peergrade.io. Among these options, Peergrade.io was the best alternative as it included features for self-assessment, anonymity, interpretation of peer feedback, and dialog about received feedback. However, it was a commercial website with priced features, which made the integration of the missing scaffolds into this website difficult. Similarly, Blackboard and Turnitin were the priced ones. Consequently, Moodle and Open EdX, free LMSs, were reviewed. Moodle was the

most widely used LMS in K12 and higher education around the world. In addition, since it was an open LMS, developers could improve it by adding new features. Therefore, the scaffolds that were expected for the SWAPPER but were not available in Moodle could be included to this LMS. Moreover, many users could benefit from the improvement of Moodle. As a result, the researcher decided to select the Moodle platform for the SWAPPER. Workshop in Moodle, the plugin for peer assessment, was used in particular for the development of the SWAPPER.

Storyboard of the SWAPPER

A tentative storyboard of the SWAPPER with the aforementioned scaffolds was prepared to visualize and explain each screen. It is important to note that the final storyboard was obtained in cycle 2. There are sample screens from the final storyboard in Appendix H.

The workshop plugin in Moodle was considered in the design of the screens in the SWAPPER. Then, the storyboard was shown to two TLL teachers and three scholars in the thesis monitoring committee to receive feedback on its design. They indicated two main problems: unclear goal-setting question and use of many open-ended questions. As a result, the researcher revised the goal-setting question to make it clearer. In particular, the question was divided into sub-questions with options to facilitate goal composition. Then, the number of open-ended questions was decreased by merging some similar questions and converting them into multiple-choice or multiple selection questions.

The First Prototype of the SWAPPER

After the revisions in the storyboard, the researcher developed the first prototype of the SWAPPER. It was in the format of an interactive PowerPoint presentation that included all pages designed for the SWAPPER and buttons with hyperlinks going to corresponding pages. The figure below provides sample screenshots from the first prototype of the SWAPPER. When the development stage of DBR was completed, the researcher passed to the testing and refinement stage.

[illegible]

Figure 3.16. Screenshots from the first prototype of the SWAPPER

3.9.3 Three Cycles to Test and Refine the Online FPA Environment

For the development of the SWAPPER, three cycles were conducted. In each cycle, the SWAPPER was evaluated and refined based on the findings. In the following sections, the studies in the cycles are explained. Table 3.10 describes the cycles with regard to aim, participants, and data collection.

Table 3.10 Description of the Cycles

Cycle	Aim	Participants	Data collection
Cycle 1	Evaluating instructional design and potential contributions of the SWAPPER	• Seven students • Seven TLL teachers • Three instructional designers	• Usability test with the students • System usability questionnaire • Heuristics evaluation with the instructional designers • Interview with the students and teachers
Cycle 2	Evaluating instructional design and potential contributions of the SWAPPER	• Seven students • Seven TLL teachers	• Usability test with the students • System usability questionnaire • Interview with the students and teachers
Cycle 3	Evaluating instructional design and contributions of the SWAPPER and preparatory activities	• 40 students	• Students' records in the SWAPPER • Interview with the students

Cycle 1

The aim of cycle 1 was to evaluate the instructional design and potential contributions of the SWAPPER. The participants included seven ninth-grade students (four females, three males) with a mean age of 15.71 ($SD = .49$). Their experience in computer and Internet use ranged from two to nine years. They had smartphones, computers, and the Internet at their homes. They used the Internet every day. The participants were also seven female TLL teachers whose teaching experiences ranged from 17 to 25 years. Finally, there were three instructional

designers who studied instructional technology or worked in a related institution for more than five years.

The students in this cycle participated in a usability test at first. The usability test prepared by the researcher included 12 tasks related to accessing a page or scaffold and completing an operation requiring user action and input in FPA activities of the SWAPPER. The students in the test performed them individually when the researcher read each task. Meanwhile, the researcher noted task completion success, task completion time, and users' actions and comments in the tasks. After that, the students responded to the system usability questionnaire with a seven-point scale (1 = strongly agree, 7 = strongly disagree). The questionnaire was developed by Erding and Lewis (2013). It had 13 items and four dimensions with Cronbach's alpha above .70. The dimensions were system usefulness, information quality, interface quality, and general satisfaction. After the administration of the questionnaire, the researcher and students examined each screen of the SWAPPER together. Then, semi-structured and individual interviews were conducted with each student. The interview protocol developed by the researcher included nine questions related to usability, visual design, scaffolds, potential contributions, problems, and necessary revisions for the SWAPPER.

The teachers in this cycle also participated in the semi-structured and individual interviews after they used the first prototype with the researcher for almost one hour. The researcher used an interview protocol developed by her. It included nine questions asking their writing and FPA activities, problems they encountered, the potential role of the SWAPPER for these problems, and their suggestions to improve the SWAPPER.

The instructional designers were participants for the heuristic evaluation of the SWAPPER. They examined each screen of the first prototype and filled the heuristic evaluation form. In the form developed by the researcher, the instructional designers wrote usability problems and heuristics related to the problems, rated the severity of

the problems on a scale 0-4 (0 = not a usability problem, 4 = usability catastrophe), and proposed suggestions to the problems.

Data obtained from students, teachers, and instructional designers were analyzed quantitatively and qualitatively. First, for the data in usability tests, the researcher analyzed task completion success and time descriptively. Students' statements for the uncompleted tasks or tasks taking much time in the usability tests were analyzed qualitatively to explain usability problems. Second, scores in the system usability questionnaire were analyzed descriptively. Third, data in heuristics evaluation were categorized according to Nielsen's 10 heuristics. Each category included major and minor problems. Finally, interview data were examined with thematic analysis method (Braun & Clarke, 2006).

Students' and teachers' opinions about the instructional design of the SWAPPER were categorized into *instructional scaffolds*, *motivational design*, and *usability*. In addition, potential contributions of the use of the SWAPPER were highlighted by the participants. The following parts explain evaluation findings regarding instructional design and potential contributions.

Instructional Scaffolds

In regard to instructional scaffolds, the participants emphasized the importance of the scaffolds for goal setting and planning, anonymity, and dialog about received feedback. They also addressed potential problems in the use of dialog scaffold.

Goal setting and planning scaffold was found useful by three students and four teachers to guide students at the beginning of the writing process. *Anonymity* was also beneficial according to four students and two teachers to ensure objectivity, mitigate assessors' fear of expressing negative comments, and prevent assessee's hatred feeling towards assessors. Another scaffold highlighted by the participants was the *dialog about received feedback*. It was an opportunity for two students to maintain peer interaction and receive more information on how to revise writing. However, four teachers drew attention to potential problems in the use of the dialog

scaffold. They mentioned that students might reveal their names and use offending language in this scaffold. They suggested to warn students about these issues in the scaffold and training and monitor students' messages to identify and intervene in problematic situations.

Motivational Design

The visual design of the SWAPPER was found inadequate by four students to attract the attention of the young learners. They suggested to use more bright colors instead of blue and gray colors and add visuals to increase interest in the SWAPPER.

Usability

In the usability test with students, 11 tasks out of 12 were completed successfully by all students. One task was completed by only three students, which resulted in 57% success percentage for this task. The average time to complete all tasks was 111 seconds ($SD = 44.53$). Although it was lower than expected time (120 seconds), the task with 57% success percentage took considerable time. The average time to complete this task was 41 seconds ($SD = 27.98$). The task was related to returning to a previous page in the SWAPPER. Students' comments revealed that they could not remember this page they used in the previous task.

Students' scores in the system usability questionnaire were another data to make inferences about the usability of the SWAPPER. Descriptive findings regarding the dimensions of the questionnaire were obtained. They were as follows: system usefulness ($M = 1.67$, $SD = .39$), information quality ($M = 1.33$, $SD = .51$), interface quality ($M = 1.67$, $SD = .54$), and general satisfaction ($M = 1.14$, $SD = .38$). As the rating scale of the questionnaire ranged from strongly agree (1) to strongly disagree (7), a mean score about one corresponded to high usability and satisfaction.

In the interviews, students also expressed ease of use ($n = 3$) and simple interface ($n = 2$) of the SWAPPER. However, there were two usability problems according to students. They were unattractive buttons that prevented their perceptibility and lack

of online help through which users could learn how to perform an action in the SWAPPER.

In the interviews with teachers, one usability problem was pronounced. The amount of open-ended questions was criticized because the teachers thought that students were less likely to answer them, and they may discontinue using the SWAPPER. A similar problem was also mentioned in the evaluation of the storyboard.

The final data about usability were collected from instructional designers. They indicated one major and six minor problems. They were related to four heuristics: visibility of system status, consistency and standards, error prevention, and recognition rather than recall. They are listed in Table 3.11. They were considered in the refinement of the SWAPPER.

Table 3.11 Usability Problems Identified by Instructional Designers

Related heuristic	Usability problem	Severity of Problem
Visibility of system status	Information about saving operation is not given in the system.	Major
	“Story Writing Homework” title is written in big font size on every page. It is confusing users about where they are in the system.	Minor
Consistency and standards	In feedback reception page, there is no button to return to the homepage, although there are homepage buttons on other pages.	Minor
	The cancel button does not reveal the function it serves. The name of the cancel button can be “return to homepage”.	Minor
	The place of going back button in “Monitor and Assess Writing Process” does not comply with standards.	Minor
Error prevention	In the writing page, there are more than one save button. Students can click the wrong save button to save their writing.	Minor
Recognition rather than recall	Although answers are recorded when the user clicks the “go to next page” button, it is better to write “ save and go to the next page” on the button.	Minor

Potential Contributions

The students and teachers in cycle 1 also conveyed potential contributions of the use of the SWAPPER. In regard to performance task, the participants reported that the students could benefit from it to improve their writing as they received peer feedback and guidance on writing ($n_{\text{total}} = 5$), raise motivation for writing because they used technology ($n_{\text{teacher}} = 2$), increase domain knowledge since they were informed about assessment criteria of writings ($n_{\text{student}} = 1$), and self-assess their writing performance after peer feedback reception ($n_{\text{teacher}} = 1$). The students could also become receptive to criticisms according to one student and teacher as they would get used to criticisms while utilizing the SWAPPER. Finally, one teacher expressed its contributions to them. She said that their workload might decrease since students would give feedback on writings instead of teachers.

Refinement of the SWAPPER

After reviewing evaluation findings regarding the first prototype of the SWAPPER, the researcher applied the following revisions to improve instructional scaffolds, motivational design, and usability of the SWAPPER:

- The prompt in the dialog scaffold was revised to guide students on the use of kind language while writing messages to peers.
- Instead of blue and gray colors, orange and green colors were used in the design of the SWAPPER. Moreover, icons and colored heading bars were added to enhance the visual quality of the SWAPPER and attract students' attention (Figure 3.17). Colored heading bars were also a solution to show where users are in the SWAPPER more clearly.

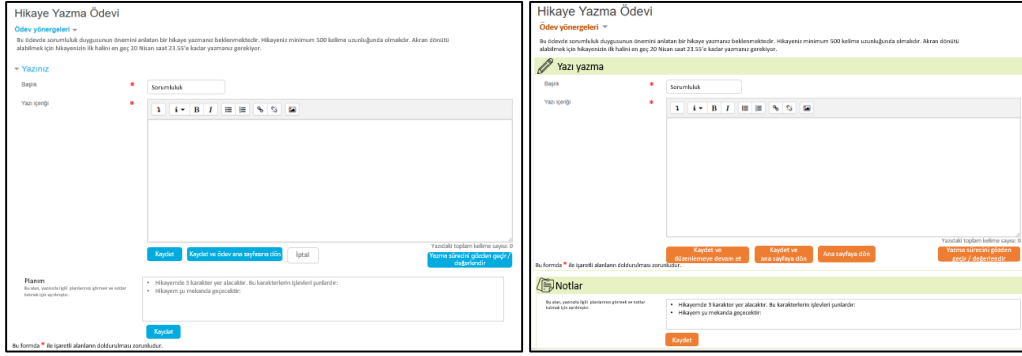


Figure 3.17. Sample change in the visual design of the first prototype of the SWAPPER

- Colors of the buttons were also changed to enhance their perceptibility. They were made orange instead of blue.
- The help section was added to the SWAPPER to give information about how to perform an action in the SWAPPER.
- The majority of the questions in the scaffolds were converted into multiple choice and multiple selection questions (Figure 3.18). Response to some open-ended questions was made optional.

Özellik	Sahip	Sahip değil	Emin değilim	Yazdığınız bu özelliğe sahip olmanız için neler yapmalısınız?
Anlatımın duru olması	☐	☐	☐	
Anlatım bozukluğu içermemesi	☐	☐	☐	
Edebi türün özelliklerini içermesi	☐	☐	☐	

Figure 3.18. Sample change in the type of questions in the first prototype of the SWAPPER

- System feedback was given to the students after they saved an operation.
- The title of the writing task was written in smaller font size to emphasize the specific activity in the task.
- The name of the “cancel” button became “return to the homepage”.

- Return to the homepage button was added to the feedback reception pages.
- The place of the “go back” button was moved to the left side of the window instead of the right part.
- Name of “go to next page” button became “save and go to the next page” button.

Cycle 2

The researcher revised the storyboard of the SWAPPER after the findings in cycle 1. Storyboard of both SWAPPER W/ORS and WRS were prepared. In Appendix H, there were sample screens from the storyboard of the SWAPPER W/ORS. In addition, the screens for the teacher interface of the SWAPPER were designed by the researcher. Teachers could choose the scaffolds they planned to use, write the instructions and questions in the scaffolds, and specify due dates of the FPA activities in teacher interface. In addition, they would have a summary table that indicated students' first and revised writings and peer feedback they provided and received. Then, the Workshop plugin of Moodle was improved for both student and teacher interface according to the storyboard. After all screens in the storyboard were developed, the SWAPPER was evaluated again with regard to its instructional design and potential contributions.

The participants in cycle 2 included seven ninth-grade students (two females, five males) with a mean age of 15.29 ($SD = .95$). Their experience in computer use ranged from one to nine years, whereas their experience in Internet use was above four years. All of them had a smart phone, but six of them had a computer and Internet at their homes. They accessed the Internet every day. The participants also consisted of seven TLL teachers (six females, one male). Their teaching experience ranged from 18 to 34.

Data collection procedure followed for the students and teachers in cycle 1 was applied in this cycle, too. The students participated in the usability test at first. They tried to complete 19 usability tasks while thinking aloud and then responded to the system usability questionnaire. Afterward, the researcher and students examined

each screen of the SWAPPER together. Semi-structured and individual interviews were conducted with each student. The interview protocol in cycle 1 was used in this cycle, as well. The teachers were also interviewed by the researcher after they used the second version of the SWAPPER together for about one hour.

Data analysis in cycle 1 and 2 was similar, as well. Task completion success and time in usability test were analyzed descriptively, while students' comments in the tasks were analyzed qualitatively. Their scores in the system usability questionnaire were also analyzed descriptively. Finally, the thematic analysis method was performed for interview data.

The instructional design of the SWAPPER is examined with three aspects in cycle 2, as in cycle 1: *instructional scaffolds*, *motivational design*, and *usability*. Then, potential contributions of the use of the SWAPPER are revealed in this section. The following parts explain the evaluation findings under these categories.

Instructional Scaffolds

The participants in cycle 2 positively deemed several scaffolds in writing and peer feedback provision and reception activities of the SWAPPER. However, they pointed out a lack of information resources as scaffolds.

With regard to the scaffolds in writing activity, the first scaffold recognized by the participants was *goal setting and planning* ($n_{\text{total}} = 5$) as it was the writing stage mostly ignored by the students in TLL courses and the SWAPPER provided help for composing writing goal. Second, the *self-assessment* scaffold was emphasized ($n_{\text{total}} = 3$) since it was an opportunity for students to control their writings, and it gave suggestions on what they needed to do to improve their writings. Third, one student highlighted the scaffold for *feedback request* as it enabled her to ask writing issues on which they hesitated. Among the scaffolds in peer feedback provision activity, *anonymity* was mostly mentioned ($n_{\text{total}} = 7$) to ensure objectivity in feedback provision and reception. One student also positively appraised the *prompts for how to give feedback*. Finally, the scaffold for *dialog about received feedback* in feedback

reception activity was emphasized as it had the potential to foster peer learning, cooperation, and sincerity in the SWAPPER.

The participants also drew attention to the lack of information resources in the SWAPPER. They suggested adding information about the genre ($n = 6$) to remind the students of the characteristics of the writing genre. Moreover, three teachers proposed to provide example writings for students to review and model during writing.

Motivational Design

The motivational design of the SWAPPER was evaluated in cycle 2, too. Some participants ($n_{\text{total}} = 5$) declared that there was a lack of motivational elements in the environment. They suggested making the SWAPPER more colorful, insert more visuals, add a background image to the scaffolds, use attractive font types, and write proverbs regarding the writing genre. Moreover, teachers suggested giving motivational feedback that included badges and positive comments for the accomplishment of the step and that oriented students to follow the next activity.

Usability

In the usability tests, all students completed 17 tasks out of 19 successfully. Two tasks were not completed by one student, which resulted in 86% success percentage for these tasks. The student could not accomplish one task since he could not see the related button at the bottom of a long page, even if he was on the correct page. Another task was not fulfilled because the student could not differentiate the input fields for title and content of the writing. The average time to complete 19 tasks was 136 seconds ($SD = 22.32$). Although it was lower than the expected time (160 seconds), one task took more time than planned time. The average time to complete this task was 28 seconds ($SD = 11.25$). The task was related to returning to the “goal setting and planning” page in the SWAPPER. The students used the back button of the browser to return to the page instead of using the navigation in the SWAPPER. A similar problem was also identified in cycle 1. The final usability problem

determined in the usability test was related to the label of the “return to home page” button. Some students expressed that they would go to the course page when they clicked on this button. However, the button was for returning to the main page of FPA activities.

The system usability questionnaire also provided data about the usability of the SWAPPER. Descriptive findings regarding the dimensions of the questionnaire are as follows: system usefulness ($M = 1.76$, $SD = .85$), information quality ($M = 1.76$, $SD = .81$), interface quality ($M = 1.86$, $SD = .86$), and general satisfaction ($M = 1.57$, $SD = .79$). As the rating scale of the questionnaire ranged from strongly agree (1) to strongly disagree (7), a mean score about one corresponded to high usability and satisfaction.

In the interviews, students also mentioned ease of use ($n = 6$) and simple interface ($n = 5$) of the SWAPPER similar to ones in cycle 1. However, there was one major usability problem according to students. It was unperceivable breadcrumb in the SWAPPER. The students could not perceive that it was a clickable area to return to previous pages because of the light color of the buttons.

Potential Contributions

Potential contributions of the SWAPPER were expressed by the participants in the interviews. The SWAPPER had benefits for both students and teachers. According to the participants, the students could improve their writing performance as they received peer feedback ($n_{\text{total}} = 7$) and feel motivated to write since they used a new online environment for learning, shared responsibility with their peers in their writing tasks, and interacted with their peers ($n_{\text{total}} = 9$). Moreover, the participants ($n_{\text{total}} = 4$) mentioned that the students had the opportunity to self-assess their writing performance with peer feedback in the SWAPPER. The SWAPPER could also be beneficial for teachers. The main contribution expressed by the teachers was easy monitoring ($n_{\text{teacher}} = 5$) and management ($n_{\text{teacher}} = 2$) of students' performance in FPA activities due to summary table in teacher interface showing students' initial and revised writings and peer feedback they provided and received. The SWAPPER

was also found useful by the teachers to eliminate time problem for writing and FPA activities ($n_{\text{teacher}} = 3$).

Refinement of the SWAPPER

The findings regarding the instructional scaffolds, motivational design, and usability of the SWAPPER required several revisions. The researcher decided to apply the following revisions to improve the SWAPPER:

- Information resources related to writing were added to the SWAPPER as an instructional scaffold (Figure 3.19). They included a summary of the characteristics of the writing genre, sample writings, links going to web pages about spelling and punctuation rules of Turkish Language Society, a video about writing strategies, an infographic about writing stages, and assessment criteria and explanations for writing genre.

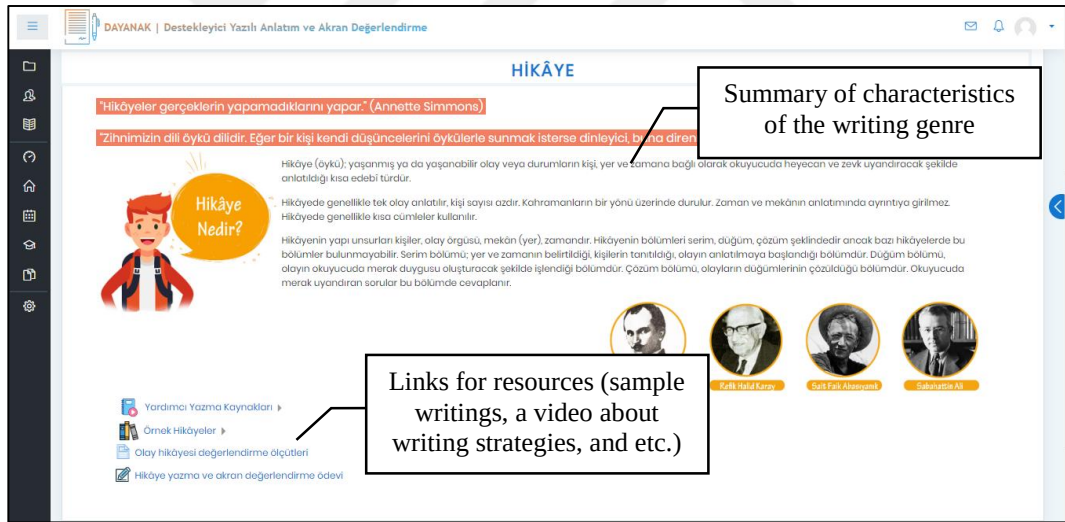


Figure 3.19. Screenshot of the page with information resources in the SWAPPER

- To enhance the visual and motivational design of the SWAPPER, more bright green, blue, and orange colors were used, icons were colored, a background image was added to pages of the scaffolds, and pedagogical agents in both genders were inserted to the SWAPPER. Figure 3.20 shows a sample page revised after cycle 2.

Hikâye yazma ve akran değerlendirme ödevi

Ödev yönergeleri ▾

 Bu ödevde bir olay hikâyesi yazmanız beklenmektedir. Hikâyenizi en geç 15 Ekim Salı gecesi saat 11'e kadar yazmalısınız. Lütfen yazı yazma aşamasındaki (1) yazma sürecine hazırlanma, (2) yazı yazma, (3) yazma sürecini değerlendirme ve (4) geri bildirim isteme adımlarını tamamlayınız.

 Yazma sürecine hazırlanma (BÖLÜM 1/3)

1. Bu yazma çalışmasının sonunda ulaşmayı istediğiniz hedefiniz nedir? *

Bu soruya vereceğiniz cevaplara göre hedef cümlelerinizi oluşturmak için «Hedef cümlesi oluşturun» butonuna tıklayınız.

* Yazınızın metin türü ne olacaktır?

Hikâye ▾

* Yazınızın konusu ne olacaktır?

savaşın bir insan üzerindeki etkisi

* Yazınızın hedef kitlesi kim olacaktır?

Figure 3.20. Screenshot of the page for goal setting and planning after cycle 2

- Further refinements were performed to enhance the motivational design of the SWAPPER. Proverbs emphasizing the importance of the writing genre were added to the SWAPPER. In addition, based on teachers' suggestions, the researcher designed motivational feedback that included badges and positive comments for the accomplishment of the step and that oriented students to follow the next activity. Figure 3.21 provides sample feedback windows.

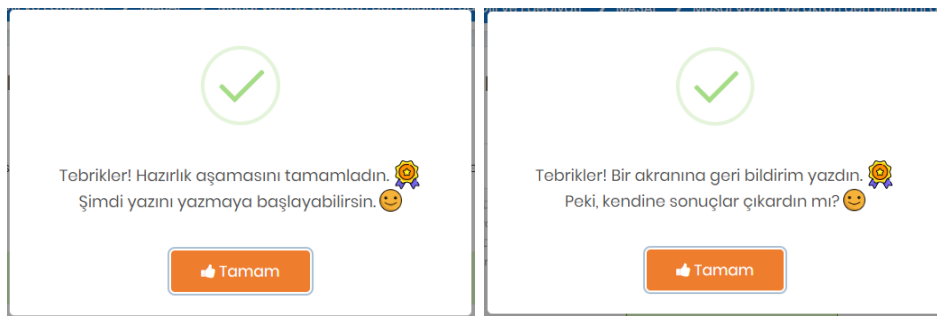


Figure 3.21. Screenshots of two feedback windows

- The color of the buttons in breadcrumb was made dark blue to indicate them as clickable more clearly (Figure 3.22).



Figure 3.22. Change in the color of the buttons in the breadcrumb

- Unnecessary blank spaces were removed to decrease page lengths as much as possible.
- The label of the input field for writing title was made bold to emphasize it.
- Feedback was designed to inform the users of the completed and next steps (Figure 3.21). In this way, users could be aware of the current step in the FPA activity, and they could recall and return to previous steps more easily.
- The label of “return to home page” button became “return to homework page”.

Cycle 3

The SWAPPER was revised based on the findings in cycle 2. Then, the researcher decided to use the SWAPPER for a writing task under the scope of the TLL course as it was mature enough for the integration into the course. Two high schools were selected for the implementation of the SWAPPER. The TLL teacher in the first school offered to use it for fairy tale writing, while TLL teacher in the second school desired to use it for story writing. Then, the SWAPPER was organized according to these writing genres for two schools. The aim of the study was to evaluate its instructional design and contributions.

The participants of cycle 3 were 40 ninth-grade students (30 females, 10 males) with a mean age of 14.85 ($SD = .48$). Most of them ($n = 30$; 75%) had more than four years' experience in computer use, and the majority had access to computer ($n = 36$; 90%) and the Internet at their homes ($n = 37$; 92.5%). While seven of them (17.5%) had experience in peer feedback provision, five students (12.5%) had experience in peer feedback reception before the study. The students in the first school used the

SWAPPER WRS ($n = 15$) for writing a fairy tale, while the ones in the second school used the SWAPPER W/ORS ($n = 25$) for writing a story. As a result, a pilot study of the actual study was conducted.

Before the use of the SWAPPER, the researcher provided one-hour training to the students at first. The researcher could not apply student-centered activities in the training because there was a limited time for it. Second, TLL teachers explained the goals, standards, and criteria of the writing tasks. In addition, they provided a sheet on which assessment criteria and their explanations were written. Finally, the students performed activities in the SWAPPER. They had two weeks to write the first version of their writing, two weeks to give feedback to two peers, one week to receive feedback from two peers, and one week to revise their writings.

At the end of the implementation, the researcher conducted individual and focus group interviews in the first school. Individual interviews were for piloting the interview protocol with two students. The final interview protocol consisted of 11 questions regarding preparatory activities and FPA activities in the SWAPPER. Then, the researcher conducted four semi-structured focus group interviews with 13 students.

In the second school, the participants responded to five open-ended questions in a document. The questions were related to preparatory activities and positive aspects, problems, and challenges of the use of the SWAPPER. The research did not have time to conduct interviews with students in this school since the implementation finished at the end of the semester.

In addition to data obtained from interviews and documents, students' records in the SWAPPER were reviewed. In particular, students' access to the SWAPPER in feedback reception was checked, and their responses in the scaffolds for feedback request and dialog about received feedback were collected. They were used to corroborate and supplement interview data.

After data collection, the researcher analyzed interviews and document data with thematic analysis method. Moreover, the frequency of students' access to the SWAPPER in feedback reception was obtained. Finally, the researcher controlled messages in the dialog scaffold to determine whether they were responded and humiliating messages were sent.

Similar to cycle 1 and 2, the instructional design of the SWAPPER is analyzed with regard to three aspects in cycle 3: *instructional scaffolds*, *motivational design*, and *usability*. In addition, contributions of the use of the SWAPPER with preparatory activities are elucidated in this section. The following parts reveal evaluation findings under these categories.

Instructional Scaffolds

There were both opportunities and problems of the use of the instructional scaffolds in the SWAPPER. The students addressed different scaffolds in this cycle. They are explained below.

Concerning opportunities of the scaffolds, first, *information resources* in writing activity were evaluated. Genre-related content ($n = 2$) and sample writings ($n = 1$) were admired as they facilitated access to the related information and grasp characteristics of the writing genre. The scaffold for *goal setting and planning* ($n = 3$) in writing activity was also highlighted. The scaffold guided the writing process, facilitated the composition of quality writing, and triggered monitoring and self-assessment of the writing performance. It is important to note that the need for this scaffold was indicated in the group W/ORS. One participant in this group suggested guiding them about components of the writing genre before they started to write. The scaffolds in feedback provision were recognized by the participants, as well. *Anonymity* was the most mentioned one ($n = 13$) as it ensured objectivity and kindly-formulated feedback, prevented their worry of making a mistake, and made them feel more comfortable while performing activities. *Criteria form* ($n = 7$) also helped students consider and assess their peers' performance with respect to different aspects and provide comprehensive and relevant feedback. In addition, one student

positively appraised *prompt regarding how to give feedback* to remember characteristics of effective feedback. Finally, the participants mentioned opportunities of the scaffolds in feedback reception activity. For example, *dialog about received feedback* was found useful ($n = 5$) to provide back-feedback and correct assessors' faulty feedback. The researcher also witnessed the need of the two students using the SWAPPER W/ORS for the interaction with their feedback providers. In fact, the two students stated that they did not agree with the received feedback because they were incorrect and asked whether they could express their opinions about the feedback to their feedback providers. However, they could not interact with them as they did not have access to the dialog scaffold. The last scaffold deemed useful was for *mindful processing of feedback*. According to one student, it enabled her to determine accurate feedback and necessary revisions for her writing.

In addition to opportunities, there were problems encountered in the use of these scaffolds. The first problem was related to the scaffold for *feedback request*. The participants in the interviews ($n = 5$) mentioned that they did not need to write their specific questions because there was a criteria form that included specific aspects for feedback provision. Correspondingly, the majority of the students' requests in the SWAPPER just asked feedback on the related criteria without expressing a specific need. However, such situation was observed to influence feedback providers negatively because one student told his feedback receiver that he couldn't understand his need thoroughly; as a result, he could not give detailed feedback in feedback provision activity. The other problems were experienced in the *dialog scaffold*. The students ($n = 2$) claimed that they could not receive responses from their feedback providers to the messages they sent in feedback reception activity. Correspondingly, the researcher detected that interaction between feedback provides and receivers through the dialog scaffold was rare in the SWAPPER. In particular, even if the students sent messages regarding the received feedback in the dialog page, some feedback providers did not respond to them. This problem arose since feedback receivers sent their messages toward the end of due time, and feedback providers did not log in to the SWAPPER regularly in feedback reception to control them. There

was another problem confronted in the dialog scaffold. While the researcher was controlling students' messages in the dialog scaffold, she identified a few students who sent humiliating messages to their feedback providers due to their inaccurate and superficial feedback. Then, the researcher shared this problem with the TLL teacher, and the teacher warned students to pay attention to their language in the dialog scaffold.

Except for the existing scaffolds, the participants also requested guidance to find a topic for writings. Some students ($n = 5$) mentioned that they had difficulty in determining their writing topics. They proposed to provide potential writing topics in the SWAPPER to facilitate this process as well.

Motivational design

The evaluation findings were also related to the motivational design of the SWAPPER. The participants ($n = 11$) expressed that there were attractive images and cartoon characters, and appealing colors in the SWAPPER. In addition, badges given in feedback windows for the completion of a step were surprising and satisfying for them.

Usability

The participants stated both positive and negative aspects regarding the usability of the SWAPPER. Concerning positive aspects, 10 participants emphasized ease of use of the SWAPPER. The particular points they positively deemed were related to information provided by the SWAPPER. The table that showed students completed and uncompleted tasks in the FPA activities informed students about their progress in the SWAPPER ($n = 11$). Moreover, clear instructions about how to complete the steps were found helpful by the students ($n = 4$).

There was also one major usability problem. It was the difficult access to the link for FPA activities ($n = 11$). The link was at the bottom of the page, which prevented students from seeing it at their first view of the page. In fact, they needed to scroll down the page to access the link.

Finally, the participants ($n = 6$) suggested developing a mobile application of the SWAPPER to ease its accessibility by the students. This suggestion was reasonable, but it was not feasible under the scope of this research.

Contributions

In this cycle, contributions of both preparatory activities and the SWAPPER were evaluated. Preparatory activities were training and sharing of task goals, criteria, and standards. Training guided students on the use of the SWAPPER ($n = 21$), writing ($n = 8$), and feedback provision and reception ($n = 11$) during FPA activities in the SWAPPER. Sharing of writing goals, standards, and criteria also guided students on both writing ($n = 15$) and feedback provision and reception ($n = 11$). According to participants, it helped students enhance their genre knowledge, compose quality writing, give relevant, accurate, and elaborated feedback, and receive the peer feedback mindfully.

The use of the SWAPPER also included a variety of contributions. The most frequently mentioned contribution was enjoyment in performing FPA activities ($n = 13$). The students reported their enjoyment due to peer interaction, their autonomy in writing and peer feedback provision and reception, and the use of technology in the TLL course. Other contributions were categorized into writing and peer assessment. In regard to writing, first, they could self-assess their writing performance and skill as a result of peer feedback ($n = 7$). Second, they could improve their writings and knowledge about the genre as they realized mistakes in their writings with peer feedback ($n = 7$). Third, they could feel motivated to write well because they would share their writings with their peers and wanted to receive positive feedback from their peers ($n = 3$). Fourth, the self-efficacy of two students in writing increased since they could practice writing and assess their performance in the SWAPPER. Concerning peer assessment, three students mentioned improvement in their peer assessment skills, their peer feedback provision and reception skills in particular.

Refinement of the SWAPPER

Cycle 3 also required refinement in the SWAPPER with regard to its instructional scaffolds and usability. The following revisions were applied before it was used for the actual study:

- Directions of the scaffold for feedback request was revised to warn students to indicate their specific needs to receive more elaborated feedback. Example feedback requests were also provided to the students in the directions (Figure 3.23).

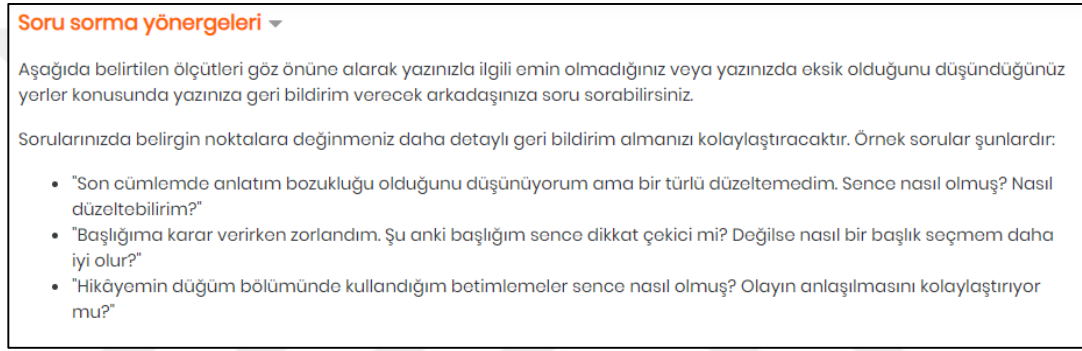


Figure 3.23. Directions in the scaffold for feedback request

- To enhance dialog between assessors and assessees after feedback reception, the training emphasized its importance. Moreover, reminders were planned to orient students to control their messages in feedback reception.
- To prevent offending language in the dialog scaffold, training illustrated a sample conversation between a feedback provider and a receiver (Figure 3.24). It was planned to advise students not to use humiliating messages in both peer feedback provision and reception with their reasons. In addition, it was decided that students would be informed about the monitoring of their messages by their teachers.



Figure 3.24. Screens in the training presentation regarding the language used in FPA

- Potential topics students can choose for their writings were determined to increase scaffolding in the writing activity.
- The link for the FPA task was moved to the top of the page instead of the bottom of the page so that students can easily realize it when they access the course page.

3.9.4 Reflection to Produce Design Guidelines

At the end of cycle 3, the researcher reflected on the whole DBR process to determine tentative design guidelines for the development of online FPA environments. They

are listed below. They were also refined after the actual study and explained in the discussion section.

1. Train students in performance tasks, FPA, and the online environment to prepare them for FPA activities
2. Share task goals, criteria, and standards with students to prepare them for FPA activities
3. Provide resources supporting domain knowledge and task skill for FPA activities
4. Support goal setting and planning for complex tasks to enhance self-assessment and task performance in FPA
5. Facilitate feedback seeking for students to send specific requests
6. Use anonymity to mitigate psychosocial demands of FPA
7. Provide criteria form in feedback provision to ensure comprehensive and relevant feedback
8. Enable students to establish a sustainable dialog about received feedback in asynchronous FPA activities
9. Guide students about the use of positive affective language in peer interaction
10. Use motivational elements to maintain student engagement in FPA
11. Ensure the usability of the new FPA technology for students to use it effectively and efficiently

3.10 Data Analysis

Different data analysis methods were used to answer research questions. Table 3.12 lists research questions with their data sources and data analysis methods. As some research questions included sub-questions and required quantification of qualitative data, more than one data analysis method were used. The researcher performed quantitative data analysis in the IBM SPSS Statistics program and qualitative data analysis in the MAXQDA program.

Table 3.12 Data Sources and Data Analysis Methods Used to Answer Research Questions

Research Question	Data source	Data analysis method
1. Is there a significant mean difference between the groups W/ORS and WRS with respect to peer feedback provision in two writing tasks?	Online records	Content analysis Mann-Whitney <i>U</i> test One-way MANOVA
2. Do the groups W/ORS and WRS significantly differ in feedback uptake in two writing tasks?	Online records Checklist regarding the implementation of feedback	Fisher's exact test Chi-square test of independence Mann-Whitney <i>U</i> test
3. Is there a significant difference between the groups W/ORS and WRS with respect to the perceived contributions of the online FPA environment?	Questionnaire regarding perceived contributions of the online FPA environment	Mann-Whitney <i>U</i> test
4. How is students' use of regulation scaffolds in FPA activities in two writing tasks?	Online records	Descriptive statistics Thematic analysis
5. What are students' experiences in FPA activities?	Focus group interviews	Thematic analysis

For the first research question regarding differences in peer feedback provision, students' records in the SWAPPER were used. In fact, feedback messages students wrote to their peers in story and poem writing tasks were analyzed. Several steps were applied to analyze these data in order to answer the research question.

First, feedback messages were divided into segments by following Strijbos, Martens, Prins, and Jochems' (2006) procedure. The unit of analysis in segmentation was a sentence or meaningful part of compound sentences to examine the content of peer feedback messages in detail. The selection of this unit of analysis was also useful to enhance the accuracy of the coding by decreasing the ambiguity of the content (Strijbos et al., 2006). After that, the total numbers of feedback segments in story and poem writing tasks were calculated for each participant.

Second, the content of each segment was analyzed based on Gielen and De Wever's (2015c) coding scheme. Three categories in the scheme were used: peer feedback style, verification type, and elaboration type. Definitions of these categories and example segments are provided in Table 3.13. Bracketed numbers in the table are the identification numbers of the quotations. Appendix J provides Turkish statements of the quotations according to these numbers. With respect to *peer feedback style*, feedback segments were classified as verification, elaboration, and general. Concerning *verification type*, feedback segments in verification style were divided into positive, negative, and neutral. Regarding *elaboration type*, feedback segments in elaboration style were categorized into informative and suggestive. Frequencies of these sub-categories were calculated for each participant in story and poem writing tasks. As the numbers of feedback segments in general peer feedback style and neutral verification were quite low, they were disregarded for further analysis.

Table 3.13 Coding Scheme adapted from Gielen and De Wever (2015c) to Analyze Content of Peer Feedback

Category	Subcategory	Definition	Sample segments
Peer feedback style	Verification	The feedback sentence is an evaluative statement expressed as a positive, negative, or neutral remark on the performance.	“Frankly, it was a very beautiful poem in all aspects.” [1] “There were some spelling mistakes in the story.” [2]
	Elaboration	The feedback sentence is an informative statement about the task, errors, or solutions. It includes justification, explanation, or exemplification to give more information about evaluative statements and suggestions to improve performance.	“I think the title was harmonious because you pointed to that connotation in writing and ultimately gave the message that you should live without fear of death.” [3] “When you passed from the first to the second paragraph, there was a huge gap in the transition. It would be better if you summed up the elapsed time in a few words.” [4] “I am writing this here because I cannot decide in which section I will write it.” [5]
	General	The feedback sentence is neither verification nor elaboration about the performance.	“In addition, I want to say one more thing” [6] “I think the plot is fluid.” [7] “The meaning and feelings of poetry are very beautiful.” [8]
	Verification	The feedback sentence is a positive evaluative statement to express right, errorless, or pleasant aspects in the performance.	“Solution part was not enough” [9] “I did not find images and literary arts.” [10]
Verification type	Positive	The feedback sentence is a positive evaluative statement to express right, errorless, or pleasant aspects in the performance.	
	Negative	The feedback sentence is a negative evaluative statement to express wrong, erroneous, missing, redundant, unclear, or unpleasant aspects in the performance.	
	Neutral	The feedback sentence is a neutral evaluative statement. Although it is related to performance, it is not clear or possible to classify it as positive or negative.	“There's a lot to talk about your story!” [11] “I don't think it's not bad, but it's not very good.” [12]

Table 3.13 (continued)

Elaboration type	Informative	The feedback sentence explains evaluative statement with other words or details, justifies the evaluative statement, provides reasons behind positive or negative aspects in the performance, expresses results of the positive or negative aspect in the performance, or gives examples from the performance.	“You have given very little punctuation in your text, and this makes fluency of narration and clarity a little bit difficult while reading your text.” [13] “I think the author wrote a case story rather than an event story in this text. Internal conversations and emotions often come to the fore. I have not seen an event that would make me wonder.” [14]
	Suggestive	The feedback sentence provides a suggestion for the receivers to review performance, study and learn some topics, correct mistakes, or add new things so that they can revise and improve their performance.	“You shouldn’t use quotation marks and em dashes together when writing dialogue.” [15] “Some of your sentences are too simple. For example, instead of sleeping, you can say that he slept deep in thought, to make a better way of expression. You will get a better result if you include descriptions in your text.” [16]

Note. Bracketed numbers are the identification numbers of the quotations. Appendix J provides Turkish statements of the quotations according to these numbers.

Then, three proportion values were obtained to make inferences about the quality of peer feedback content according to Gielen and De Wever (2015c). They were proportions of elaborations, negative verifications, and suggestive elaborations. The proportion of elaborations was for defining the balance between verifications and elaborations in total feedback segments. The proportion of negative verifications was for defining the balance between positive and negative verifications in total verification segments. Lastly, proportion of suggestive elaborations was for defining balance between informative and suggestive elaborations in total suggestive elaborations. When these proportions are high, more quality feedback is obtained according to Gielen and De Wever (2015c).

Finally, after qualitative data about peer feedback were quantified, statistical tests were conducted to compare experimental groups in this regard. The researcher decided to use the independent samples-*t* test and one-way MANOVA to analyze differences between the groups W/ORS and WRS with regard to the number of feedback segments and the combination of quality variables of feedback content. However, the independent samples-*t* test could not be performed since the normality assumption was not met (Appendix I). As a result, the Mann-Whitney *U* test, a non-parametric alternative of the independent samples-*t* test, was performed.

For *the second research question* regarding feedback uptake, students' log data and writings in the SWAPPER were analyzed. First, log data revealed whether students read peer feedback they received, and they revised their stories and poems. To investigate the relationship between treatment condition and reading peer feedback and revision, the researcher decided to use the chi-square test of independence. However, one of its assumptions was violated in the test regarding reading peer feedback because the expected frequency of one cell was less than 5. As a result, Fisher's exact test was performed. Second, students' initial and revised writings in the SWAPPER were analyzed with the feedback implementation checklist. The checklist was filled for each student in story and poem writing tasks. The use of the checklist resulted in total numbers of peer feedback with shortcomings in writing, specific and accurate feedback, and implemented specific and accurate feedback.

While the researcher was identifying the accurate feedback, she consulted the TLL teachers. After that, the implementation rate of specific and accurate peer feedback comments was calculated for each student. Finally, two experimental groups were compared with regard to the implementation rate of peer feedback. The Mann-Whitney *U* test was conducted instead of an independent samples *t*-test since sample sizes in the groups were small.

For the *third research question* regarding the perceived contributions of the online FPA environment, the related questionnaire was administered. The aim was to compare two experimental groups with regard to each item in the questionnaire. The researcher decided to use the independent samples *t*-test; however, the normality assumption was not met (Appendix I). Hence, the Mann-Whitney *U* tests were conducted to investigate (in)significant group differences in each item.

For the *fourth research question* regarding the use of the regulation scaffolds, online records of the students in the SWAPPER were analyzed. First, log data were analyzed to describe how many of the students used each regulation scaffold in FPA activities. Then, usage frequency and percentage of the regulation scaffolds were calculated. Finally, the researcher examined qualitative data written in the scaffolds for goal setting and planning, feedback requests, and dialog about received feedback. The thematic analysis method was applied to feedback requests and dialog messages.

In the thematic analysis, the following steps were followed: “familiarizing yourself with your data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report” (Braun & Clarke, 2006, p. 87). In parallel with these steps, the researcher first immersed herself in the data by reading them several times and writing down her ideas. Second, initial codes were generated from the systematic analysis of the whole data. In other words, sentences written in the scaffolds for feedback requests and dialogs were labeled with a code to represent its content. Third, all codes were reviewed in order to collect them under inclusive themes. As a result, the codes similar to each other were clustered, and tentative themes were constructed for each cluster. Fourth, initial themes were

reviewed and modified recursively. In particular, the researcher checked the themes in relation to their data extracts in this step. Consequently, clarity, meaningfulness, and boundaries of the themes were evaluated. Accordingly, some themes were revised, merged, and divided into separate themes. Then, themes and data extracts were read again to decide whether the themes encompassed the whole data set. Fifth, the definition and name of each theme were determined. Moreover, some data extracts were chosen to illustrate codes and themes clearly. Sixth, when fully worked themes were derived, the results section of the study was written. The researcher paid attention to present and explain the themes in a logical and meaningful order.

For the *fifth research question* regarding students' experiences in FPA activities, interview data were examined with thematic analysis method. The procedure followed for the qualitative data concerning the use of the regulation scaffolds was applied for the interview data, as well.

3.11 Validity and Reliability

In this mixed methods research, validity and reliability issues were taken into account for both quantitative and qualitative strands of the study. They are discussed below for quantitative and qualitative phases separately. It is important to note that reliability and validity were replaced by trustworthiness word in the qualitative phase.

3.11.1 Validity and Reliability of the Quantitative Phase

Validity

The validity of the quantitative phase of the study included three aspects for consideration. They were external validity, instrument validity, and internal validity.

The *external validity* of the study depends on “the extent to which the results of a study can be generalized” (Frankel, Wallen, & Hyun, 2012, p. 103). The nature of

the sample and the environmental conditions can affect the generalizability of the results (Frankel et al., 2012). The sample at the beginning of the study was 70 ninth-grade students in a social sciences high school selected with purposive and convenience sampling methods. The use of these sampling methods and participation of the students from a social sciences high school were a threat to the representativeness of the sample. As the students in social sciences high school preferred a specific school, completed writing activities in the preparatory class of the high school, and had more lesson hours in the TLL course compared to the ones in regular high schools, their writing experience, skills, and motivation might be higher. Therefore, participants were described with respect to experience in writing, their willingness to provide and receive peer feedback on writings in the TLL course, and peer feedback beliefs. As a result, detailed information about the participants is provided for the researchers who would like to generalize findings to similar contexts.

Instrument validity was another concern in this study. It influences “appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect.” (Frankel et al., 2012, p. 148). Therefore, it was considered when using an instrument for the study. For example, the researcher applied certain methods to enhance the instrument validity of the questionnaires. In particular, in the development of the questionnaires, the researcher reviewed the literature to describe constructs and examine the related instruments, consulted experts to evaluate representativeness, clarity, factorial structure of the items, and conducted cognitive interviews with the students to compare the alignment of participants’ interpretations with the researcher’s intentions. Then, the instruments were improved according to different pieces of evidence to ensure the validity of the inferences.

The *internal validity* of the quantitative findings was also considered in the current study. It means that “observed differences on the dependent variable are directly related to the independent variable, and not due to some other unintended variable.” (Frankel et al., 2012, p. 166). There were potential threats to the internal validity of

this study. The researcher tried to minimize these threats during the planning and implementation phases of the experimental intervention.

Subject characteristics were the first internal validity threat since the participants were not randomly assigned to experimental groups. In other words, the students in the groups W/ORS and WRS might differ in some characteristics related to peer feedback provision and reception. To mitigate the effect of this threat, the researcher obtained information about the characteristics of the subjects relevant to the study and compared the two groups with regard to these characteristics.

Second, there was a mortality threat. The number of participants at the beginning of the study was 70. However, some of them were lost in the second writing task. At the end of the study, 56 students remained. Possible reasons behind the subject loss were that the second task coincided with the final exam dates, and participants had less time to complete the FPA activities. Consequently, the students might not have allocated enough time to the writing task, even if it was homework. The other reason could be related to students' motivational beliefs. The participants who dropped out of the study had lower willingness in peer assessment and peer feedback beliefs than the students who completed the study before the intervention. Long intervention process could have been too demanding for them. However, subject loss in the groups W/ORS and WRS was almost similar at the end of the study and remaining participants in the groups were not less than 20; therefore, it was not a major problem in this study comparing two groups.

The third internal validity threat was the location. Although the pre- and post-questionnaires were conducted in similar classrooms, the students completed FPA activities outside the classrooms. There could be differences in computer and Internet resources and physical settings of the locations. To examine this threat, the researcher collected information about students' computer and Internet ownership at their homes or dormitories. It was found that all students had a device connected to the Internet at least.

Fourth, there was an instrumentation threat. To prevent this threat, the only researcher collected data, gave special attention to behave the two groups in the same way during the whole intervention and data collection process, and stopped to score the data when she was tired.

The attitude of the subjects was the fifth internal validity threat. The group WRS received regulation scaffolds, whereas the group W/ORS did not. Students in the group W/ORS might have a negative attitude towards their intervention since additional scaffolds were not available for them. However, the researcher did not inform the participants about the different interventions implemented in the classrooms. In addition, the participants from different classrooms did not communicate with each other about the features of their online FPA environments as far as the researcher realized.

The final threat was related to implementation. Three intact classrooms taught by different TLL teachers participated in the study. The involvement of different teachers was a risk that could affect the learning and implementation of the intervention. However, all TLL teachers were female, had more than 10 years of teaching experience, regularly collaborated to prepare course activities and exams together, and integrated FPA activities in the SWAPPER into their courses as a performance homework. Therefore, it can be assumed that a similar teaching process was applied in the classrooms. In addition, the intervention process was mainly administered by the researcher. She announced FPA activities to the participants via e-mails and WhatsApp groups of the classrooms. Moreover, she answered students' questions about the activities and solved their technical problems. The researcher also paid great attention not to show bias or favor for the group WRS during the implementation. As a result, the effect of the implementation threat on internal validity was minimized.

Reliability

Reliability means consistency of the scores acquired; in other words, it is related to how consistent the scores of an individual are in repeated administrations of an

instrument or different sets of the items (Frankel et al., 2012). In this study, the reliability of the scores was investigated for quantitative measures. In particular, Cronbach's alphas were calculated to check the internal consistency of the scores obtained from questionnaires regarding peer feedback beliefs and perceived contributions of the online FPA environment. There were a few aspects in the questionnaires that had Cronbach's alpha below .80 due to number of items. However, reliability coefficient for the whole questionnaires were higher than .80. Therefore, there was adequate reliability of the scores according to Nunnally's (1978) benchmarks.

3.11.2 Trustworthiness of the Qualitative Phase

Internal validity, external validity, and reliability are the scientific terms used in the rationalistic paradigm to define three aspects of trustworthiness in quantitative studies (Guba, 1981). On the other hand, these terms are replaced by credibility, transferability, and dependability terms in the naturalistic paradigm for qualitative research (Guba, 1981). In the qualitative phase of this study, three aspects of trustworthiness were considered to enhance the quality of the study. This section explains the strategies Guba (1981) and Merriam (2009) proposed to increase the credibility, transferability, and dependability of the findings.

Credibility is concerned with “the question of how research findings match reality” (Merriam, 2009, p. 213). To ensure credibility in this study, the researcher first used the triangulation strategy. Both students' online records regarding the use of regulation scaffolds and interviews provided data to describe the intervention process and experiences. The use of different data collection methods enabled the researcher to compare and contrast findings. The second strategy was adequate engagement in data collection. For example, students' use of regulation scaffolds was investigated in two separate writing tasks in this research. Moreover, data of all participants in the group WRS were included in the analysis. Interviews were also conducted with 27 students that differed in their characteristics regarding the use of the SWAPPER.

As a result, the researcher's engagement with data collection increased. Peer debriefing was the third strategy for credibility. In dissertation committee meetings, the researcher could frequently interact with the experts to reveal and discuss preliminary ideas and receive feedback. Finally, the researcher's position was written in this dissertation so that the investigator could reflect on her theoretical orientation, potential biases, and assumptions. As a result, readers can comprehend how the researcher reached a particular conclusion (Merriam, 2009).

Transferability is related to "the extent to which the findings of one study can be applied to other situations" (Merriam, 2009, p. 223). To foster the transferability of the findings into similar contexts, the researcher firstly used thick and rich descriptions while presenting context, online FPA environment, participants, and findings. Second, maximum variation sampling was used in the selection of participants for focus group interviews. In other words, the students who had different characteristics regarding completion of FPA activities and use of the scaffolds were chosen to maximize the collection of various experiences and opinions.

Dependability or consistency deals with "whether the process of the study is consistent, reasonably stable over time and across researchers and methods." (Miles & Huberman, 1994, p. 278). Triangulation of different data collection methods, peer debriefing, and researcher's position were the three strategies applied for dependability, as well. Moreover, coding checks of qualitative data were conducted to calculate inter-rater reliability coefficients for both quantified and qualitative data collected during two writing tasks. One of the focus group interviews was also used for coding check. The researcher received help from other researchers who passed the doctoral qualification exam in the education field and had experience in qualitative analysis. They were the second coders of qualitative data. In this process, first, the researcher explained the research and coding scheme to the second-raters. Second, they coded some portion of the data together. Third, the second-raters individually analyzed the data. Finally, the researcher compared her coding with the coding of the second-raters. Then, the researcher and raters discussed the data units

on which they disagreed. As a result, disagreements were resolved, some codes were revised, and whole data were reviewed again considering the suggestions of the raters.

Table 3.14 lists inter-rater reliability results for the data in the SWAPPER. They were calculated before discussions between the researcher and raters. Agreement percentage and Kappa value for the interview data were 74.63% and .74, respectively. All Kappa coefficients were higher than .60, and some of them were above .80. Therefore, there were substantial and almost perfect agreements between coders (Landis & Koch, 1977).



Table 3.14 Inter-rater Reliability Results of Qualitative Data Analyses

Category	Task #1				Task #2			
	Total units	Units for coding check (%)	Agreed units (%)	k	Total units	Units for coding check (%)	Agreed units (%)	k
Segmentation of peer feedback	1807	293 (16.21%)	288 (98.29%)	-	1091	167 (15.31%)	160 (95.81%)	-
Content of peer feedback								
Peer feedback style	1807	293 (16.21%)	269 (91.19%)	.84	1091	167 (15.31%)	158 (94.61%)	.90
Verification type	993	156 (15.71%)	138 (88.46)	.79	695	92 (13.23%)	89 (96.74%)	.93
Elaboration type	768	133 (17.32%)	124 (93.23)	.87	372	73 (19.62%)	67 (91.78%)	.84
Peer feedback implemented	198	58 (29.29%)	57 (98.28%)	-	53	20 (37.74%)	18 (90.00%)	-
Feedback requests	117	26 (22.22%)	18 (69.23)	.62	108	24 (22.22%)	24 (100.00%)	1.00
Dialog	195	38 (19.49%)	30 (78.95%)	.76	97	20 (20.62%)	18 (90.00%)	.87

3.12 Assumptions

Assumptions of this study were as follows:

- The questionnaires were responded honestly and accurately by the participants.
- The participants in the interviews expressed their experiences and opinions sincerely.
- The students did not influence their peers' responses in online FPA activities.

3.13 Limitations

This study had some limitations addressed below:

- The results of the study were limited to ninth-grade students at the high school stage. The participation of the students in other grades or educational stages might lead to different results.
- The high school selected in this study was a social sciences high school. The profile of the students in this school might be different than the ones in other schools. Therefore, the generalizability of the findings to other school contexts might be limited.
- It was not possible to randomly assign students to experimental groups in this study due to three intact groups in the school. First, it caused an unequal number of participants in the two experimental groups. Although the sample size in both groups was not less than 20, there were considerably more participants in the group WRS. Second, subject characteristics of the experimental groups might not be similar because of the use of intact groups. Though there were no significant differences between the groups with regard to some variables related to the study, there could be some variables unmeasured and in which the groups differed (e.g., domain knowledge and

writing skill). They might have confounded the findings in the quantitative strand of this study.

- Teachers of the intact groups were different. Even though they had similar characteristics and the researcher mainly administered the intervention, this might have brought about different teaching and learning process in the classrooms and might have affected students' performance in online FPA activities.
- FPA activities were conducted for only story and poem writings in the TLL course. If there were writing tasks on other genres or different performance tasks in different courses, the results of the study might not be the same.
- While the FPA activities of the first writing task were completed in the planned time frame during the semester, the second task was conducted in a shorter time at the end of the semester. The latter one also coincided with the final exam dates. Therefore, the time conditions of the two tasks were not the same.
- There was a loss of subjects in both experimental groups. Therefore, the results of the study were limited to the responses of the participants who completed the intervention.

CHAPTER 4

RESULTS

In this chapter, the results of the study are presented according to the five research questions. First, the findings comparing the groups W/ORS and WRS with regard to peer feedback provision in two writing tasks are provided. Second, whether the two groups differed in feedback uptake is answered for each writing task. Third, the perceived contributions of the online FPA environments are revealed and contrasted between the two groups. Fourth, the use of the regulation scaffolds in the online FPA environment are described based on students' records. Finally, participants' experiences in FPA activities are explained with interview data.

4.1 Difference in Peer Feedback Provision between the Groups W/ORS and WRS

The first research question is “Is there a significant mean difference between the groups W/ORS and WRS with respect to peer feedback provision in two writing tasks?”. It consists of two sub-questions. One is related to the number of feedback segments, and the second one is pertaining to the quality of peer feedback content. As a result, the two groups experiencing different online FPA designs are compared in terms of both the number of feedback segments and peer feedback content.

Overall results indicated that the group W/ORS wrote more feedback segments in both writing tasks, but it was significantly higher in the second task. In terms of quality of feedback content, the use of regulation scaffolds yielded significantly greater proportions of elaborations and negative verifications in the first writing task. However, there was no significant difference in the second writing task. Detailed findings are reported for two sub-questions and writing tasks in the following parts.

4.1.1 Difference in the Number of Feedback Segments between the Groups

Students wrote feedback on their peers' stories in the first task and on their poems in the second task. Afterward, feedback messages were divided into segments by following Strijbos et al.'s (2006) procedure. Table 4.1 presents descriptive statistics and group differences in both writing tasks.

Table 4.1 Descriptive Statistics and Results of Mann-Whitney *U* Tests Regarding the Number of Feedback Segments in Two Writing Tasks

Task	Group	<i>N</i>	<i>M</i>	<i>SD</i>	Mean rank	<i>U</i>	<i>Z</i>	<i>p</i>	<i>r</i>
#1	W/ORS	26	28.08	17.09	38.21	501.50	-.86	.39	.10
	WRS	44	24.48	14.27	33.90				
#2	W/ORS	23	24.17	13.99	33.83	257.00	-2.04	.04	.27
	WRS	33	16.21	6.83	24.79				

In the first task, the total number of segments in feedback messages was 730 in the group W/ORS ($N = 26$) and 1077 in the group WRS ($N = 44$). The mean number of feedback segments per student was 28.08 ($SD = 17.09$) in the group W/ORS, while it was 24.48 ($SD = 14.27$) in the group WRS (Table 4.1). These findings imply that the group W/ORS wrote more feedback segments than the group WRS in the first task.

The Mann-Whitney *U* test was conducted to investigate whether the two groups significantly differed with respect to the number of peer feedback segments (Table 4.1). It was not appropriate to perform the independent samples *t*-test or parametric test as the normality assumption was violated (Appendix I). The Mann-Whitney *U* test indicated that there was no significant difference in the number of feedback segments between the groups W/ORS (Mean rank = 38.21) and WRS (Mean rank = 33.90) in the first task, $U = 501.50$, $z = -.86$, $p > .05$.

In the second task, the group W/ORS ($N = 23$) had 556 feedback segments in total, and the group WRS ($N = 33$) 535 segments. The mean number of feedback segments per student was 24.17 ($SD = 13.99$) in the group W/ORS, whereas it was 16.21 ($SD = 6.83$) in the group WRS (Table 4.1). The difference between the mean numbers of the two groups is quite noticeable in the second writing task.

The results of the Mann-Whitney U tests indicated that the number of feedback segments of the group W/ORS (Mean rank = 33.83) was significantly higher than that of the group WRS (Mean rank = 24.79), $U = 257.00$, $z = -2.04$, $p < .05$ (Table 4.1). A small to medium effect size was found ($r = .27$). It was inferred that the design of the online FPA environment WRS negatively and significantly affected the number of feedback segments in the second writing task.

4.1.2 Difference in Feedback Content between the Groups

Peer feedback segments in the two writing tasks were analyzed in terms of peer feedback style, verification type, and elaboration type based on Gielen and De Wever's (2015c) coding scheme. Then, the proportions of elaborations, negative verifications, and suggestive elaborations were calculated. They were used to define the balance between verifications and elaborations in total feedback segments, the balance between positive and negative verifications in total verification segments, and balance between informative and suggestive elaborations in total elaboration segments, respectively. The groups W/ORS and WRS were compared with regard to these proportions in two writing tasks to investigate the effect of regulation scaffolds on the quality of peer feedback content. Table 4.2 presents descriptive statistics and group differences in both writing tasks.

Table 4.2 Descriptive Statistics regarding Peer Feedback Content in Two Writing Tasks

Category	Variable	Task #1		Task #2	
		Group W/ORS <i>M (SD)</i>	Group WRS <i>M (SD)</i>	Group W/ORS <i>M (SD)</i>	Group WRS <i>M (SD)</i>
Peer feedback style	Verifications per student	17.38 (9.28)	12.30 (5.97)	15.17 (7.33)	10.48 (3.51)
	Elaborations per student	9.96 (8.37)	11.57 (9.60)	8.57 (7.33)	5.30 (4.14)
	Proportion of elaborations per student	.33 (0.16)	.44 (0.19)	.30 (0.16)	.31 (0.16)
Verification type	Positive verification per student	11.77 (6.95)	6.18 (4.19)	10.74 (5.48)	7.88 (2.62)
	Negative verification per student	5.15 (3.85)	5.41 (3.79)	3.26 (2.24)	2.21 (2.01)
	Proportion of negative verifications per student	.31 (0.21)	.48 (0.26)	.23 (0.11)	.21 (0.15)
Elaboration type	Informative elaborations per student	4.69 (4.58)	4.36 (3.46)	5.09 (5.53)	2.55 (2.18)
	Suggestive elaborations per student	5.27 (5.05)	7.20 (7.93)	3.48 (3.16)	2.76 (2.75)
	Proportion of suggestive elaborations per student	.52 (0.32)	.55 (0.28)	.40 (0.31)	.48 (0.34)

In the first task, with respect to peer feedback style, the group W/ORS wrote more feedback segments in verification type than the group WRS, whereas the group WRS one had a higher number of elaborations and proportion of elaborations per student than the group W/ORS (Table 4.2). Concerning the verification style, positive verification segments of the group W/ORS were higher than the segments of the group WRS although the number of negative verification segments was almost the same in the two groups. Accordingly, the group W/ORS had a lower proportion of negative verification than the group WRS. Lastly, with regard to the elaboration type, the two groups wrote a similar amount of informative elaborations, whereas the group WRS had higher suggestive elaborations than the group W/ORS. However, the proportion of suggestive elaborations was nearly the same in the two groups.

Mean differences between the two groups on the combination of peer feedback content variables were compared. The variables were proportions of elaborations, negative verifications, and suggestive elaborations. Since there were multiple continuous dependent variables, one-way MANOVA was chosen for the comparison of the groups. It was appropriate to conduct MANOVA since the results of the assumption checks for MANOVA were satisfactory (Appendix I). After performing MANOVA, different test statistics yielded the same F since the independent variable had two levels (Tabachnick & Fidell, 2013). The tests indicated significant effect of online environment design WRS on the combination of peer feedback content variables in the first writing task, Pillai's Trace = .15, $F(3, 66) = 3.82$, $p = .014$, partial $\eta^2 = .148$. It was a large effect explaining 14.8% of the variance of the peer feedback content.

Separate ANOVA results were evaluated to determine to what extent the groups differed in the dependent variables. More conservative alpha level was applied to adjust for inflated Type I error. The new alpha level was .017 ($= .05 / 3$) as a result of Bonferroni correction. ANOVAs revealed significant and medium effect on proportion of elaborations, $F(1, 68) = 6.22$, $p < .017$, partial $\eta^2 = .08$, and negative verifications, $F(1, 68) = 7.90$, $p < .017$, partial $\eta^2 = .104$; but non-significant effect

on proportion of suggestive elaborations, $F(1, 68) = .15, p > .017$ (Table 4.3). In other words, the group WRS had significantly higher proportions of elaborations and negative verifications in feedback messages than the group W/ORS in the first task. It means that the group WRS had higher feedback quality in the first task as there was more balance between verifications and elaborations and between positive and negative verifications in their peer feedback. On the other hand, the group W/ORS gave more verifications than elaborations and more positive verifications than negative verifications in their peer feedback.

Table 4.3 Results of Multivariate and Univariate Analyses of Variance for Peer Feedback Content Variables in the First Writing Task

Variable	MANOVA $F(3, 66)$	ANOVA		
		Prop. of elaborations $F(1,68)$	Prop. of negative verifications $F(1,68)$	Prop. of suggestive elaborations $F(1,68)$
Group	3.82*	6.22**	7.90**	.15

Note. * $p < .05$, ** $p < .017$

In the second task, the number of feedback segments of the group W/ORS was significantly higher than the group WRS (Table 4.1). Correspondingly, scores of all peer feedback content variables except proportions of elaborations and suggestive elaborations were greater in the group W/ORS (Table 4.2). With respect to peer feedback style, the numbers of verifications and elaborations per student in the group W/ORS were higher than the group WRS' number of verifications and elaborations. However, the proportion of elaborations was almost the same in the two groups in the second task. Concerning the verification style, the group W/ORS wrote more positive and negative verification than the group WRS. However, the proportion of negative verifications did not differ considerably in the two groups. With regard to elaboration type, the group W/ORS had higher informative and suggestive elaborations than the group WRS. On the other hand, the group WRS' proportion of suggestive elaborations was greater than the group W/ORS.

To investigate the effect of the online FPA design WRS on the set of peer feedback content proportions, one-way MANOVA was performed. Assumption checks for MANOVA yielded satisfactory results (Appendix I). MANOVA tests revealed that the groups W/ORS and WRS did not differ significantly on the combination of peer feedback content proportions in the second writing task, Pillai's Trace = .02, $F(3, 52) = .40$, $p = .76$. As a significant difference between the groups did not exist, there was no need to examine ANOVA results. Consequently, it was concluded that online FPA design WRS did not influence the quality of peer feedback content in the second task, although it significantly affected it in the first task.

4.2 Difference in Feedback Uptake between the Groups W/ORS and WRS

The second research question asks "Do the groups W/ORS and WRS significantly differ in feedback uptake in two writing tasks?". It includes three sub-questions. Within the scope of the sub-questions, first, difference in reading peer feedback between the groups W/ORS and WRS is examined. Second, the groups W/ORS and WRS are compared with respect to revision of writing. Third, the study aims to investigate whether the groups W/ORS and WRS differ the implementation rate of peer feedback.

Overall results firstly revealed that reading peer feedback significantly differed between the two groups in the first task by favoring the group WRS, whereas it did not differ in the second task. Second, the revision of writings was not performed by the majority of the students in both groups and tasks, and regulation scaffolds did not affect revision activity. Finally, students revising their writings used both peer and self-feedback. The group W/ORS implemented a significantly higher proportion of accurate peer feedback than the group WRS in the first task; however, there was no significant difference between the groups in the second task. Detailed findings are reported for three sub-questions and two writing tasks in the following parts.

4.2.1 Difference in Reading Peer Feedback between the Groups

Students' logs in the SWAPPER were examined to determine whether they read peer feedback they received. Accordingly, a categorical variable, reading peer feedback, was created with "not read" and "read" values. Afterward, the difference in reading peer feedback between the groups W/ORS and WRS was analyzed for two writing tasks. Table 4.4 is the cross-tabulation of the group and reading peer feedback variables and presents frequency counts and percentages in two writing tasks.

Table 4.4 Frequency Distribution Regarding Reading Peer Feedback by the Groups W/ORS and WRS in Two Writing Tasks

Task	Group		Reading peer feedback		Total
			Not read	Read	
#1	W/ORS	Count	8	18	26
		Percentage within W/ORS	30.77	69.23	100
	WRS	Count	2	42	44
		Percentage within WRS	4.55	95.45	100
#2	W/ORS	Count	2	22	24
		Percentage within W/ORS	8.33	91.67	100
	WRS	Count	1	36	37
		Percentage within WRS	2.70	97.30	100

Task #1: Fisher's exact $p = .004$, $\phi = .36$

Task #2: Fisher's exact $p = .56$

In the first task, there were 26 students whose peers sent them feedback in the group W/ORS. Among them, 18 students (69.23%) read their feedback. In the group WRS, 44 students received peer feedback. Of them, 42 students (95.45%) read their feedback. Chi-square test of independence was chosen to investigate whether two categorical variables are independent of each other, but one of its assumptions was violated. In particular, the expected frequency of one cell was less than 5. Therefore, Fisher's exact test was used. It yielded significant alpha value ($p = .004$; $\phi = .36$).

Hence, it was concluded that reading peer feedback differed significantly between the groups W/ORS and WRS in the first writing task by favoring the group WRS. In other words, the students in the group WRS were more likely to read peer feedback they received than the group W/ORS in the first task. The effect size was medium, according to Cohen's (1988) criteria.

In the second task, the number of students whose peers sent them feedback was 24 in the group W/ORS and 37 in the group WRS (Table 4.4). In the group W/ORS, 22 students (91.67%) read peer feedback, whereas, in the group WRS, 36 students (97.30%) read peer feedback. In brief, almost all students read the feedback they received from their peers in the second task. Consequently, Fisher's exact test resulted in an insignificant probability value ($p = .56$) indicating no difference in peer feedback reading between the two groups. In other words, the use of the online FPA environment WRS and peer feedback reading were independent of each other in the second task.

4.2.2 Difference in Revision of Writing between the Groups

In the last activity of FPA, the students were expected to revise their writings based on peer or self-feedback. Their records in the SWAPPER were analyzed to calculate how many of the students reading peer feedback revised their writings. As a result, a categorical variable (revision of writing) was created with "not revised" and "revised" values. Then, whether the groups W/ORS and WRS differed in revision was investigated for two writing tasks. Table 4.5 provides frequency counts and percentages of the students in the groups who revised their writings in two writing tasks.

Table 4.5 Frequency Distribution Regarding Revision by the Groups W/ORS and WRS in Two Writing Tasks

Task	Group		Revision of writing		Total
			Not revised	Revised	
#1	W/ORS	Count	10	8	18
		Percentage within W/ORS	55.56	44.44	100
	WRS	Count	24	18	42
		Percentage within WRS	59.09	40.91	100
#2	W/ORS	Count	11	11	22
		Percentage within W/ORS	50.00	50.00	100
	WRS	Count	21	15	36
		Percentage within WRS	58.33	41.67	100

Task #1: $\chi^2 (1, n = 60) = .013, p = .91$

Task #2: $\chi^2 (1, n = 58) = .38, p = .54$

In the first task, eight (44.44%) out of 18 students in the group W/ORS revised their stories, and 18 (40.91%) out of 42 students in the group WRS made a revision (Table 4.5). In other words, more than half of the students in both groups did not revise their stories. Chi-square test of independence was conducted to examine whether the two groups differed in revision of writing. Assumptions of the test were met since a different participant derived each observation, and all expected frequencies were higher than 5. The test yielded insignificant value, $\chi^2 (1, n = 60) = .013, p = .91$. In other words, revision of stories did not vary between the groups W/ORS and WRS in the first task.

In the second task, the proportion of the students who completed the revision activity of FPA was not more than half of the students in the groups similar to the first task (Table 4.5). While 11 students (50%) out of 22 in the group W/ORS revised their poems, 15 students (41.67%) out of 36 in the group WRS made a revision. Chi-square test of independence revealed an insignificant value, $\chi^2 (1, n = 58) = .38, p = .54$. Therefore, revision of writing did not vary between the groups W/ORS and WRS

in the second task, too. On the whole, it was concluded that the use of the regulation scaffolds did not make a difference to learners' revision of their writings.

4.2.3 Difference in Implementation Rate of Peer Feedback between the Groups

Students' initial and revised writings were also compared to analyze the changes in their stories and poems. First, revisions stemming from peer or self-feedback were determined. Then, the implementation rate of the specific and accurate peer feedback was identified and compared between the two groups. Table 4.6 and Table 4.7 provides findings regarding revision based on peer feedback.

Table 4.6 Descriptive Statistics regarding Revision based on Peer Feedback in Two Writing Tasks

Task	Variable	Group W/ORS			Group WRS		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
#1	Feedback with shortcomings	8	5.38	4.31	18	8.61	4.39
	Specific and accurate feedback		4.00	2.93		7.28	4.52
	Implemented feedback		4.00	2.93		3.94	3.46
#2	Feedback with shortcomings	8	3.25	1.67	12	2.17	1.03
	Specific and accurate feedback		2.88	1.25		1.50	.67
	Implemented feedback		2.13	1.28		1.33	.65

Table 4.7 Results of Mann-Whitney *U* Test regarding Implementation Rate of Peer Feedback in Two Writing Tasks

Task	Group	<i>N</i>	<i>M</i>	<i>SD</i>	Mean rank	<i>U</i>	<i>Z</i>	<i>p</i>	<i>r</i>
#1	W/ORS	8	1.00	-	21.50	8.00	-3.66	.00	-.72
	WRS	18	.57	.30	9.94				
#2	W/ORS	8	.80	.27	8.75	34.00	-1.33	.18	-.30
	WRS	12	.92	.19	11.67				

In the first task, the students benefitted from both peer and self-feedback in revision. All students revising their writings in the group W/ORS ($N = 8$) implemented peer feedback; also, three of them used self-feedback. In the group WRS ($N = 18$), except one student, 17 students applied peer feedback in their stories. Moreover, 11 students benefitted from self-feedback. Revisions of the students were analyzed further to determine the implementation rate of peer feedback. Specific and accurate peer feedback with shortcomings was elicited to calculate the implementation rate. There were eight and 18 students who could make revisions based on peer feedback in the groups W/ORS and WRS, respectively.

Descriptive findings regarding revision are listed for the groups W/ORS and WRS in Table 4.6. The number of specific and accurate peer feedback students received was higher in the group WRS ($M = 7.28$, $SD = 4.52$) than the group W/ORS ($M = 4.00$, $SD = 2.93$) in the first task. However, the number of implemented feedback was almost the same in the two groups. With regard to the implementation rate of the feedback, the group W/ORS performed better than the group WRS ($M = .57$, $SD = .30$) in the first writing task since all students in the former group applied all comments (Table 4.7). Then, the Mann-Whitney U test was conducted to investigate whether there is a significant difference in the implementation rate of peer feedback. The independent samples t -test or parametric test was not performed as the sample size in the groups was too low. The Mann-Whitney U test indicated that the implementation rate of the group W/ORS (Mean rank = 21.50) was significantly greater than the group WRS' rate (Mean rank = 9.94) in the first writing task, $U = 8.00$, $z = -3.66$, $p < .05$, $r = -.72$ (Table 4.7).

In the second task, eight students among 11 who revised their poems in the group W/ORS implemented peer feedback; in addition, five of them used self-feedback. In the group WRS ($N = 15$), 12 students applied peer feedback, and seven students used self-feedback. The implementation rate of peer feedback was also determined in the second writing task. Three students from both groups were excluded from the analysis as they did not receive peer feedback specific, accurate, and with

shortcomings, although they revised their writings. As a result, there were eight and 12 students who could make a revision based on peer feedback in the groups W/ORS and WRS, respectively.

The students in the group W/ORS ($M = 2.88$, $SD = 1.25$) received higher number of specific and accurate peer comments than the ones in the group WRS ($M = 1.50$, $SD = .67$) in the second task (Table 4.6). Accordingly, the number of implemented feedback was higher in the group W/ORS. Concerning the implementation rate, the group WRS' mean rate ($M = .92$, $SD = .19$) was greater than the group W/ORS' mean rate ($M = .80$, $SD = .27$) (Table 4.7). However, the results of the Mann-Whitney U test revealed that there was no significant difference in implementation rate of the peer feedback between the groups W/ORS (Mean rank = 8.75) and WRS (Mean rank = 11.67) in the second writing task, $U = 34.00$, $z = -1.33$, $p > .05$, $r = -.30$.

4.3 Difference in Perceived Contributions of the Online FPA Environment between the Groups W/ORS and WRS

The third research question is “Is there a significant difference between the groups W/ORS and WRS with respect to the perceived contributions of the online FPA environment?”. Perceived contributions were measured with a questionnaire including the following aspects: self-assessment, peer feedback provision, peer feedback uptake, peer cooperation, and learning outcomes on writing. Table 4.8 provides descriptive statistics regarding these aspects.

Mean values ranged from 5.67 to 6.28 in the seven-point scale (Table 4.8). It means that students from both groups nearly agreed or agreed that online FPA environments contributed to them. Except for peer feedback provision, the group WRS perceived slightly higher contributions of the online FPA environment. However, the difference regarding perceived learning outcomes on writing was more noticeable.

Table 4.8 Descriptive Statistics Regarding Perceived the Contributions of the Online FPA Environments

Aspect	Group W/ORS (<i>N</i> = 20)		Group WRS (<i>N</i> = 36)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-assessment	6.00	.68	6.09	.64
Peer feedback provision	6.28	.81	6.17	.72
Peer feedback uptake	5.74	.99	5.80	.74
Peer cooperation	5.78	.87	5.82	.76
Learning outcomes on writing	5.67	1.03	6.09	.71

Questionnaire scores of the students in the two groups were compared to answer the third research question. The Mann-Whitney *U* test was conducted for each item instead of the independent samples *t*-test as the normality assumption was not met (Appendix I). Table 4.9 provides descriptive statistics and results of the Mann-Whitney *U* tests.

Overall results indicated that there was no significant difference between the two groups in terms of the items regarding perceived contributions of the online FPA environment to self-assessment, peer feedback provision, and peer feedback uptake. Concerning peer cooperation, the groups significantly differed in one item out of three. The group WRS perceived the online FPA environment's contribution to interaction with friends about writing homework significantly more than the group W/ORS. With respect to perceived learning outcomes on writing, there was significant difference between the groups in one item out of three. The group WRS perceived contribution of the online FPA environment to the enhancement of knowledge about the characteristics of the writing genre significantly more than the group WRS. In the following parts, they are explained in detail according to the five aspects of the questionnaire.

Table 4.9 (continued)

Peer Feedback Uptake										
11. It evoked a willingness to examine the feedback I received from my friends.	5.55	1.61	26.70	5.97	.94	29.50	324.00	-.64	.52	-.09
12. It enabled me to become open to my friends' criticisms.	6.05	.83	29.85	5.78	1.31	27.75	333.00	-.49	.63	-.06
13. It enabled me to assess the quality of feedback I received from my friends.	5.80	1.11	27.13	5.97	.97	29.26	332.50	-.49	.62	-.07
14. I enabled me to improve my writing homework according to my friends' feedback.	5.55	1.28	28.45	5.47	1.58	28.53	359.00	-.02	.99	.00
Total	5.74	.99		5.80	.74					
Peer Cooperation										
15. It enabled me to help my friends with their homework through my feedback.	6.10	1.17	31.38	5.81	1.17	26.90	302.50	-1.05	.30	-.14
16. It enabled me to receive help with my writing homework from my friends.	5.85	1.18	31.30	5.64	1.02	26.94	304.00	-1.00	.32	-.13
17. It enabled me to interact with my friends about my writing homework.	5.40	1.14	22.23	6.03	1.23	31.99	234.50	-2.24	.025	-.30
Total	5.78	.87		5.82	.76					
Learning Outcomes on Writing										
18. It enabled me to increase my knowledge about the characteristics of the writing genre.	5.60	.88	20.40	6.22	1.27	33.00	198.00	-2.94	.003	-.39
19. It helped me to improve my written expression skill.	5.85	1.09	25.05	6.25	.77	30.42	291.00	-1.26	.21	-.17
20. It enabled me to increase my confidence in written expression.	5.55	1.57	27.73	5.81	1.11	28.93	344.50	-.28	.78	-.04
Total	5.67	1.03		6.09	.71					

Self-assessment

The self-assessment aspect consisted of five items (Table 4.9). Among five items, the highest mean in the groups W/ORS ($M = 6.15$, $SD = 1.04$) and WRS ($M = 6.39$, $SD = .77$) belonged to the item measuring the contribution of the environment to the assessment of writing quality. The items with the lowest mean were the contribution of the environment to the consideration of the ways to improve writing in the group W/ORS ($M = 5.85$, $SD = 1.14$), and to the realization of whether writing strategies were useful in the group WRS ($M = 5.69$, $SD = 1.17$).

The mean ranks of the groups were compared with the Mann-Whitney U tests. The mean ranks of the group WRS were higher than the mean ranks of the group W/ORS except for one item (Table 4.9); however, there was no significant difference between the two groups. In other words, two groups did not differ in the perceived contributions of the online FPA environment to the identification of assessment criteria for writing ($U = 326.50$, $z = -.65$, $p > .05$), assessment of quality of writing ($U = 319.50$, $z = -.76$, $p > .05$), provision of self-feedback ($U = 344.50$, $z = -.29$, $p > .05$), consideration of the ways to improve writing ($U = 331.50$, $z = -.52$, $p > .05$), and realization of whether writing strategies were useful ($U = 333.50$, $z = -.47$, $p > .05$).

Peer Feedback Provision

The contributions of the online FPA environment to peer feedback provision were measured with five items (Table 4.9). The item regarding the contribution of the environment to the use of kind language had the highest mean score in the groups W/ORS ($M = 6.45$, $SD = .88$) and WRS ($M = 6.47$, $SD = 1.11$). The item with the lowest mean score in the groups W/ORS ($M = 6.05$, $SD = 1.19$) and WRS ($M = 5.92$, $SD = 1.05$) was regarding the contribution to the provision of detailed feedback.

The Mann-Whitney U test resulted in mean ranks for the comparison of the two groups. The mean ranks of the group W/ORS were higher in the three items about the identification of the points on which they would provide peer feedback and the

provision of detailed and fair peer feedback. In contrast, the group WRS had higher ranks in the two items about the identification of how to give peer feedback and use of kind language. However, the differences between the mean ranks of the two groups were not significant. In particular, the groups did not differ in the perceived contributions of the online FPA environment to the identification of how to give peer feedback ($U = 317.00$, $z = -.79$, $p > .05$), identification of the points on which they would provide peer feedback ($U = 324.50$, $z = -.65$, $p > .05$), provision of detailed peer feedback ($U = 324.00$, $z = -.65$, $p > .05$), provision of fair peer feedback ($U = 336.50$, $z = -.45$, $p > .05$), and use of kind language ($U = 347.00$, $z = -.27$, $p > .05$).

Peer Feedback Uptake

The contribution of the online FPA environment to peer feedback uptake was examined with four items (Table 4.9). The group W/ORS had the highest mean in the item about openness to criticisms ($M = 6.05$, $SD = .83$), and the lowest mean in the items about willingness to examine peer feedback ($M = 5.55$, $SD = 1.61$) and improvement of writing according to peer feedback ($M = 5.55$, $SD = 1.28$). On the other hand, the group WRS had the highest mean in the items about willingness to examine peer feedback ($M = 5.97$, $SD = .94$) and assessment of feedback quality ($M = 5.97$, $SD = .97$). The lowest mean in the group WRS belonged to the item about the improvement of writing based on peer feedback ($M = 5.47$, $SD = 1.58$) similar to the group W/ORS.

The Mann-Whitney U test was performed on whether the two groups differ in the perceived contributions of the online FPA environment to peer feedback uptake. However, no significant difference was found. In other words, the groups did not differ in the perceived contributions of the environment to the willingness to examine peer feedback ($U = 324.00$, $z = -.64$, $p > .05$), openness to criticisms ($U = 333.00$, $z = -.49$, $p > .05$), assessment of feedback quality ($U = 332.50$, $z = -.49$, $p > .05$), and improvement of writing according to peer feedback ($U = 359.00$, $z = -.02$, $p > .05$).

Peer Cooperation

The questionnaire also included three items to measure the contributions of the online FPA environment to peer cooperation (Table 4.9). Among all the items in the questionnaire, the group W/ORS obtained the lowest mean in the item regarding the contribution of the environment to the interaction with friends about writing homework ($M = 5.40$, $SD = 1.14$). On the other hand, the mean score of the group WRS on this item was 6.03 ($SD = 1.23$).

The Mann-Whitney U test was conducted to investigate whether there is a significant difference between the mean ranks of the two groups for the items regarding peer cooperation. The group WRS (Mean rank = 31.99) perceived higher and significant contribution of the online FPA environment to the interaction with friends about writing homework than the group W/ORS (Mean rank = 22.23), ($U = 234.50$, $z = -2.24$, $p < .05$). The effect size was medium ($r = -.30$) according to Cohen's (1988) criteria. However, the groups did not differ significantly concerning the perceived contributions of the online FPA environment to the provision ($U = 302.50$, $z = -1.05$, $p > .05$) and reception of peer help ($U = 304.00$, $z = -1.00$, $p > .05$).

Learning Outcomes on Writing

The last items in the survey were related to the contributions of the online FPA environment to learning outcomes on writing. The highest mean was obtained in the item regarding the improvement of written expression skill in the groups W/ORS ($M = 5.85$, $SD = 1.09$) and WRS ($M = 6.25$, $SD = .77$). The lowest item belonged to the item regarding the increase in confidence in written expression in the groups W/ORS ($M = 5.55$, $SD = 1.57$) and WRS ($M = 5.81$, $SD = 1.11$). It was also noticeable that the group WRS' means were higher than the group W/ORS' means in the three items measuring learning outcomes.

The mean ranks of the two groups were compared with the Mann-Whitney U test. In line with mean scores, the mean ranks of the group WRS were above the mean ranks of the group W/ORS. The Mann-Whitney U test yielded a significant difference

between the groups W/ORS (Mean rank = 20.40) and WRS (Mean rank = 33.00) with regard to the perceived contribution of the online FPA environment to the enhancement of knowledge about the characteristics of the writing genre ($U = 198.00$, $z = -2.94$, $p < .05$). In this regard, the group WRS perceived significantly higher contributions. The effect size was medium ($r = -.39$). However, there was no significant difference between the mean ranks for the items about improvement of written expression skill ($U = 291.00$, $z = -1.26$, $p > .05$) and confidence in written expression ($U = 344.50$, $z = -.28$, $p > .05$).

4.4 Use of the Regulation Scaffolds in FPA Activities of the Group WRS

This section answers the fourth research question: “How is the use of regulation scaffolds in FPA activities of the group WRS in two writing tasks?”. Online records of the students in the group WRS were examined to determine usage percentage of the scaffolds, identify problematic use, and analyze peer interaction. Table 4.10 provides frequency distribution regarding the use of the scaffolds. It indicates that the usage percentage of all regulation scaffolds except for the dialog scaffold increased in the second task. The least used scaffold was the self-assessment scaffold in the revision activity in both tasks. The results are described in the following sections in detail according to the four activities in FPA: writing, peer feedback provision, peer feedback reception, and revision.

Table 4.10 Frequency Distribution Regarding the Use of Scaffolds in the Activities of FPA in Two Writing Tasks

Activity	Scaffold	Task #1			Task #2		
		TP	<i>n</i>	%	TP	<i>n</i>	%
Writing	Goal setting and planning	44	44	100.00	38	38	100.00
	Self-assessment		25	56.82		28	73.68
	Feedback request		25	56.82		27	71.05
Feedback provision	Reception of feedback request	44	33	75.00	33	30	90.91
	Reflection on feedback provision		32	72.73		30	90.91
Feedback reception	Mindful processing of feedback	42	36	85.71	36	33	91.67
	Dialog about received feedback		34	80.95		26	72.22
Revision	Self-assessment	18	6	33.33	15	7	46.67

Note. TP means the total number of participants who completed the activity, where *n* represents the number of students who used the scaffold among those participants.

4.4.1 Use of the Regulation Scaffolds in Writing

The writing activity included scaffolds for goal setting and planning, self-assessment, and feedback request. Before students composed their writings, they had to answer the questions in goal setting and planning scaffold. After or during writing, they could use the self-assessment scaffold. Finally, they could send feedback requests to their prospective feedback providers.

Although the majority of the students used the aforementioned scaffolds, goal setting and planning was the one all students experienced in the writing activity. This is because students had to use it before composing their writings; otherwise, they couldn't access to the writing page in the SWAPPER. In comparison to goal setting and planning, the scaffolds for self-assessment and feedback requests were less used by the students (Table 4.10). However, the percentage of students who used them increased in the second task. The percentage in the use of self-assessment scaffold

increased from 56.82 to 73.68, and the percentage in the use of feedback requests scaffold increased from 56.82 to 71.05 in the second task.

Among the scaffolds in the writing activity, goal setting and planning and feedback requests required students to answer open-ended questions. In the goal setting and planning scaffold, the open-ended questions were for planning writing. The questions in the first task (story writing) were related to conflict, characters, point of view, setting and time, and plot of the story. Although the majority of the students responded to the questions, some problematic answers were observed. For instance, some students wrote that there would not be a conflict ($n = 4$) and a setting and time ($n = 1$) though they were components of an event story. Also, one student added only dot to skip the question. In the second task (poem writing), the questions were related to the image, the unit of poetry, meter, and consonant elements of the poem. After the analysis of students' responses, problematic answers were identified again. They were more frequent in the second task compared to the first task. Some students wrote that they did not know images ($n = 2$) and consonance elements of their poems ($n = 1$), and there would not be images ($n = 6$) and consonance elements ($n = 1$) in their poems even if their use was suggested. In addition, 11 students could not write a specific and clear answer to the question regarding images. For example, they mentioned that they would use several images and figures of speech, or they stated the theme of their poems. It can indicate a lack of understanding or misunderstanding about writing genres.

The other scaffold in which students provided qualitative information was feedback requests. By using this scaffold, the students in the group WRS could express their specific needs and questions to their prospective feedback providers. The content of students' request messages was analyzed to describe the purpose of the feedback-seeking behavior in detail in two writing tasks.

Content of Feedback Requests

Messages consisted of the sentences that included an explanation about writing choices, self-assessment, and requests; accordingly, themes were created. Table 4.11 in the following page presents thematic analysis results for the feedback requests sent in two writing tasks. Sample statements regarding the codes are also provided in Table 4.11.

Some feedback requests started with the sentences that provided an ***explanation about writing choices***. In particular, some students gave preliminary information about their writings to their feedback providers before they express their requests. For example, in poem writing activity, the students ($n = 4$) revealed themes, meter, and images of their poems before requesting feedback.

The feedback request messages included ***self-assessment*** sentences, as well. In particular, the students wrote both *negative* ($f_{total} = 39$) and *positive self-feedback* ($f_{total} = 28$) to share how they evaluated their own performance with their feedback providers before their requests. While they confirmed their performance with positive self-feedback, they revealed erroneous or missing aspects in their performance with negative self-feedback. In addition to positive and negative self-feedback, some students expressed only their *uncertainty* ($f_{total} = 10$) about their writing performance on the related criteria. They could not state whether their performance was well-done, erroneous, or deficient explicitly.

The intriguing finding was that students wrote more negative self-feedback ($n = 16$, $f = 25$) than positive feedback ($n = 6$, $f = 11$) in the first writing task, whereas the frequency of positive feedback ($n = 8$, $f = 17$) was higher than the frequency of negative feedback ($n = 11$, $f = 14$) in the second task. It is also important to note that eight students in the second task stated only positive self-feedback in the request scaffold. Besides, the number of the students uncertain about their performance was more in the first task ($n = 6$, $f = 7$) compared to the second task ($n = 2$, $f = 3$). These findings imply that the request scaffold in the first writing task served more for negative self-feedback and uncertainties.

Table 4.11 Thematic Analysis Results Regarding the Content of Feedback Requests in Two Writing Tasks

Theme	Subtheme / Code	Task #1		Task #2		Sample statement
		n	f	n	f	
Self-assessment	Explanation about writing choices	1	1	4	4	"I chose the theme as love." [17] "I tried to associate death with centuries of sleep." [18]
	Negative self-feedback	16	25	11	14	"In some parts of the story, I thought that the flow of the event was disconnected from the story." [19] "I don't think the title is very appropriate and noticeable." [20]
	Positive self-feedback	6	11	8	17	"I think I maintain theme integrity." [21] "I think that I used the narrative techniques and features well." [22]
	Uncertainty	6	7	2	3	"I'm not sure about the image and rhetoric I use." [23]
	Request for performance information	22	50	22	54	"Are the punctuation marks in the correct place and accurate?" [24]
Request	General information	16	30	14	34	"Have I used the narrative techniques correctly?" [25]
	Specific information	12	20	14	20	"Is my description of Neriman appropriate for that part?" [26] "What do you think about my matching between my theme, or separation, and the scent of lavender?" [27]
	Request for improvement information	15	23	9	11	"Which narrative features do you think I should work on more?" [28]
	General information	11	16	6	8	"If there is a part you don't like, how can I fix it?" [29]
	Specific information	7	7	3	3	"I guess there is no harmony between the first lines and the last lines. What can I do to maintain harmony according to you?" [30]
No request	General request	-	-	1	4	"I'll be glad if you help." [31]
	No request	-	-	1	1	"I do not have question." [32]

Finally, there were **request** sentences in students' messages. They were categorized into four types: request for performance information, request for improvement information, general request, and no request.

Request for performance information aimed to seek information about the writing performance, such as performance level and mistakes related to an assessment criterion. A similar amount of requests for performance information was sent in the first ($f = 50$) and second writing tasks ($f = 54$). The requested performance information was also divided into general and specific information. While the request for general information ($f_{total} = 64$) asked overall performance about the assessment criterion, the request for specific information ($f_{total} = 40$) sought information about a particular place in writing, a particular aspect of the criterion, or a particular characteristic of the writing. Students' requests for performance information were mostly general in both first ($n = 16, f = 30$) and second ($n = 14, f = 34$) tasks.

Requests for improvement information asked how to improve the writing performance related to an assessment criterion. More requests for improvement information were sent in the first task ($f = 23$) than in the second task ($f = 11$). Requests for improvement information were also categorized into general and specific information similar to the requests for performance information. Compared to the requests for general improvement information, the number of requests for specific improvement information was lower in both first ($n = 7, f = 7$) and second ($n = 3, f = 3$) writing tasks.

Finally, there were also *general request* and *no request* sentences in the second writing task. Regarding the general request, one student wrote only, "I will be happy if you help me." for four assessment criteria. Concerning no request code, one student expressed that she did not have a question in the scaffold for feedback requests.

4.4.2 Use of the Regulation Scaffolds in Peer Feedback Provision

The regulation scaffolds of peer feedback provision activity were the reception of feedback requests and reflection on feedback provision. By using these scaffolds, the students could see their peers' feedback requests under related criteria in feedback provision form and reflect on feedback provision for their own writing performance and process. They were used by a higher proportion of students in the second writing task compared to the first task (Table 4.10).

The number of students receiving feedback request was 33 in the first task and 30 in the second task. However, there were students who did not answer all feedback requests in both tasks. While nine students in the first task did not respond to some requests, there were four students in the second task who skipped requests. It was also observed that the student, writing "I did not have a question" in the scaffold for feedback request, could not receive any feedback from two feedback providers on the related assessment criterion.

4.4.3 Use of the Regulation Scaffolds in Peer Feedback Reception

The regulation scaffolds of feedback reception activity were mindful processing of feedback and dialog about received feedback. After the students read received feedback, they could think about the feedback with the question prompts and interact with their feedback providers and receivers about the received feedback by using these scaffolds.

While the use of feedback processing scaffold increased in the second task, the usage percentage of the dialog scaffold decreased (Table 4.10). In fact, it was the only scaffold that was used by a lower proportion of the students in the second task compared to the first task. Its usage percentage was 80.85 in the first task, whereas it was 72.22 in the second task. The use of the dialog scaffold was analyzed further

to investigate peer interaction in feedback reception and compare it between two writing tasks.

The amount of dialog between feedback providers and receivers in each writing task is illustrated in Figure 4.1. One dialog was established when one feedback receiver sent a message to one of their feedback providers. A total of 59 and 50 dialogs were established in the first and second writing tasks, respectively. However, about one-third of the dialogs were read by feedback providers in both tasks. Through the responses of feedback providers, peer interaction continued for 12 dialogs in the first task and 13 dialogs in the second task. Nevertheless, only one feedback receiver in the first task answered to her feedback provider's message. These findings indicated a problem with the sustainability of the dialog in feedback reception activity.

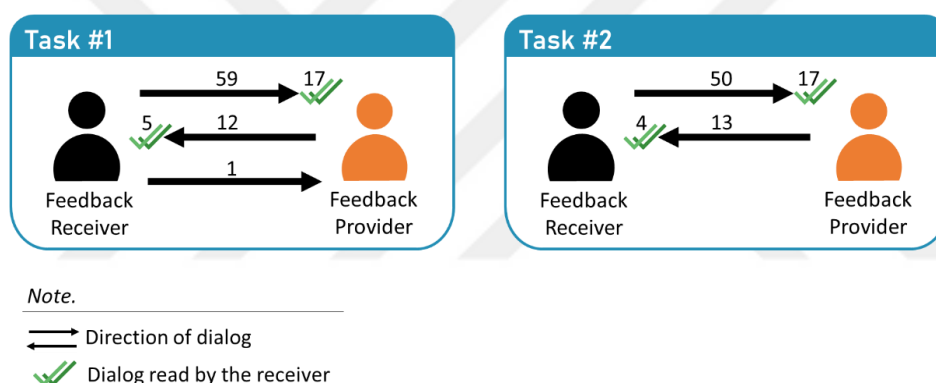


Figure 4.1. The amount of dialog in two writing tasks

Each sentence in the feedback receivers' and providers' messages was also analyzed to understand the content of the dialog. Accordingly, two main themes were created: feedback receivers' messages and feedback providers' messages. Table 4.12 and Table 4.13 list subthemes, categories, and codes of these themes.

Table 4.12 Thematic Analysis Results Regarding the Content of Feedback
Receivers' Messages in Dialog Scaffold in Two Writing Tasks

Subtheme	Category / Code	Task #1		Task #2	
		<i>n</i>	<i>f</i>	<i>n</i>	<i>f</i>
Clarification of writing		-	-	4	10
General thanks		28	47	24	44
Satisfaction with feedback	Satisfying	19	38	8	17
	Kindly-formulated	6	6	2	4
	Appreciating writing	4	5	3	5
	Not specified	2	3	3	5
	Useful for improvement	5	7	-	-
	Indicating mistakes	6	7	-	-
	Elaborated	4	4	1	1
	Comprehensible	2	2	2	2
	With specific suggestions	4	4	-	-
	Unsatisfying	10	18	1	1
	Not elaborated	6	7	-	-
	Missing on some criteria	3	3	-	-
	Incomprehensible	2	2	1	1
	Without specific suggestions	2	2	-	-
	Not responding to request	2	2	-	-
	Not useful for improvement	1	2	-	-
Agreement with the feedback	Agreeing	11	24	1	1
	Disagreeing	12	32	3	8
Plan for improvement	Planning	14	24	8	10
	Not planning	1	1	-	-
Request for the elaboration	Informative elaboration	6	7	3	3
	Suggestive elaboration	4	4	3	3

Table 4.13 Thematic Analysis Results Regarding the Content of Feedback Providers' Messages in the Dialog Scaffold in Two Writing Tasks

Subtheme	Code	Task #1		Task #2	
		<i>n</i>	<i>f</i>	<i>n</i>	<i>f</i>
Reply to thanks	You're welcome	5	6	5	5
	Thanks	1	1	2	2
	Positive feedback	-	-	2	3
	Smiling emoticon	1	1	-	-
	Pleasure for helping	1	1	-	-
Reply to disagreements	Advocating feedback	3	5	1	1
	Approving counter argument	2	2	-	-
	Positive feedback	1	2	-	-
	Respecting disagreement	-	-	1	1
Reply to requests / incomprehensible feedback	Informative elaboration	2	2	2	2
	Suggestive elaboration	1	2	1	1
	Positive feedback	-	-	1	1

Feedback Receivers' Messages

The sentences in feedback receivers' messages were coded and then divided into categories and subthemes. The subthemes were clarification of writing, general thanks, satisfaction with feedback, agreement with feedback, plan for improvement, and request for elaboration (Table 4.12).

First, feedback receivers' messages included ***clarification of writing***. Some students expressed the areas in the poems that were not clear or understandable for them while providing feedback in the second writing task. As a result, the authors of the poems ($n = 4$) responded to the feedback providers to clarify what they intended to mean in the messaging area. The dialog below presents a sample peer feedback and feedback receiver's answer to the question in the feedback.

Student 69 (feedback provider): I liked it very much in general, but I could not understand the integrity of the last two lines of the first stanza. Could you explain it, please? [33]

Student 49 (feedback receiver): A building houses a lot of people. It warms them, but people don't notice. In the slightest spillage of the building, they leave it and leave without thanking, despite all that experience. I wanted to explain this. [34]

Second, students provided **general thanks** in the dialog scaffold. In particular, they thanked their peers for their feedback, allocation of their time, and their attention even though they were not satisfied or did not agree with the feedback. Such sentences did not include any evaluation of the feedback. They were the most frequently used sentences in both first ($n = 28, f = 47$) and second ($n = 24, f = 44$) tasks. Two sentences with general thanks are as follows:

Student 27: First of all, thank you for your feedback. [35]

Student 34: First of all, thank you for your time and attention. [36]

Third, students' messages implied that some students were satisfied with their feedback, but some of them were not. Accordingly, **satisfaction with peer feedback** subtheme was created to indicate different feedback characteristics *satisfying* and *unsatisfying* for feedback receivers. Students were satisfied with feedback kindly-formulated, appreciating writing, useful for improvement, indicating mistakes, elaborated, comprehensible, and with specific suggestions in the first ($n = 19, f = 38$) and second ($n = 8, f = 17$) writing tasks. On the other hand, they were unsatisfied with feedback not elaborated, missing on some criteria, incomprehensible, without specific suggestions, not responding to request, and not useful for improvement in the first ($n = 10, f = 18$) and second ($n = 1, f = 1$) writing tasks. Compared to the second task, the students were more likely to explain both their satisfaction and dissatisfaction in the first task. Sample messages regarding satisfying and unsatisfying feedback are as follows:

Student 41: I was also very happy that you used a kind and sincere language. [37]

Student 61: Thanks to the feedback you gave, I saw my mistakes in spelling, clarity, and punctuation marks. [38]

Student 66: You have suggested beautiful sentences to make my story better within a logical framework. Thank you for that too. <3 [39]

Student 34: I wish you hadn't just written a sentence and quit. ... You told me what you think about my story in just one sentence. [40]

Student 52: I found your feedback incomplete because I realized that I made a lot of spelling and punctuation mistakes while reviewing my writing, but you haven't mentioned any of them. [41]

Student 50: You didn't say anything about what I should do. [42]

Fourth, feedback receivers' messages included sentences that reveal whether they agree or disagree with the received feedback. These sentences were coded as *agreeing* or *disagreeing*, and they were collected under **agreement with the feedback** theme. Among the students agreeing with the feedback, there were ones who mentioned the source of their mistakes in their messages as well. For example, two students attributed mistakes to a lack of knowledge, the use of keyboards, and overlooking the mistakes during writing. One student also justified why the proposed suggestion is reasonable to implement in writing while agreeing with feedback. Besides, some students disagreed with feedback or directly justified their writings. While justifying their writings, the students explained their writing aim, choices, and experiences. Moreover, some of them corrected their feedback providers' misconceptions about genre and writing rules. However, there were a few students who advocated their writing even if they were wrong. Finally, agreement ($n = 11$, $f = 24$) and disagreement ($n = 12$, $f = 32$) statements in the first task were quite more

frequent than agreement ($n = 1$, $f = 1$) and disagreement ($n = 3$, $f = 8$) statements in the second task. Sample agreement and disagreement statements are as follows:

Student 44: You are right, I never expected from myself, but I used the word 'parent' incorrectly. And the reason why I used a hyphen was that it was a sentence that would never be finished and ended abruptly in half. Honestly, I didn't know if it was '...'. [43]

Student 27: Since children are my target audience, I chose simpler sentences. [44]

Student 44: The reason why I didn't end it in a very explanatory way was that I wanted the reader to imagine the story in their own head. I guess it's a kind of wonder element. [45]

Fifth, feedback receivers revealed their **plan for improvement** in their messages. In particular, the students mentioned whether they would take into account the received feedback or correct problems in their writings based on the feedback in revision activity. There was only one student telling her feedback provider that she was *not planning* to revise her story in the dialog scaffold because she did not agree with the feedback. Except her, 14 students in the first task ($f = 24$) and eight students in the second task ($f = 10$) declared their *planning* to improve their writings after they thanked their feedback providers, agreed with them, or indicated their satisfaction with the feedback. Sample statements regarding the plan for improvement are as follows:

Student 34: I will definitely apply and correct what you wrote during the revision phase. [46]

Student 36: I will also try to add the thoughts of the characters to the text. [47]

Student 28: I wrote what was on my mind because I could not think of a different story. I probably can't change because there are no exemplary stories, no tales. [48]

Sixth, the students asked questions to **request for the elaboration** of the received feedback. These requests were divided into requests for either *informative elaboration* or *suggestive elaboration* in parallel with the feedback content analysis scheme. The requests for informative elaboration were sent to learn the places of the mistakes in writing, understand incomprehensible or unclear negative feedback, and receive more information about what they liked in particular in the first ($f = 7$) and second ($f = 3$) writing tasks. However, the requests mostly served for the localizations of the writing problems. In other words, the students asked in which word, sentence, paragraph, or line of poetry there were mistakes. The students also sent requests for suggestive elaboration in the first ($f = 4$) and second tasks ($f = 3$). They asked the feedback providers to give suggestions as their feedback providers gave negative feedback without suggestions or did not write feedback on some criteria. Moreover, some students requested more specific or direct suggestions or examples to improve their writings since the received ones were general. Sample statements about the requests for elaboration are as follows:

Student 33: In your comment on criterion 1, you mentioned that I adjacently wrote words that should be written separately. Could you indicate which ones, please? [49]

Student 47: I read the writing a few more times, but I could not understand the poetic tone. Can you explain this a little more? [50]

Student 32: You wrote that sadness was not revealed sufficiently. What do you suggest for me? [51]

Feedback Providers' Messages

As a reply to peers' messages, some feedback providers wrote messages, as well. These messages were coded and divided into themes based on what they replied to in feedback receivers' messages. Consequently, the following themes were created: reply to thanks, reply to disagreements, and reply to requests / incomprehensible feedback (Table 4.13).

First, there were general thanks or thanks for satisfying feedback in feedback receivers' messages. Feedback providers gave a **reply to thanks**, too. In particular, they wrote *you're welcome* ($f_{\text{total}} = 11$); presented *thanks* ($f_{\text{total}} = 3$) for their peers' effort in writing, response to their feedback, and satisfying feedback; continued to give *positive feedback* ($f_{\text{total}} = 3$); added only *smiling emoticon* ($f_{\text{total}} = 1$); and expressed *pleasure for helping* ($f_{\text{total}} = 1$). Sample participant sentences are as follows:

Student 53: Thank you for considering my feedback and responding. [52]

Student 60: You're welcome. Thank you for your story and for your effort. [53]

Second, some feedback providers gave a **reply to disagreements**. In the replies, they *advocated their feedback* ($f_{\text{total}} = 6$) by explaining or justifying their thoughts more, *approved counter-argument* ($f_{\text{total}} = 2$), gave *positive feedback* ($f_{\text{total}} = 2$) before advocating their feedback, and expressed her *respect for disagreement* ($f_{\text{total}} = 1$). However, not all feedback providers replied to disagreements because most of the students did not read incoming messages. It prevented a two-way dialog on controversial issues. Sample responses to disagreements are as follows:

Student 30: Then why didn't you write that everyone go down to breakfast? Since the word has no plural suffixes, it is really stinging in the eyes and ears. [54]

Student 39: I liked your story very much. Your way of thinking is also beautiful. Just as I liked your story very much, I was sorry when it ended suddenly. I wish it continued. [55]

Student 66: Of course, your own decision is the end result, but these are the results when examined. [56]

Third, some feedback providers gave a **reply to requests / incomprehensible feedback** to share more information about their feedback with their peers. In particular, they gave *informative* and *suggestive elaborations* and *positive feedback*. In informative elaboration sentences ($f_{\text{total}} = 4$), students localized mistakes in writing by indicating a particular word, sentence, or line of poetry. Moreover, one student explained what she intended to mean in her feedback. In suggestive elaboration sentences ($f_{\text{total}} = 3$), students provided more explicit suggestions to elucidate incomprehensible feedback. Finally, one student in the poem task gave positive feedback after informative elaboration. It is important to note that more than half of the requests for elaboration were not answered by feedback providers as the reading rate of the messages was low. Sample responses to requests or incomprehensible feedback were as follows:

Student 39: The word I mentioned in criterion 1 is 'always' towards the end of the third paragraph. [57]

Student 34: For example, 'Ebrar, be fast, I am very curious' sentence should have been 'Ebrar, be fast, I am very curious.' I meant there must be a period before the quotation mark. [58]

Summary of the Peer Interaction

In the group WRS, there were scaffolds to enhance peer interaction in FPA. In addition to peer feedback provision activity, the students could send feedback requests in the writing activity and establish dialog in the peer feedback reception activity. In this study, the content of the peer interaction between feedback providers and receivers was analyzed. Its summary is provided in Figure 4.2.

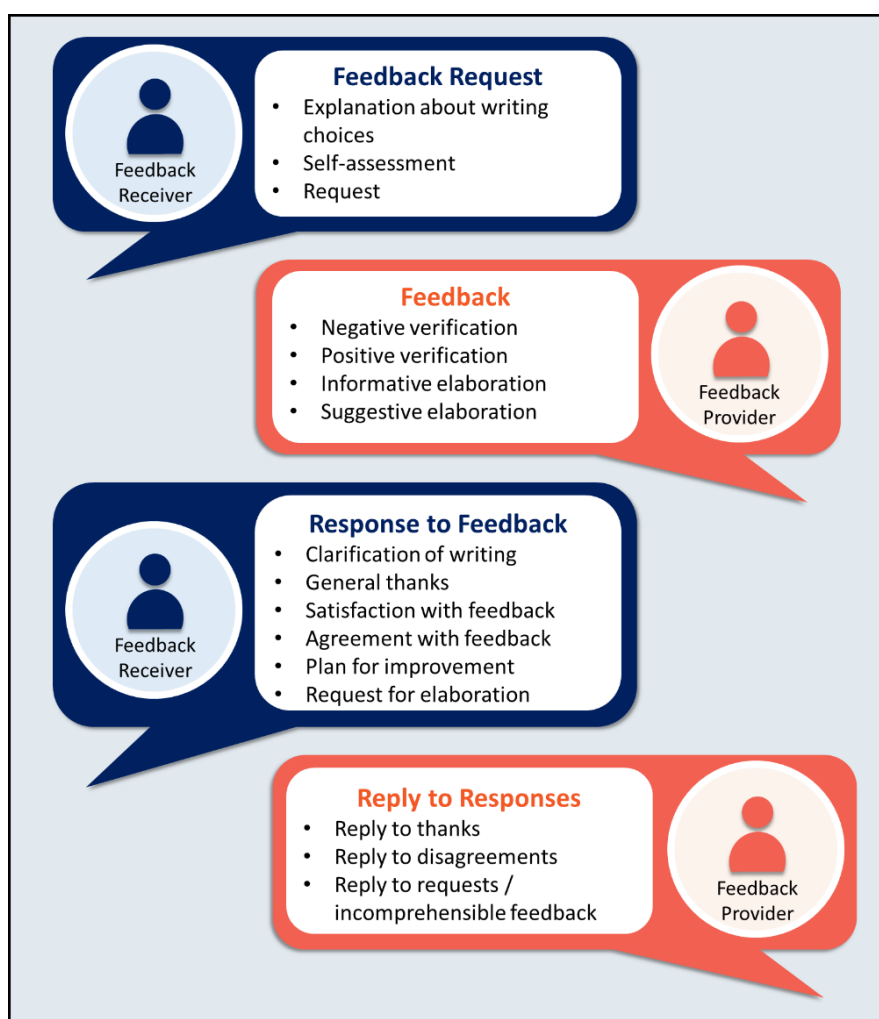


Figure 4.2. Summary of the content of the peer interaction in the group WRS

Analysis of feedback requests and dialogs also indicated that peer interaction did not occur in the same way for all students in the group WRS and in both tasks. While some students could specify their needs regarding their writing performance in feedback requests, some of them only stated what they did well. In the dialog scaffold, some feedback receivers just thanked, whereas some of them could evaluate and discuss the feedback and send requests for elaboration. Therefore, the quality of interaction differed in feedback requests and dialogs in addition to the peer feedback provided.

4.4.4 Use of the Regulation Scaffolds in Revision

The revision activity included only the self-assessment scaffold. As in the self-assessment scaffold in writing activity, the students were expected to determine how much they accomplished their self-evaluative standards and how much their writing strategies were useful for their writing performance.

The number of students in the group WRS who revised their writings was 18 in the first task and 15 in the second task. Among them, only six students in the first task (33.33%) and seven students in the second task (46.67%) used the self-assessment scaffold. These findings suggest that the students were less inclined to use the self-assessment scaffold in revision activity.

4.5 Students' Experiences in FPA Activities

This section answers the last research question: "What are students' experiences in FPA activities?". The experiences of the students in FPA activities were investigated with interviews. Eight students from the group W/ORS and 19 students from the group WRS participated in the focus group interviews to enhance understanding of the intervention process and to explain quantitative results. Data analysis resulted in two main themes: (1) contributions of the FPA activities and (2) problems in the FPA activities. Table 4.14 and Table 4.15 list their sub-themes and codes, total coding frequencies, frequencies in the groups W/ORS and WRS, and related FPA activity and scaffold. As the scaffolds provided to the two groups and the number of participants from these groups in the interviews were not equal, there were differences between the frequencies of the groups.

Table 4.14 Contributions of the FPA Activities According to the Interview Groups W/ORS and WRS

Subtheme / Code	Total			W/ORS			WRS			Related activity and scaffold				
	n	f	n	n	f	n	n	f	Preparatory activities	Writing	Peer feedback provision	Peer feedback reception	Revision	
Guidance	27	77	8	17	19	60								
Peer feedback provision	25	52	7	11	18	41			Tr, SACE	GP	An, FR, CF			
Writing	10	12	2	2	8	10			SACE	IR, GP				
Use of the SWAPPER	10	10	4	4	6	6			Tr					
Peer feedback reception	3	3	-	-	3	3			SACE, Tr			MP		
Improvement of knowledge and skills	20	33	7	8	13	25								
Knowledge about writing genre	9	13	-	-	9	13				G, IR			G	
Writing performance	7	9	3	4	4	5								
Knowledge about writing criteria	7	8	3	3	4	5			SAC	GP	G			
Critical thinking skill	3	3	1	1	2	2								
Self-assessment	17	27	4	6	13	21								
Writing	14	18	4	6	10	12				GP, SA	G, RF	G	G	
Attainment of writing goal	5	5	-	-	5	5				GP	RF			
Writing strategies	2	3	-	-	2	3				GP		G		
Domain knowledge	2	2	-	-	2	2				GP				
Psychosocial safety	15	20	5	6	10	14								
Prevention of social conflicts	7	8	5	6	2	2					An	An		
Comfortableness	7	8	-	-	7	8			Tr		An			
Sincerity	4	4	-	-	4	4					FR			
Reception of quality feedback	11	18	3	7	8	10								
Indicating mistakes	5	7	3	4	2	3						G		
Objective	4	6	1	1	3	5					An	An		
Elaborated	4	4	2	2	2	2						G		
From two sources	1	1	-	-	1	1						G		

Table 4.14 (continued)

Motivation	10	14	5	7	5	7	5	7		
Necessity to provide peer feedback	6	6	4	4	2	2	2	2		
Curiosity	4	4	1	1	3	3	3	3		
Willingness to write	2	2	1	1	1	1	1	1	G	
Attention to writing well	1	1	1	1	-	-	-	-	G	
Self-efficacy in writing	1	1	-	-	1	1	1	1	G	
Peer cooperation	11	11	3	3	8	8	8	8		
Sharing of writings	4	4	3	3	1	1	1	1		
Messaging about received feedback	4	4	-	-	4	4	4	4		DF
Sharing of needs	3	3	-	-	3	3	3	3	FR	

Notes. G: General contribution of the activity, Tr: Training, SACE: Sharing of assessment criteria and explanations, GP: Goal setting and planning, IR: Information resources, FR: Feedback request, SA: Self-assessment, An: Anonymity, CF: Criteria form, RF: Reflection on feedback provision, MP: Mindful processing of feedback, DF: Dialog about feedback

Table 4.15 Problems in the FPA Activities According to the Interview Groups W/ORS and WRS

Subtheme / Code	Total			W/ORS			WRS			Related activity and scaffold		
	n	f	n	n	f	n	n	f	n	Peer feedback provision	Peer feedback reception	Revision
Functioning of scaffolds	18	36	2	2	2	16	34					
Communication failure in dialog scaffold	8	15	-	-	-	8	15				DF	
Loss of anonymity	10	14	2	2	2	8	12			An	An	
Demotivation in feedback provision without requests	2	4	-	-	-	2	4			FR		
Low attention to questions in scaffolds	1	3	-	-	-	1	3				MP	
Characteristics of writing assessed	21	30	7	10	14	20						
Short writings	10	12	3	4	7	8				G		
Subjectivity of writing	6	7	-	-	-	6	7			G		
Requirements in writing criteria	4	4	2	2	2	2	2			G		
Quality writings	3	3	3	3	-	-	-			G		
Long writings	2	2	1	1	1	1	1			G		
Implicit expression in writing	2	2	-	-	-	2	2			G		
Feedback quality and quantity	17	25	6	9	11	16						
Lack of elaboration	7	7	3	3	4	4					G	
Lack of specific suggestion	5	7	1	1	4	6					G	
Only positive feedback	6	6	5	5	1	1					G	
Lack of feedback	4	4	-	-	-	4	4				G	
Inaccuracy	1	1	-	-	-	1	1				G	
Revision of writing	13	21	4	4	9	17						
Reception of ineffective feedback	10	16	2	2	8	14						G
Difficulty in rewriting	2	2	1	1	1	1						G
Positive self-feedback	1	1	-	-	-	1	1					G
Forgetting to revise	1	1	-	-	-	1	1					G

Table 4.15 (continued)

Usability	13	19	2	2	11	17	
Inadequate notification for new messages	4	6	-	-	4	6	DF
Trouble in saving operation	4	4	2	2	2	2	MP
Difficult access to messages	3	4	-	-	3	4	DF
Incapability to delete messages	2	3	-	-	2	3	DF
Difficulty in the indication of problems	1	1	-	-	1	1	G
Incapability to state other reasons	1	1	-	-	1	1	MP
Learner characteristics	9	9	-	-	9	9	
Low knowledge and skill in writing genre	8	8	-	-	8	8	G
Low interest in writing genre	1	1	-	-	1	1	G
Information adequacy in the SWAPPER	4	5	-	-	4	5	
Inadequate assessment criteria	3	3	-	-	3	3	CF
Lack of peers' writing selections	2	2	-	-	2	2	G

Notes. G: General problem of the activity, GP: Goal-setting and planning, FR: Feedback request, SA: Self-assessment, An: Anonymity, MP: Mindful processing of feedback, DF: Dialog about feedback

Contributions of the FPA activities included seven sub-themes indicating different types of the contributions (Table 4.14). They were guidance ($f = 77$), improvement of knowledge and skills ($f = 33$), self-assessment ($f = 27$), psychosocial safety ($f = 20$), reception of quality feedback ($f = 18$), motivation ($f = 14$), and peer cooperation ($f = 11$). There were also problems students experienced in the FPA activities. They were categorized into seven sub-themes (Table 4.15). The problems were related to functioning of scaffolds ($f = 36$), characteristics of writing assessed ($f = 30$), feedback quality and quantity ($f = 25$), revision of writing ($f = 21$), usability ($f = 19$), learner characteristics ($f = 9$), and information adequacy in the SWAPPER ($f = 5$).

On the whole, the students experienced various contributions and problems in the intervention process. As indicated in Table 4.14 and Table 4.15, they were related to a particular FPA activity and scaffold. The following parts describe contributions and problems with relevant FPA activities and scaffolds.

4.5.1 Contributions of the FPA Activities

Contributions of the FPA activities was one main theme derived from interview data. As indicated in Table 4.14, it consisted of seven subthemes. They were guidance, improvement of knowledge and skills, self-assessment, psychosocial safety, reception of quality feedback, motivation, and peer cooperation.

Guidance

The most frequently mentioned contribution of the FPA activities was guidance ($n = 27, f = 77$). All participants in the groups W/ORS ($n = 8, f = 17$) and WRS ($n = 19, f = 60$) agreed that guidance was provided to them. There was a strong emphasis on guiding role of the FPA activities supported with online regulation scaffolds. Specific types of guidance were guidance for peer feedback provision, writing, use of the SWAPPER, and peer feedback reception. Preparatory activities experienced by both groups were generally highlighted to provide different kinds of guidance.

Goal setting and planning scaffold in the group WRS also guided both peer feedback provision and writing.

Guidance on **peer feedback provision** was experienced by the students at most ($n = 25, f = 52$). Both the group W/ORS ($n = 7, f = 11$) and the group WRS ($n = 18, f = 41$) mentioned guidance on feedback provision owing to different FPA activities and scaffolds. While the emphasis on preparatory activities, anonymity, and criteria form was common in both groups, the group WRS highlighted goal setting and planning and feedback requests as well.

Among the activities and scaffolds, first, preparatory activities were indicated by both groups. Specifically, training and sharing of assessment criteria and explanations guided peer feedback provision in the SWAPPER. Students reported that training helped them use kind language, provide elaboration, and state both negative and positive aspects of the performance while giving feedback in the SWAPPER. Sharing of assessment criteria and explanations also contributed to the provision of more comprehensive feedback as students were informed about the aspects they could use to assess writings. Besides, it facilitated the formulation of peer feedback. Some students expressed that they took explanations in the paper clarifying assessment criteria, as example sentences for their feedback. It enabled them to provide more elaboration and suggestions. Regarding the role of preparatory activities in the guidance on peer feedback provision, two participants stated that:

Student 43: You said that we need to give more explicit and clearer feedback. It guided me in that regard. I could have written a little sloppy if you didn't. I wrote more content, especially in the story.
[59]

Student 4: We saw both what to evaluate and what to do in terms of language style. For example, instead of saying, 'this poem is very bad. It was so bad. I wish you didn't write', we can say that 'you can correct your writing as follows, you can make your writing beautiful by doing the following.' and without

discouraging him. 'Your writing is good, but you can improve yourself by doing the following.' It contributed to me in this way.

[60]

Second, anonymity scaffold in peer feedback provision activity had a facilitating role. In particular, it enabled students in both groups to give objective or unbiased feedback. The students claimed that it prevented feedback provision based on the characteristics of the person being assessed. For example, one participant mentioned the friendship effect. He said:

Student 45: For example, [if there had been no anonymity], it would have been a personal action. If he had given feedback to a close friend and had seen his name, he would not have said any mistake and he would have finished his feedback without even telling the place where he was wrong. I think it was very useful to be anonymous in that part. [62]

Third, guidance on peer feedback provision was led by criteria form available in both groups. The students reported that they could provide more comprehensive feedback since they need to consider each criterion in the form. Statements of one student are as follows:

Student 4: Also, you did not give a direct page for feedback [only one input field for feedback provision]. As the writing is examined under different titles, it somehow pushes us to examine the writing. We write to all of them one by one instead of just writing that it is beautiful. [64]

Fourth, in contrast to the group W/ORS, the group WRS mentioned guiding role of the goal setting and planning scaffold in the writing activity of this group. Three students who made self-assessment of their domain knowledge and writings in this scaffold reported that it was beneficial for providing feedback to their peers later on

because they gained experience in the use of assessment criteria during the writing activity. In this regard, one of them expressed that:

Student 66: You asked something [in the goal setting and planning scaffold]. Will you use rhyme? What will you use if you are going to use rhyme? Then, when we come to the criterion part [peer feedback provision activity], they help us in terms of what we will evaluate. Because my friend said that I used rhyme, but there is no rhyme in the poem. Or he said I didn't use rhyme, but there is a rhyme in the poem. So it helps us a lot even though it is difficult at first. [61]

Fifth, feedback requests scaffold in the group WRS guided peer feedback provision. The students in this group expressed that owing to their peers' feedback requests, they could decide what they should firstly focus on in the review of the writings and on what they should give more specific feedback. Moreover, they mentioned that they could provide elaboration on the specific needs of their peers in their feedback by using feedback requests. For instance, one student in the group WRS told that:

Student 41: I think the best thing in giving feedback is that we could specify what we wanted, as we have said before. 'Is this place wrong, is it wrong here?' I think it's very nice to focus on it. For example, the person we gave feedback asked if he had errors in spelling and punctuation. While focusing, I first was looking at the spelling and punctuation, and then I was looking at the theme. I was giving feedback more easily. [63]

Guidance on **writing** was another contribution of the FPA activities ($n = 10, f = 12$). Both the group W/ORS ($n = 2, f = 2$) and group WRS ($n = 8, f = 10$) experienced such contribution. Among the activities and scaffolds, sharing of assessment criteria and explanations, information resources, and goal setting and planning scaffold in the group WRS guided writing. Sharing of assessment criteria and explanations and information resources were available in the intervention of the two groups. They

facilitated writing in the SWAPPER and the literature course in general since the students expressed that they could pay attention to the related characteristics of the genre in the writing activity. To illustrate, one student expressed that:

Student 7: They were also what we should use in our daily lives and the Literature class. Therefore, learning them made it easier for the website and while writing something in our daily life. I started paying more attention to them. It helped a little more while composing writing. [65]

In comparison to the group W/ORS, the group WRS mentioned that goal setting and planning scaffold also helped them in the writing activity. For example, two students in this group stated that they did not know how to start writing before the use of the SWAPPER, and they were surprised when they saw the questions in the scaffold. They expressed that the scaffold facilitated the composition of quality writing. Sample participant statements are as follows:

Student 27: I write on paper first because I cannot write directly on the computer. ... Then I thought I couldn't write on paper. I scribbled, but it didn't work. When I first entered the writing process, the theme came out. I had nothing in my mind. I didn't even know how to begin my story. Then, I quitted the application. I didn't even go back that day. A few days passed. The time was already running short. I entered, suddenly I typed a theme. Then, the story went well according to that theme. [66]

Guidance on the **use of the SWAPPER** was also provided by the FPA activities ($n = 10$, $f = 10$). In particular, the students in the groups W/ORS ($n = 4$, $f = 4$) and WRS ($n = 6$, $f = 6$) mentioned that the training facilitated use of the SWAPPER because it demonstrated how to access the website, course, and FPA activities, how to navigate the web site, what they were expected to do in FPA activities, and what they should pay attention to while performing activities. Some participants also expressed the

clear design of the SWAPPER, which led to ease of use of the SWAPPER as well. Regarding the role of training, one student claimed that:

Student 61: If I had entered directly, I am sure that I would have had trouble at first. But since you explain it there, I could enter, write and do it easily. [67]

Finally, three students in the group WRS ($f = 3$) reported guidance on **peer feedback reception** owing to training, sharing of assessment criteria and explanations, and mindful processing of feedback scaffold. These activities and scaffold helped those students think about feedback, evaluate feedback, and use kind language during dialog about received feedback. For example, regarding the mindful processing of feedback scaffold in the group WRS, one student stated that:

Student 44: Questions are good because they enable you to reflect on the feedback you get, and you don't read and pass it. You think about what he really means here, and it's really useful. ... I think the questions are useful. [68]

Improvement of Knowledge and Skill

Improvement of knowledge and skill was the second most frequent contribution of the FPA activities ($n = 20$, $f = 33$). The participants from the groups W/ORS ($n = 7$, $f = 8$) and WRS ($n = 13$, $f = 25$) reported improvement of knowledge and skills. Specifically, the FPA activities developed students' knowledge about writing genre, writing performance, knowledge about writing criteria, and critical thinking skill. Different activities led to such contributions.

Improvement of **knowledge about writing genre** was mentioned by the students only in the group WRS. This improvement was gained owing to writing activity itself and information resources ($n = 9$, $f = 13$). First, the students mentioned that writing practice fostered their understanding of the genre after lecture hours. Second, information resources in the SWAPPER mainly helped them consolidate their knowledge about genre before writing. Moreover, three students reported that they

used them while preparing course exams to review the information about the genre. Regarding the improvement of knowledge about writing genre, sample participant statements are as follows:

Student 34: I think we learned better by writing because the more we practice something, the better we get it into our minds, and we start to do it easier. For example, information about the story and poetry stays in our minds better. I think it makes learning easier. [69]

Student 54: When I entered the assignment, it directly gave a definition. It gave a description of what the story was. When I examined it, it explained briefly and concisely, and I liked it because we have at least some prior knowledge. No matter how much we see in the lesson, it becomes permanent there. [70]

Improvement of **writing performance** was also experienced by some students ($n = 7$, $f = 9$). There were three students in the group W/ORS ($f = 4$) and four students in the group WRS ($f = 5$) who expressed their experiences in this regard. As a result, among 27 participants in the interviews, only seven of them reported that they improved their writings in the SWAPPER. Their improvement stemmed from peer feedback and self-feedback. In other words, in revision activity, students applied both peer feedback and self-feedback derived after initial writing or during re-reading of their writings. To illustrate, the students stated that:

Student 8: In fact, my friends' ideas developed myself more. When I looked at my writing, there were too many shortcomings in my writings. I fixed them. [71]

Student 44: Thanks to the feedback, I made corrections in a very small place. But in general, it occurs as follows. After I wrote, there were parts that I wish I had written in different ways. I

changed them. ... After a while, giving a second glance at the writing enabled me to change it. [72]

Improvement of **knowledge about writing criteria** was another contribution of the FPA activities ($n = 7, f = 8$). There were students from the groups W/ORS ($n = 3, f = 3$) and WRS ($n = 4, f = 5$) who reported such contribution. Specifically, sharing of assessment criteria and explanations and goal setting and planning scaffold brought about the improvement of knowledge about writing criteria. The students expressed that they were informed about the aspects they could use to assess writings owing to sharing of assessment criteria and explanations. Moreover, two students in the group WRS who made self-assessment of their domain knowledge and writings in the goal setting and planning scaffold reported that they gained knowledge about assessment criteria. Regarding the sharing of assessment criteria, one student told that:

Student 2: I also learned according to what I would give my feedback or from which aspects I can evaluate a story. While I was evaluating it with a few aspects, it has expanded now. [73]

Finally, the FPA activities contributed to the improvement of **critical thinking skill** ($n = 3, f = 3$). The students from the groups W/ORS ($n = 1, f = 1$) and WRS ($n = 2, f = 2$) mentioned that they examined their peers' writings with regard to different aspects, determined problems, and provided suggestions. According to the students, it required more effort, but it fostered their critical thinking skill. In particular, one student said:

Student 54: I gave feedback to two people, and I really think I did well. Composition of my writing took one hour. Giving feedback to the two of them took three hours. I am not exaggerating. I am telling the truth seriously. And I had written several paragraphs for all of them. But, after a while, giving feedback enables us to carefully think when criticizing. I criticize my friend, but I also give him a suggestion. 'It will be better if you do that. You couldn't do that, but it will be better if you do that.' In this way, we gave

suggestions. It allows us to think more analytically while giving feedback. [74]

Self-assessment

Self-assessment was the third most frequent contribution of the FPA activities ($n = 17$, $f = 27$). The groups W/ORS ($n = 4$, $f = 6$) and WRS ($n = 13$, $f = 21$) experienced self-assessment. While self-assessment of writing occurred in both groups, some participants in the group WRS performed self-assessment of attainment of writing goal, writing strategies, and domain knowledge, too. The remarkable finding was that goal setting and planning scaffold in the group WRS initiated self-assessment before writing and it had a major role in experiencing different types of self-assessment.

Self-assessment of **writing** occurred in each FPA activity of the SWAPPER ($n = 14$, $f = 18$). Both the group W/ORS ($n = 4$, $f = 6$) and the group WRS ($n = 10$, $f = 12$) experienced it. FPA activities and regulation scaffolds in the group WRS resulted in such contribution. First, goal setting and planning scaffold in the writing activity of the group WRS contributed to the self-assessment of writing. For example, four students in the group WRS composed their writings in a paper and then wrote it in the SWAPPER. While answering planning questions, those students reported that they assessed their writings in the paper from different aspects. One of them said:

Student 66: I have never reviewed any poem like that. Where are rhyme, assonance, alliteration? ... What are the elements of harmony? Literary arts... I thought I did not use it, but somewhere I did. I even noticed it while examining it. [75]

Second, self-assessment and reflection on feedback provision scaffolds in the group WRS led to self-assessment. The students mentioned that they could assess their writings and become aware of how they wrote by using these scaffolds in writing and peer feedback provision activities. For instance, one student told that:

Student 57: We are evaluating at the end. I think it enabled me to realize how I wrote. [76]

Third, one student in the group W/ORS assessed her writing in feedback provision activity even if there was no regulation scaffold. As a result, she could notice mistakes in her writing while giving peer feedback. Similarly, the students in both groups assessed their writings when they received peer feedback and realized mistakes in their writings. Finally, self-assessment of writing occurred in the revision activity. Two students reported that they could assess their writings better when they reviewed them after a certain period. Sample participant statements are as follows:

Student 1: We also saw our own mistakes in the story or poem written by someone else. We learned a lot of things there. Expression mistakes or expression techniques... We also saw our own mistakes. [77]

Student 8: When we look at our writings from our own eyes, we cannot see the mistakes we made. But we can see better through someone else's eyes. [78]

Self-assessment of **attainment of writing goal** was another contribution of the FPA activities supported with regulation scaffolds ($n = 5, f = 5$). Four students in the group WRS experienced it while using goal setting and planning and reflection on feedback provision scaffolds. They reported that thanks to these scaffolds, they monitored their writing process, compared it with their writing goal, and made a comprehensive judgment about the attainment of their writing goal during the writing and peer feedback provision activities. For example, regarding the use of reflection on feedback provision scaffold, one student told that:

Student 40: I think it is very good to draw conclusions here [in reflection on feedback provision], to see both what other people think of you, that is, from external observation, and by comparing the goals you have set with sincere observations of what you do.

You can see how successfully you arrive it while achieving a goal. You can also find out what other people think of this success. So maybe we can get a very useful and broad result. I think it was fine. [79]

Self-assessment of **writing strategies** also occurred in the FPA activities of the group WRS ($n = 3, f = 3$) in contrast to the group W/ORS. Three students in the group WRS assessed their writing strategies in goal setting and planning scaffold and peer feedback reception activity. In the interviews, two of them explained why environmental structuring and time planning were not suitable for them to select as a writing strategy in goal setting and planning scaffold. Besides, one student reported that peer feedback led him to review his writing strategies in feedback reception activity. Self-assessment statements regarding environmental structuring strategy are as follows:

Student 21: I also prepare for the writing process, but I cannot definitely say that I am writing in a particular place. This is because I am writing something while I am travelling on the bus, playing cards with my friends. Meanwhile, something comes to my mind. I am writing in those places, too. [80]

Finally, unlike the group W/ORS, the group WRS experienced self-assessment of **domain knowledge** ($n = 2, f = 2$). Specifically, goal setting and planning scaffold in the group WRS enabled two students to assess their knowledge about the genre and then to study genre to recall the related information. For example, one student said:

Student 54: We learned elements of harmony in the lesson, but I honestly stopped when the elements of harmony of my poem were asked. Meanwhile, I checked my notebook. After that, I wrote my poem. [81]

Psychosocial Safety

Psychosocial safety was the fourth most frequent contribution of the FPA activities ($n = 15, f = 20$). Some students in the groups W/ORS ($n = 3, f = 7$) and WRS ($n = 8, f = 10$) felt psychosocially safe to perform FPA activities in the SWAPPER. Specifically, potential social conflicts among students were prevented, and the students felt more comfortable and sincere for writing and providing feedback in the SWAPPER. Anonymity scaffold had a major role in the emergence of this contribution.

First, anonymity was found helpful for **prevention of social conflicts** ($n = 7, f = 8$). According to the students from the groups W/ORS ($n = 5, f = 6$) and WRS ($n = 2, f = 2$), it prevented nonresponse to unfriends, humiliation, fighting, and hatred feeling among peers in the FPA activities. For example, three students expressed that they might not have written feedback to their peers with whom they had a bad relationship in non-anonymous peer assessment. Two students also mentioned the ones who could despise their peers for their writings in the classroom, and they highlighted the importance of anonymity. Finally, three students emphasized the role of anonymity in the prevention of fighting and hatred feeling that might stem from the content or quality of the received feedback. Sample participant statements are as follows:

Student 43: In my opinion, objectivity [anonymity] was good. If we had read the same writing in the classroom, there could have been some students expressing humiliating sentences. [82]

Student 3: I didn't think that my writings were read in both tasks because the feedback [I received] was very bad. I felt very bad when I read it. ... In my opinion, the identity of assessors should not be revealed. Otherwise, there will be a fight. [83]

In regard to psychosocial safety, **comfortableness** was experienced by the students in the group WRS owing to both anonymity scaffold and training ($n = 7, f = 8$). For example, some students confessed that they had been anxious and daunted before the

training since they hadn't actually known what they were expected to do in writing and feedback provision activities. In addition, sharing of their writings among other students caused them to feel anxiety. On the other hand, they expressed that they were more comfortable after the training since they were informed about the activities and sharing of their writings among the students only in their classroom. For example, one of them pointed out that:

Student 34: Although it was intimidating at first because it was writing, I can say that I got a little warmer after the video. I thought it would be easier and more fun. At first... My teacher talked about it. ... To tell you the truth, I was really scared because I thought that it would be difficult. I was a little more relaxed after your presentation and your video. ... There was a relief in both writing and giving feedback because I thought we would write something formal. But when I found out we would write ourselves, I was more relieved. And I thought [giving] feedback would be difficult. I thought we would write so seriously. But it became more comfortable. I think it was better in a circle of friends. [84]

Anonymity also had a role in feeling comfortable. It enabled students to express their thoughts and feelings more comfortably in peer feedback provision because feedback receivers did not know who was the feedback provider. Statements of one student are as follows:

Student 44: In my opinion, it was nice that giving and receiving feedback was anonymous because it is usually not easy to tell the other person what you feel. Your feedback is about what you feel and what you think. It was nice that you wrote knowing that s/he wouldn't judge you. [85]

Sincerity was another feeling to indicate a psychosocially safe environment for FPA ($n = 4, f = 4$). It was experienced by only the group WRS. Four students in this group reported that they felt the sincerity in peer feedback provision when they received

feedback requests from their peers. It also contributed to the use of kind language while responding to the questions of feedback receivers. For instance, one student said:

Student 59: I think it also adds sincerity. Instead of an explanation, sincerely... We ask politely, and when we answer, we inevitably use a polite language that does not hurt the person. This teaches us how to evaluate our peers' writings and adds sincerity. [86]

Reception of Quality Feedback

Reception of quality feedback was the fifth most frequent contribution of the FPA activities ($n = 11, f = 18$). There were students from the interview groups W/ORS ($n = 3, f = 7$) and WRS ($n = 8, f = 10$) who described quality peer feedback they received. Such feedback was characterized as indicating mistakes, objective, elaborated, and from two sources.

Reception of feedback **indicating mistakes** was one contribution of the FPA activities ($n = 5, f = 7$). Both the group W/ORS ($n = 3, f = 4$) and WRS ($n = 2, f = 3$) experienced it. The feedback pinpointing mistakes and their locations was deemed as useful by the students. For instance, one student reported that:

Student 27: The feedback I received in the story was really good. There was a punctuation and spelling mistake. He put the erroneous sentence there [into the feedback form]. He said there was a mistake in this sentence. Their feedback was really useful. [87]

Four students reported that they could receive **objective feedback** in the SWAPPER ($f = 6$). There was one student in the group W/ORS ($f = 1$) and three students in the group WRS ($f = 5$) who expressed such contribution. Anonymity scaffold had a major role in the reception of objective feedback. For example, the students mentioned that the feedback they received from their friends or families were mostly positive even if they did not like their writings. On the other hand, they thought that

they could receive more objective feedback due to anonymity in the SWAPPER. Sample participant statements are as follows:

Student 30: First of all, let me talk about the feedback I received. This is one of the biggest benefits of the site. For example, if I asked a friend, if I had shown him my poetry, how objectively would have he given comments? But when you write on that site, you get an objective comment. [88]

Reception of **elaborated feedback** was another contribution of the FPA activities ($n = 4, f = 4$). It was pleasing for the two students in both groups to receive elaborated feedback that gave detailed information about their writings. Finally, one student in the group WRS positively appraised feedback **from two sources** to get different perspectives ($f = 1$). Regarding elaborated feedback, one student expressed that:

Student 7: One of the feedback reports I received, as far as I remember, was pretty long. He wrote in a quite detailed way. I was very impressed by it. It really made me very happy because he examined my story in such a detailed way and took care of it. [89]

Motivation

Motivation was the sixth most frequent contribution of the FPA activities ($n = 10, f = 14$). Some participants from the groups W/ORS ($n = 5, f = 7$) and WRS ($n = 5, f = 7$) felt motivated in the FPA activities. There were a number of indicators revealing that specific activities and scaffolds provided motivation. They were feeling the necessity to provide feedback, curiosity, willingness to write, and self-efficacy in writing, and paying more attention to writing well.

The **necessity to provide peer feedback** was experienced in both training and peer feedback provision activities ($n = 6, f = 6$) by the groups W/ORS ($n = 4, f = 4$) and WRS ($n = 2, f = 2$). In training, the researcher's explanations about the expectations for the students led one participant to feel responsible for allocating time to provide peer feedback. In the feedback provision, some students also felt the necessity to

give feedback. They reported that while students might not listen to the writings read by their peers in the classroom, they felt obliged to read the writings assigned to them and give feedback in the SWAPPER. For example, one student stated:

Student 4: You have to think. ... You have to think the poem you will not read elsewhere. And as my friend said, everyone's writing type is different. For example, I write free verse and long poetry. Many people do not listen to me in class. I'm not addressing them. ... That's why I don't think everybody is listening. But here they have to listen. They have to provide feedback. [90]

Reception of feedback requests in the group WRS brought about the necessity to provide peer feedback, as well. Specifically, two students expressed that they needed to give feedback on assessment criteria that included feedback receivers' questions. One of them told that:

Student 59: But if it is asked in the form of such a question, you inevitably have to answer. [91]

The FPA activities also aroused **curiosity** among peers ($n = 4, f = 4$) in the groups W/ORS ($n = 1, f = 1$) and WRS ($n = 3, f = 3$). Anonymity in the SWAPPER had a major role in feeling curious in both peer feedback provision and reception. For example, three students mentioned that they were curious about the authors of the writings since they liked writings or predicted the authors based on peers' writing characteristics in the peer feedback reception activity. One student stated that:

Student 5: I wondered who wrote it. The writing I read was good. I liked it so much. I wonder who wrote it. [92]

Willingness to write was another motivational contribution of the FPA activities ($n = 2, f = 2$). One student from both groups expressed that they were more willing to write because they started to like it and they received "good" feedback from their peers. For example, one student reported that:

Student 40: I started wanting to write more. If the criticism in the feedback was good, of course, I wanted to share more writings.

[93]

Finally, writing in the SWAPPER led students to allocate more **attention to writing well** ($n = 1, f = 1$) and feel **self-efficacy in writing** ($n = 1, f = 1$). One student in the group W/ORS reported that she was more attentive to her writings because their peers would read them. Another student in the group WRS mentioned that her self-confidence in writing increased since she realized that she could produce quality writing even if she did not try before.

Peer Cooperation

Peer cooperation was the final contribution of the FPA activities ($n = 11, f = 11$). It was experienced by the participants from the groups W/ORS ($n = 3, f = 3$) and WRS ($n = 8, f = 8$). According to students' reports, they could cooperate with each other by sharing their writings in the SWAPPER. On the other hand, the ones in the group WRS had more opportunities for peer cooperation. They mentioned that they could share their needs and send messages to their peers in feedback reception.

Sharing of writings was mandatory in the SWAPPER so that the students could provide and receive peer feedback ($n = 4, f = 4$). It enabled three students in the group W/ORS ($f = 3$) and one student in the group WRS ($f = 1$) to involve in peer cooperation. For example, one student reported that she was unwilling to read her poems in the classroom, but she could share her poem in the SWAPPER. As a result, another student expressed that they could get help from their peers to produce quality writing. She said:

Student 2: We open our writings to the public. I think it's nice to compose writing that will be open to the public and then to ask people to comment and help us. It is also a little bit of peer cooperation to prepare quality writing. [94]

Messaging about received feedback in the group WRS increased peer cooperation in the FPA activities ($n = 4$, $f = 4$). In particular, the dialog scaffold in this group gave the students the opportunity of continuing peer interaction and correcting faulty feedback in feedback reception. Regarding the correction of wrong feedback, one student expressed that:

Student 40: All three feedback reports I received in my story were incorrect. I had to fix it. Either he misunderstood the story or what I was telling, or he had the wrong information. I fixed this using the message part. [95]

Sharing of needs through feedback requests in the group WRS enhanced peer cooperation as well ($n = 3$, $f = 3$). The scaffold was useful for students in the group WRS to emphasize their needs to their feedback providers. As a result, their peers could help them, and they could receive more specific feedback addressing their needs and improve their writings accordingly. For instance, one student told that:

Student 44: He was stuck in somewhere. He was stuck with spelling rules. He doesn't know his mistake and he wants help from us. He wants us to find the mistake. By answering his questions, both we can help him and he can realize his mistakes. He also learns his mistakes if they exist. [96]

4.5.2 Problems in the FPA Activities

Problems in FPA activities was another main theme regarding students' experiences. It included seven subthemes. Specifically, the problems pertained to the functioning of scaffolds, characteristics of writing assessed, feedback quality and quantity, revision of writing, usability, learner characteristics, and information adequacy in the SWAPPER.

Functioning of Scaffold

The most frequently mentioned problems in the FPA activities were associated with the functioning of scaffolds ($n = 18, f = 36$). Some scaffolds did not fulfill their purpose because of unexpected situations. As a result, the following problems emerged: communication failure in dialog scaffold, loss of anonymity, demotivation in feedback provision without requests, and low attention to questions in scaffolds. Except for the loss of anonymity, these problems existed only in the SWAPPER WRS. Consequently, the group WRS ($n = 16, f = 34$) experienced considerably more problems than the group W/ORS ($n = 2, f = 2$).

One of the main problems was *communication failure in dialog scaffold* in the group WRS ($n = 8, f = 15$). It resulted from low and defensive communication in the scaffold. First, some students expressed that their feedback receivers did not write messages about the feedback they provided, and they could not receive a response from their feedback providers for the messages they sent about the given feedback. This situation hindered the establishment of peer interaction and caused low dialog in the feedback reception activity. For example, one student told that:

Student 69: Someone said my shortcomings in the feedback, but when I ask whether I can do this, they don't answer the message.

[97]

Defensive communication also caused a problem in the use of the dialog scaffold. One student highlighted this problem four times in the interviews. In particular, she mentioned that her feedback receiver did not agree with her, would not revise the writing based on her feedback, and suggested her to review her mistakes by using an unkind language. This reaction made the student annoyed. As a solution to this problem, the students suggested providing some sample sentences as options in the messaging area. Consequently, they told that students could receive more guidance about how to respond, and they can directly use these sentences in their messages. Regarding this problem, the participant stated that:

Student 66: We have a friend. She says, 'My writing is good. I will not fix this. I think my writing is good. So I will not fix this. Correct your own mistakes.' I'm serious; it was like this. 'You have mistakes. I think you should review your mistakes.' I checked my writing. I opened the book. So there were no elements of harmony. There isn't anyway. ... She was angry in her messages. I was nervous. [98]

Another problem regarding the functioning of the scaffolds was the **loss of anonymity** ($n = 10, f = 14$). It was experienced by both the group W/ORS ($n = 2, f = 2$) and the group WRS ($n = 8, f = 12$). Anonymity in feedback provision was eliminated among some students since they read their writings, asked authors of the writings they gave feedback on, and sought their feedback providers in the classroom. In feedback reception activity, one student who predicted her feedback provider also started to talk to her to discuss the feedback in WhatsApp. As a solution to this problem, one student suggested mixing all ninth-grade classes for feedback provision to decrease the possibility of interaction among students. Regarding loss of anonymity, one student pointed out that:

Student 54: When you wrote that [feedback provision] stage started, our peers in the classroom asked who gave me feedback and who was the author of that writing. [99]

There was also a controversial issue in the reception of feedback requests. While it motivated students to write feedback on related criteria, it caused **demotivation in feedback provision without requests** in the group WRS ($n = 2, f = 4$). Two students thought that their peers did not have problems in their writings when they did not see their questions, and they considered that giving feedback to them would be ridiculous. Therefore, they skipped the assessment criteria without request questions in the peer feedback provision activity. Sample participant statements are as follows:

Student 44: It would also be a little ridiculous to say your opinion even though the other person did not ask. It is good to write

feedback on something they really want feedback and on which they are inadequate in their opinion. ... I am mostly directed to those who ask questions, but if there is an obvious mistake, of course, I will share it. But, I do not force myself. [100]

Finally, **low attention to the scaffold** was a problem that prevented fully functioning of the regulation scaffolds in the group WRS ($n = 1$, $f = 3$). There was one student skeptical about the use of goal setting and planning, self-assessment, and mindful processing of feedback scaffolds since he thought that the questions in the scaffold were not answered meticulously. He said:

Student 45: In fact, those questions, of course, ask the subject in general terms. But, I still think if that part was too much. In general, no care was taken there. [101]

Characteristics of Writing Assessed

The second most frequent problems in the FPA activities were related to characteristics of writing assessed ($n = 21$, $f = 30$). They made peer feedback provision more challenging for learners. Both the group W/ORS ($n = 7$, $f = 10$) and the group WRS ($n = 14$, $f = 20$) encountered difficulty due to characteristics of writing assessed. These characteristics were short writings, the subjectivity of writing, requirements in writing criteria, quality writings, long writings, and implicit expression in writing according to the students. The noteworthy finding was that shortness, subjectivity, and implicit expression problems were more peculiar to the writings in poem genre and pronounced more frequently for the feedback provision on this genre.

Short writings were difficult for learners to provide quality peer feedback according to 10 students ($f = 12$). Specifically, the students in the groups W/ORS ($n = 3$, $f = 4$) and WRS ($n = 7$, $f = 8$) who assessed short writings encountered difficulty in giving detailed feedback covering all assessment criteria and using kind language. Three of

them suggested adding a minimum word limit for the writing activity. Sample participant opinion is as follows:

Student 1: I had a hard time while doing ... When there is long writing, we can give a lot of feedback comments. We can write very long feedback, too. But, there was something with only a few lines. I could not find anything to write. [In the feedback provision page], there were too many things. It was necessary to evaluate writings from different aspects. ... Maybe, at that point, it can be improved. [102]

Moreover, five students specified that the shortness of poems prevented them from finding aspects on which they could comment and giving elaborated feedback. Therefore, they thought that feedback provision on poems was more challenging. One of them stated:

Student 3: In the story, there are more spelling and punctuation issues, and the plot is longer. On the other hand, they are more limited in the poem. For example, he wrote a few stanzas. That's why you can't find much in poetry. [103]

The **subjectivity of writing** was another writing characteristic that caused problems in peer feedback provision according to six students in the group WRS ($f = 7$). They had difficulty in writing negative feedback on subjective writings since they thought that the content and meaning of the writings were peculiar to the author or an individual and not open to criticism. This reason was more pronounced for feedback provision on poems ($n = 5$, $f = 6$) than stories ($n = 1$, $f = 1$). For example, one student stated:

Student 69: I think poetry is personal. Poetry is an individual work; it belongs to the person. Therefore, I did not want to comment much. ... The story was easier because you could write that the conflict of the story was not well-written, or it was

confusing. But you cannot say that the poem was confusing because they will say according to what, according to whom. [104]

Requirements in writing criteria caused challenges in peer feedback provision, as well ($n = 4, f = 4$). Two students from both groups reported their experiences. For example, they thought that feedback provision on the story was more challenging because it included more aspects on which they were expected to give feedback and its assessment criteria required to examine every word, sentence, and punctuation in writing. One of them said that:

Student 66: In the story, I should evaluate it for every sentence. Where is there a spelling mistake, where is there a word mistake or where is there a punctuation mistake, how should he complete his sentence? The story was harder for me as I had to evaluate sentence by sentence, but poetry was easier. Because the elements of harmony and rhyme are at the end of the sentence, they can be easily seen when you read the poem. That's why it was easier. [105]

Quality writings were also challenging for the students in the group W/ORS to provide peer feedback ($n = 3, f = 3$). They reported that it was hard to find negative points in those writings. For example, one student told that:

Student 2: Good poetry is actually more difficult to interpret. You can't write negative feedback, but you also think you should write. Then, you start writing silly things. [106]

Students experienced difficulties in providing feedback on **long writings**, too ($n = 2, f = 2$). As a result, one student from both groups regarded feedback provision on stories as more difficult since they were longer writings than poems. They mentioned that they needed more attention and effort in reading stories and giving feedback on them. Statements of one student are as follows:

Student 6: But if you write at least two or three stanzas in the poem, you can examine it, but the story is longer. Some of our friends have written for pages. It was harder to give them feedback. [107]

Finally, **implicit expression in writing** brought about hardship in peer feedback provision activity according to two students in the group WRS ($f = 2$). They reported that stories were regarded as more explicit in the explanation of the writing topic; however, the use of images and figures of speech in poems made the understanding of the writing difficult. Due to implicit expression in poems, they deemed feedback provision on poems as more challenging. For example, one student stated:

Student 40: I think that since there is a certain subject in the story, and it is written clearly, it can be understood more easily and feedback can be given more easily. But I think it was a little bit more difficult for me to give feedback on poems since we could not understand the image of the poet and what he meant in the figure of speech. For example, I read the story twice to give feedback, but I read the poem about four times. [108]

Feedback Quality and Quantity

The third most frequent problems in the FPA activities were related to feedback quality and quantity ($n = 17$, $f = 25$). In other words, some students were unsatisfied with the quality and quantity of peer feedback they received. Both the group W/ORS ($n = 6$, $f = 9$) and the group WRS ($n = 11$, $f = 16$) reported their dissatisfaction. Specifically, their dissatisfaction in peer feedback reception stemmed from lack of elaboration and suggestion in feedback, only positive feedback, lack of feedback, and inaccuracy of feedback.

Lack of elaboration caused problems in peer feedback reception activity ($n = 7$, $f = 7$). Three students in the group W/ORS ($f = 3$) and four students in the group WRS ($f = 4$) were unhappy with the feedback that included short information about the writing or only verification sentences. The students who gave detailed feedback in

feedback provision activity were disappointed and angry because of the superficial feedback they received. In addition, such feedback caused difficulty for the students in the group WRS to draw conclusions about the performance. To prevent this problem, three students suggested a minimum word count for feedback provision. Statements of one student are as follows:

Student 61: Since some of the feedback given to us was short, we were saying, what can I learn from this feedback? You know, what can I deduce from it for myself? I think a word limit can be set. It can be required to write feedback between certain word numbers. Because people won't write short feedback, we can draw conclusions from it. [109]

Lack of specific suggestion also lowered feedback quality ($n = 5, f = 7$) because the students in the groups W/ORS ($n = 1, f = 1$) and WRS ($n = 4, f = 6$) considered the feedback without any suggestion or specific suggestion as useless. The ones who gave more effort to feedback provision and sent feedback requests, in particular, felt disappointed again due to the feedback without specific suggestions. For example, one student said:

Student 51: I tried to be as careful as I could while giving feedback. ... But the feedback I received... It said I could fix it with one sentence. Ok, I can fix it, but it means I didn't notice it. So give me an example. Let me fix it according to the example. So I did not find the feedback very useful. [110]

Reception of **only positive feedback** was also unsatisfying for students ($n = 6, f = 6$). In other words, the students in the groups W/ORS ($n = 5, f = 5$) and WRS ($n = 1, f = 1$) were unhappy with the feedback that did not indicate any mistake in the writing. For example, one student stated:

Student 4: I gave my feedback very well in the first task, story. At least, I gave it very diligently. I guess there were four titles. All of

them included a sentence. He wrote just nice for each title. We passed to the poem task. There was the same situation in the poem task. I wrote very long and diligently. Then, the feedback I received was similar to the feedback I received in the prior task. He wrote that it was harmonious and it was nice. They just found a mistake in punctuation. The rest is always harmonious, beautiful. [111]

Lack of feedback was another problem in peer feedback reception activity reported by the students in the group WRS ($n = 4, f = 4$). In the SWAPPER, two writings were assigned to each student for feedback provision. However, there were a few students who did not give feedback. It resulted in missing feedback for some students in the feedback reception activity. In other words, some students did not receive feedback from two peers. It caused one student to feel disappointed. In this regard, she pointed out that:

Student 41: I was very excited to learn the thoughts of my friends about my own writing. But one of my friends didn't write to me. I've been disappointed because I was very excited beforehand. [112]

Finally, **inaccuracy** of feedback was a problem in feedback reception activity ($n = 1, f = 1$). One student in the group WRS mentioned that all feedback she received was wrong.

Revision of Writing

The fourth most frequent problem in the FPA activities was regarding revision of writing ($n = 13, f = 21$). The students from the groups W/ORS ($n = 4, f = 4$) and WRS ($n = 9, f = 17$) reported that they did not revise their writings because of different reasons. They were reception of ineffective feedback, difficulty in rewriting, positive self-feedback, and forgetting to revise.

The main reason behind non-revision was the **reception of ineffective feedback** ($n = 10, f = 16$). Two students in the group W/ORS ($f = 2$) and eight students in the group

WRS ($f = 14$) reported this reason. Specifically, receiving peer feedback with only positive evaluations, without specific suggestions, and not elaborated prevented students from improving their writings in revision activity. For example, one student expressed that:

Student 69: The suggestions I received were missing. In the criticisms, you express whether it is correct and wrong. In addition, you should propose a suggestion. You expected such criticisms from us. The person who gave me feedback hadn't done this. That's why I saved my writing without any changes. [113]

One student from both groups also decided not to revise their writings because of **difficulty in rewriting** ($f = 2$). Although they received suggestions about their writing, implementing them required the students to revise whole writing. As a result, they did not attempt to make a change. In this regard, one student told that:

Student 8: I could not correct my poem very much. There was a general problem with the poem. It wasn't like a poem. There was nothing I could do. I had to rewrite it from scratch to fix it because there was a general problem. [114]

In addition to ineffective peer feedback, **positive self-feedback** caused one student in the group WRS not to revise her writing ($f = 1$). She thought that she did not have faults in her writing. Finally, another student in the group WRS did not change her writing because of **forgetting to revise** ($f = 1$).

Usability

The fifth most frequent problems in the FPA activities were related to usability ($n = 13$, $f = 19$). Although the usability of the SWAPPER was evaluated and improved several times, new usability issues emerged in this study. The group WRS ($n = 11$, $f = 17$) reported noticeably more usability problems than the group W/ORS ($n = 2$, $f = 2$) because they had more features or scaffolds in the SWAPPER. Usability problems were inadequate notification for new messages, trouble in saving operation, difficult

access to messages, incapability to delete messages, difficulty in the indication of problems, and incapability to state other reasons. They were mainly related to the dialog scaffold in the group WRS.

One usability problem was related to the ***inadequate notification for new messages*** in the dialog scaffold of the group WRS ($n = 4$, $f = 6$). To warn students about the new messages, notifications were given in the FPA page of the SWAPPER. However, four students did not deem it adequate because they did not log in to the SWAPPER frequently to check their messages. As a solution to this problem, the students suggested sending notification e-mails and phone messages to inform them about the new messages, add a notification button at the top bar of the website, and develop a mobile application of the SWAPPER. Regarding this problem, one student stated that:

Student 54: Let's say in messaging, my friend sent me a message. Since notifications are not sent, we rarely enter, no student enters at any time and check... That's why he doesn't see. So it can be a notification system. [115]

Another problem regarding the usability of the dialog scaffold was ***difficult access to messages*** ($n = 3$, $f = 4$). Some students had difficulty in finding the place of messages in the SWAPPER. In addition, ***incapability to delete messages*** in the dialog scaffold caused problems ($n = 2$, $f = 3$). There were two students who sent wrong or incomplete messages, but then could not delete them. They suggested adding deleting feature to the dialog scaffold. Concerning these problems, they said that:

Student 30: I had a hard time finding the message box. I couldn't even find it. So I could open it only when the notification came. It could be put into a more visible place, maybe. [116]

Student 59: I made a mistake in a few words due to the keyboard while messaging with two peers. I could not retract the message. I had a hard time because I couldn't rewrite the message. [117]

Trouble in saving operations was experienced by two students from both groups, as well ($n = 4, f = 4$). Sometimes they could not save their writings, feedback, and responses to the questions in the regulation scaffold. Therefore, they had to redo the activities. For example, one student told that:

Student 5: I encountered a problem related to the system while giving feedback. I wrote my feedback and sent it. Then, all feedback was deleted, and there was nowhere I saved it... I wrote long feedback and carefully. Afterwards, I had to rewrite it. [118]

One student in the group WRS also had **difficulty in the indication of problems** while giving feedback ($n = 1, f = 1$). He expressed that he had to copy erroneous sentences from peers' writings and paste them into the fields for feedback provision. He suggested that adding a feature that enables students to mark the problematic areas in writings would be more efficient. His statements are as follows:

Student 18: When telling our friend's mistake, we first need to tell where his mistake is. To do that, we need to copy the erroneous sentence. Instead of copying, there can be a button to mark the place where the error happened. When we click the button, we can receive feedback that indicates the place of error. I think it will be better if it marks erroneous parts in the text when I click the button and shows the parts on which suggestions are given. [119]

Incapability to state other reasons in the attribution questions of the regulation scaffolds was the final usability problem ($n = 1, f = 1$). One student could not state her specific reason why her writing performance was good or bad in the attribution question of the mindful processing of feedback scaffold because it was a multiple-choice question, and it was not allowed for users to write text as a response.

Learner Characteristics

The sixth most frequent problems in the FPA activities pertained to learner characteristics ($n = 9, f = 9$). They were low knowledge about writing genre and low interest in writing genre. They caused challenges in giving quality feedback on writings, poems in particular, only in the group WRS.

Low knowledge and skill in writing genre was one problematic learner characteristic ($n = 8, f = 8$). Eight students in the group WRS who compared their experiences in peer feedback provision activities in the two writings tasks concluded that the poem was a more difficult genre for them than the story. Their argument was that writing stories and giving feedback did not require specific knowledge, and they felt more skillful in it. On the other hand, the students mentioned that they felt less competent in feedback provision on poems and needed more knowledge and skill in this genre. In this regard, one student said:

Student 33: It is important to have knowledge about the topic in feedback provision. For example, I don't have much knowledge about the poem. ... I cannot write poems very well, for instance. At least, I think so. I am better at the story and I can critically analyze stories, the subject in which I am an expert. I can provide better comments. However, it is not so in the poem. I think that it depends on our expertise. [120]

Low interest in writing genre was another learner characteristic that made feedback provision on a specific genre more challenging ($n = 1, f = 1$). Specifically, one student reported that he had more interest in writing poems; therefore, feedback provision on stories was more challenging for him. His statements are as follows:

Student 67: The story was more challenging for me. Maybe it's because I like to write poems more. Writing poems was more funny and pleasant for me. That's why the story might have been more challenging for me. [121]

Findings regarding the characteristics of writing assessed and learner characteristics revealed differences in feedback provision on two writing genres. Among the participants who compared their experiences in two genres, 17 of them regarded feedback provision on the poem more challenging, whereas four participants considered feedback provision on the story more challenging. Table 4.16 contrasts two genres to reveal why feedback provision on a specific genre was more challenging according to the students. Feedback provision on story was more challenging due to subjectivity, long writings, requirements in writing criteria, and low interest. On the other hand, the following reasons regarding poem were pronounced: subjectivity, short writings, implicit expression, and low knowledge and skill.

Table 4.16 The Reasons Why Feedback Provision on a Story or Poem was More Challenging

Theme	Code	The story was more challenging ($n = 4$)		The poem was more challenging ($n = 17$)	
		n	f	n	f
Characteristics of writing assessed	Subjectivity	1	1	5	6
	Short writings	-	-	5	6
	Long writings	2	2	-	-
	Requirements in writing criteria	4	4	-	-
	Implicit expression	-	-	2	2
Learner characteristics	Low knowledge and skill	-	-	8	8
	Low interest	1	1	-	-

Information Adequacy

The final problems in the FPA activities were related to information adequacy ($n = 4$, $f = 5$). Some students only in the group WRS deemed information provided in the peer feedback provision activity inadequate. The following codes were derived under this subtheme: inadequate assessment criteria and lack of peers' writing selections.

Three students reported *inadequate assessment criteria* listed in the criteria form of the peer feedback provision activity ($n = 3$, $f = 3$). They mentioned that they had

difficulty in finding a field where they could request feedback or provide feedback on the topics not available in the form. They suggested adding the “other” field or their own criteria to the form. Concerning this problem, one student told that:

Student 61: I think we are restricted in giving feedback. For example, we can give feedback on how we can elaborate on the subject, not spelling correction, punctuation. ‘Should we increase or decrease the number of characters?’ ... But, there is no place where we can specify it. [122]

Another problem was ***lack of peers’ writing selections*** ($n = 2, f = 2$). Two students in the group WRS proposed that their peers’ selections in the scaffolds of writing activity should be shared so that they can be informed about the topic of the writings and peers’ writing strategies. As a result, they mentioned that they could give feedback more accurately and addressing writing strategies. Regarding this problem and suggestion, one student said:

Student 40: We are writing our topic during the preparation phase. Actually, this can be seen for the friend giving feedback. When he reads the writing at first, he might give wrong feedback because he does not grasp the subject in the story or poem. Our topic can be written above [in the feedback provision page]. The information that can be useful to provide feedback on the story can be written above the writing. [123]

4.6 Summary of the Results

In line with the research questions, this chapter provided results about the effect of the regulation scaffolds on (1) peer feedback provision, (2) feedback uptake, and (3) perceived contributions of the online FPA environment. In addition, it described (4) use of the regulation scaffolds in the FPA activities of the group WRS and (5) students’ experiences in FPA activities. Figure 4.3 presents the results of the

inferential statistical tests regarding the first three research questions and highlights of the descriptive and qualitative results regarding the last two questions.

Peer feedback provision was analyzed with regard to the number of feedback segments and the quality of feedback content. The group W/ORS wrote more feedback segments in both writing tasks, but it was significantly higher in the second task. In terms of quality of feedback content, the use of regulation scaffolds yielded significantly greater proportions of elaborations and negative verifications in the first writing task. However, there was no significant difference in the second writing task. *Feedback uptake* was operationalized with reading peer feedback, revision of writing, and implementation rate of peer feedback in this study. First, reading peer feedback significantly differed between the two groups in the first task by favoring the group WRS, whereas it did not differ in the second task. Second, the revision of writings was not performed by the majority of the students in both groups and tasks, and regulation scaffolds did not affect revision activity. Finally, students revising their writings used both peer and self-feedback. The group W/ORS implemented a significantly higher proportion of accurate peer feedback in the first task; however, there was no significant difference between the groups in the second task.

Perceived contributions of the online FPA environment included five aspects: self-assessment, peer feedback provision, peer feedback uptake, peer cooperation, and learning outcomes on writing. The groups W/ORS and WRS did not differ significantly in terms of self-assessment, peer feedback provision, and peer feedback uptake. However, the group WRS perceived a significantly higher contribution of the online FPA environment to the interaction with friends about writing homework and enhancement of knowledge about the characteristics of the writing genre.

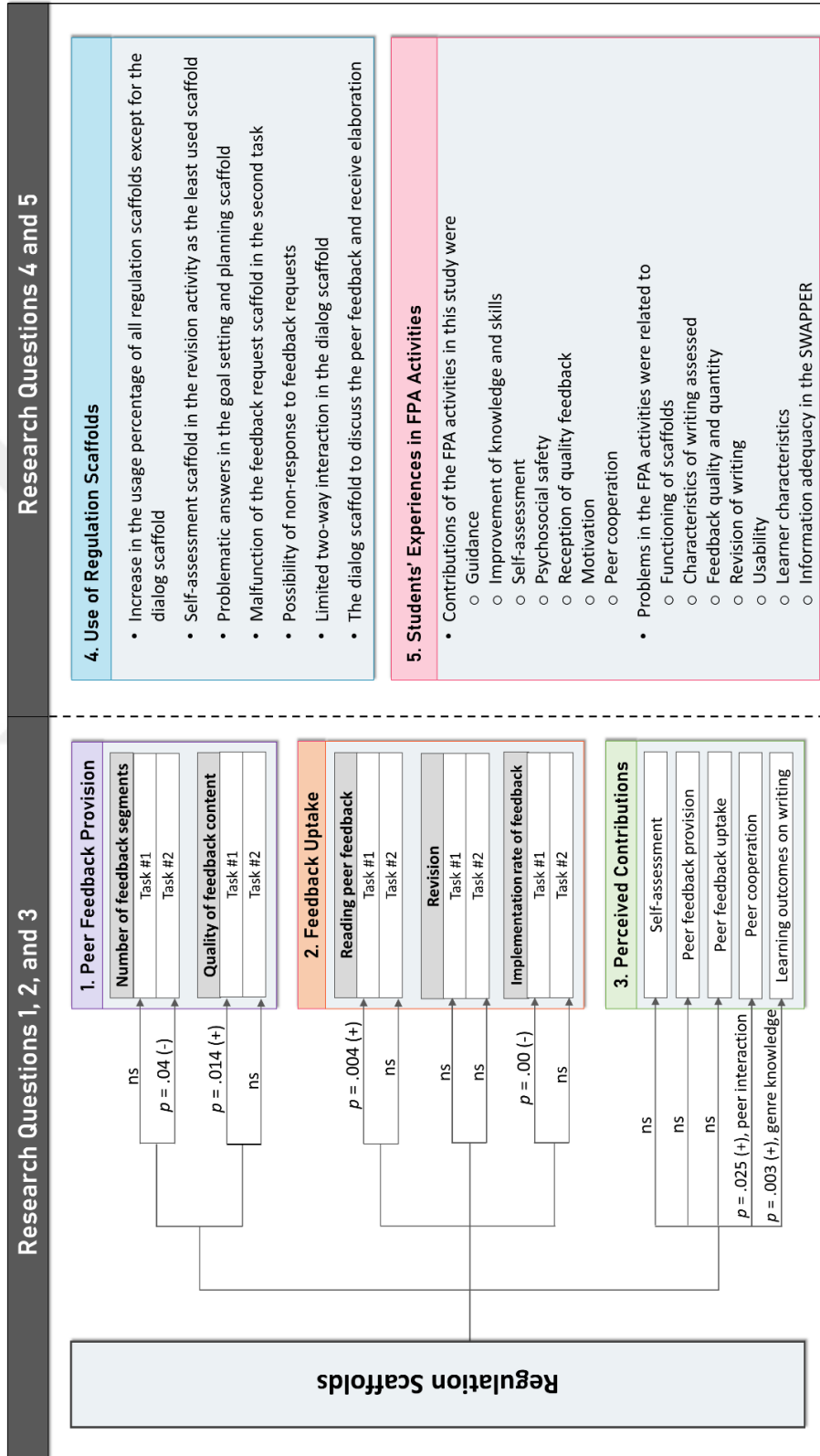


Figure 4.3. Summary of the results
 Note. ns = not significant, (+) = positive effect of regulation scaffolds, and (-) = negative effect of regulation scaffolds

Use of the regulation scaffolds in the FPA activities of the group WRS was also analyzed to determine the usage percentage of the scaffolds, identify problematic use, and analyze peer interaction. Figure 4.3 lists the main findings. The usage percentage of all regulation scaffolds except for the dialog scaffold increased in the second task. The self-assessment scaffold in the revision activity was the least used scaffold in both tasks. Problems were noted in the following scaffolds: goal setting and planning, feedback requests, and dialog. Finally, peer interaction started with the feedback request scaffold in the task performance activity, and it continued with the dialog scaffold to discuss peer feedback and receive elaboration of the feedback.

Students' experiences in FPA activities were finally investigated in the study to enhance understanding of the intervention process. The results revealed contributions of the FPA activities and problems in the FPA activities (Figure 4.3). Contributions of the FPA activities were guidance, improvement of knowledge and skills, self-assessment, psychosocial safety, reception of quality feedback, motivation, and peer cooperation. The comparisons between the two groups implied that online regulation scaffolds brought more guidance on peer feedback provision, improvement of knowledge about writing genre, and different kinds of self-assessment. The problems in the FPA activities were related to the functioning of scaffolds, characteristics of writing assessed, feedback quality and quantity, revision of writing, usability, learner characteristics, and information adequacy in the SWAPPER. Analyses of the two groups indicated that some scaffolds did not work as intended, and more usability problems emerged in the group WRS. Besides scaffolds, characteristics of task, learner, and feedback played an essential role in the emergence of the problems.

CHAPTER 5

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The final chapter consists of discussion, conclusion, implications for theory, implications for practice, and recommendations for future research sections. First, discussion of the results provides an interpretation of quantitative and qualitative findings regarding peer feedback provision, feedback uptake, perceived contributions of the online FPA environment, use of the regulation scaffolds, and students' experiences in FPA activities. Second, the conclusion of the study is revealed, considering the research aim and essential findings. Third, the chapter explains implications of the study for theory. Fourth, implications of the study for FPA practices are presented. Finally, this chapter lists the recommendations for future research.

5.1 Discussion of the Results

The purpose of this mixed-methods study was to investigate the effect of regulation scaffolds on FPA activities in the online environment. It included two particular aims. The first one was to analyze the impact of regulation scaffolds on (1) peer feedback provision, (2) feedback uptake, and (3) perceived contributions of the online FPA environment. The second one is to describe (4) use of the regulation scaffolds and (5) students' experiences in online FPA activities. In the following parts, the main research results are discussed with both complementary results and related literature to provide a better understanding of the effect of regulation scaffolds.

5.1.1 Peer Feedback Provision

The first research question was related to the effect of regulation scaffolds on peer feedback provision. The impact was examined with regard to the number of feedback segments and the quality of feedback content. The analyses were conducted for two consecutive writing tasks separately. The results revealed that the group W/ORS wrote more feedback segments in both writing tasks, but it was significantly higher in the second task. In terms of quality of feedback content, the use of regulation scaffolds yielded significantly greater proportions of elaborations and negative verifications in the first writing task. However, there was no significant difference in the second writing task.

Number of Feedback Segments

The difference in the number of feedback segments in favor of the group W/ORS was an intriguing finding of this study. It was expected that the use of more instructional scaffolds would result in longer feedback messages in line with prior research (e.g., Gielen & De Wever, 2015c; Peters et al., 2018). The use of the regulation scaffolds and students' experiences with the scaffolds were explored to explain this unexpected difference. Among the scaffolds, feedback requests have been the main focus for the interpretation of the finding because both Voet al. (2018) and Agricola et al. (2020) suggested analyzing whether students used this scaffold as instructed and they could write quality feedback requests to explain its insignificant effect on feedback quantity and quality.

Content analysis of feedback requests revealed that students used this scaffold to share their writing choices, self-assessment results, and requests with their feedback providers. Their self-assessment results indicated what they did well or poorly according to their point of view. Students mostly revealed what they did poorly in the first writing task, whereas their self-assessment results in the second writing task mainly included what they did well. It is also important to note that some students in the second task just used the scaffold to share their satisfaction with their

performance and state they had no request. In fact, feedback requests are used by learners to express their needs on which they would like to receive feedback (Gielen et al., 2010a; Nicol, 2010). The content of feedback requests in this study implies that the instructional scaffold could not fulfill its aim in the second task in particular. This might have negatively affected students who are expected to respond to feedback requests during feedback provision. Normally, students become more motivated to provide elaborated feedback when their peers seek help with feedback requests (Gielen et al., 2010a, 2010b; Tsivitanidou et al., 2012; Voet et al., 2018). However, they might feel unwilling to criticize their friends if their peers deem their performance adequate. As a result, the group WRS might have provided fewer feedback segments than the group not sending and receiving feedback requests.

Students' experiences in the use of feedback request scaffold can also explain why the group WRS wrote fewer feedback segments. In this scaffold, students could express their requests under related assessment criteria, but they did not have to send a request for each criterion. In the interviews, some feedback providers reported that they disregarded assessment criteria without peers' feedback requests and did not struggle to give feedback on those criteria. In contrast, they paid more attention to the criteria including requests. On the other hand, feedback providers in the group W/ORS did not receive a request for any specific criterion; thus, they could have attached equal importance to each assessment criterion. Consequently, they could have written more feedback segments than the group WRS to cover entire assessment criteria. On the whole, it might be inferred that feedback requests could direct attention to certain assessment criteria; nevertheless, they could have a negative impact on the total number of feedback segments provided for all assessment criteria.

Feedback Content

The use of regulation scaffolds was not beneficial to increase the length of the feedback messages, but it contributed to the quality of feedback content in the first writing task. As the group WRS received different regulation scaffolds until peer feedback provision, qualitative findings were used to determine which of them

supported the quality of feedback content. Goal setting and planning and feedback requests scaffolds were found useful for guiding peer feedback provision.

In goal setting and planning scaffold, students could compose their writing goals, specify self-evaluative standards, select writing strategies, and plan their writing. Students in the interviews reported that they could assess and improve their own domain knowledge and writings through the questions in this scaffold before and during the task performance. They also expressed that they gained knowledge and experience in using assessment criteria before peer feedback provision as the questions in the scaffold were related to assessment criteria. Therefore, it facilitated giving peer feedback according to some students.

Although the use of goal setting and planning scaffold is a novel way to support peer feedback provision, literature emphasizing domain-specific skills can bring more explanations about the role of this scaffold in FPA. Peer assessment skill depends on domain-specific skill because assessment or evaluation is at a higher level than many cognitive skills in learning hierarchy (van Zundert et al., 2012a). In other words, having domain-specific skills is a prerequisite for giving quality feedback (van Zundert et al., 2012b). Moreover, when domain-specific skill is a complex task and learners are novice, the quality of peer assessment is affected negatively (van Zundert et al., 2012b). Cognitive load theory can explain why peer assessment deteriorates in such a situation (van Zundert et al., 2012a; 2012b). To be able to assess peers' work, students firstly recall and use domain-specific skills for the complex task (van Zundert et al., 2012a). It requires a considerable amount of working memory because of high element interactivity in the complex tasks or intrinsic cognitive load (Könings et al., 2019). In addition, if the students are novice ones, little capacity is left for the peer assessment because they own weak cognitive schemata consisting of separate units of information for the task (van Zundert et al., 2012b). As a result of the insufficient amount of working memory left for peer assessment, the quality of peer assessment is worsened (Könings et al., 2019; van Zundert et al., 2012a, 2012b). Hence, the scaffolds that support the development of domain-specific skills can make room in the working memory for peer assessment (van Zundert, 2012a).

Such a situation can also make scaffolding of peer assessment skills more effective because Könings et al. (2019) found that the use of both peer assessment scaffold and domain-specific scaffold yielded the highest peer assessment accuracy. In the current study, students in both groups were trained on writing strategies and informed about assessment criteria and standards in the classroom before writing tasks in the online FPA environment. Therefore, all students had the opportunity to foster their domain-specific skills. However, the group WRS continued to receive support for writing in the online environment. The use of goal setting and planning scaffold was one of them that was appraised as beneficial to enhance writing knowledge and facilitate writing and peer feedback provision. This finding suggests that the scaffolds promoting domain knowledge and skill in task performance can also help feedback provision and result in higher quality feedback.

Another scaffold that affected feedback provision was feedback requests. Although this scaffold was indicated as a potential cause of significantly fewer feedback segments in the group WRS in the second task, qualitative findings indicated that it could have brought about higher feedback quality in the group WRS in the first task. In addition to self-assessment results, the content of feedback requests included students' questions about how their performance was and how they could improve their performance in regard to specific assessment criteria. In the interviews, students reported that receiving feedback requests facilitated their feedback provision as they could determine how to give feedback more easily and write better feedback addressing the needs of their peers. Correspondingly, the literature indicates that assessors are guided with feedback requests during feedback provision, and they become more motivated to give useful feedback (Gielen et al., 2010a; Nicol, 2010). For example, Bloxham and Campbell (2010) used interactive cover sheets on which students could write their feedback requests for their tutors. The tutors who responded to students' questions reported that their feedback provision process accelerated, they gained further insights into students' writing process, and they could meet their students' specific needs. As a result of such advantages of feedback requests, the cognitive complexity of feedback provision can be alleviated, and more

quality feedback can be given. There is also empirical evidence revealing the positive impact of the feedback requests on peer feedback quality. To illustrate, Gielen and De Wever (2015a) found that feedback requests significantly increased peer feedback quality over time. Furthermore, Voet et al. (2018) revealed that the students responding to feedback requests provided a significantly lower proportion of verifications and a higher proportion of informative elaborations. Considering results of both this study and prior research, it might be concluded that feedback requests could enhance peer feedback quality in the first FPA practices in particular.

Peer feedback quality did not differ between the two groups in the second writing task. This result can be attributed to different factors. First, in the feedback requests of the second task, students wrote what they did well more frequently instead of emphasizing their needs. Malfunction of this scaffold was associated with significantly less number of feedback segments in the second task. It could also have prevented the potential contribution of the feedback requests to peer feedback quality. For example, it might unbalance positive and negative verifications in peer feedback. Students' positive self-feedback in their feedback requests can result in positive peer feedback because feedback providers mostly agree with assessees' self-assessments, and they sometimes become more positive than assessees (Elbow & Sorcinelli, 2011). However, this situation can harm the quality of peer feedback as the proportion of positive verifications increases compared to negative verifications.

Second, the lack of significant difference in feedback quality in the second task can be ascribed to writing genres in two tasks. While students wrote a story in the first task, they wrote a poem in the second task. With regard to the characteristics of the writing assessed, the participants in the interviews mostly argued that feedback provision on poems was more challenging compared to feedback provision on stories. Various reasons were indicated by the students to support their argument. Shortness, subjectivity, and implicit expression of poems were the factors that obstructed feedback provision in this genre according to students. Moreover, some participants in the group WRS declared that they felt more incompetent in feedback provision on poems because it required more knowledge and skill in this genre. Due

to the profound difficulty inherent in feedback provision on poems, regulation scaffolds might not have been adequate to affect the quality of peer feedback.

Third, the insignificant difference in feedback quality in the second task could have been due to the practice effect and lack of time (Panadero et al., 2020). According to the online dictionary of the American Psychological Association (2020), practice effect is “any change or improvement that results from practice or repetition of task items or activities.” Different empirical studies (Gielen & De Wever, 2015a, 2015b; Rotsaert et al., 2018a, 2018b) revealed that students’ peer assessment skills increased with multiple practice opportunities even if they did not receive scaffolds. As all participants of the current study provided peer feedback two times, the practice effect might have neutralized the impact of the regulation scaffold in the second writing task and resulted in no significant difference between the groups. In addition, the second task coincided with the final exam dates, and participants had less time to do the FPA activities. As completion of FPA activities is cognitively demanding and requires considerable effort (Adachi et al., 2018b; Gravett & Winstone, 2019; Kollar & Fischer, 2010; Nicol, 2012; O-Donnell & Topping, 1998; Patchan et al., 2016), limited time in the second task might have hampered students’ effective use of regulation scaffolds and performance in the activities. Therefore, regulation scaffolds might not have influenced feedback provision in the second task.

In peer assessment, the co-regulation of learning with the help of peers is influenced by the quality of peer feedback (Panadero et al., 2016). However, students may not provide quality peer feedback (e.g., Gan & Hattie, 2014; Harris, Brown, & Harnett, 2015; Hovardas et al., 2014; Tsai and Liang, 2009) due to the high level of cognitive and social demands of peer assessment (Kim, 2009; Kim & Ryu, 2013; O-Donnell & Topping, 1998). Therefore, it is crucial to support students with instructional scaffolds in peer feedback provision (Gielen & De Wever, 2015a, 2015b, 2015c; Hovardas et al., 2014; Kollar & Fischer, 2010; Walker, 2015). Training students in the performance task and peer feedback and clarifying assessment criteria (Dochy et al.; Topping, 1998, 2009) before peer assessment activities have been proposed. Nonetheless, they are not enough to ensure the provision of quality peer feedback.

Researchers (e.g., Kaufman & Schunn, 2011; Leenknecht & Prins, 2018; Hovardas et al., 2014) advocate the maintenance of support during peer assessment activities especially for younger age groups. List of assessment criteria, prompts regarding how to give feedback (e.g., Gan & Hattie, 2014; Gielen & De Wever, 2015b, 2015c; Peters et al., 2018), and anonymity (e.g., Howard et al., 2010; Kobayashi, 2020; Lin, 2018; Rotsaert et al., 2018a) have been common instructional scaffolds in peer feedback provision. This study proposed the use of additional scaffolds to optimize the effectiveness of peer assessment. Collected under the title of regulation scaffolds, goal setting and planning, self-assessment, and feedback requests scaffolds were given to one group of students in the current research. The results indicated their positive impact in the first task with higher feedback quality produced by the students receiving these scaffolds. Qualitative data highlighted the role of goal setting and planning and feedback requests in feedback provision. The lack of significant effect of these scaffolds in the second task was explained with the malfunction of feedback requests, writing genre, practice effect, and limited time allocated to the FPA activities. On the whole, this study supports the use of regulation scaffolds with empirical evidence to enhance feedback provision, but it draws attention to necessary conditions to benefit from these scaffolds.

5.1.2 Feedback Uptake

The second research question sought the effect of regulation scaffolds on feedback uptake in two consecutive writing tasks. Feedback uptake was analyzed in terms of reading peer feedback, revision of writing, and implementation rate of peer feedback. Firstly, it was indicated that reading peer feedback differed significantly with the use of online FPA environment WRS in the first writing task, whereas it did not differ in the second task. Secondly, the revision of writings was not performed by the majority of the students in both groups and tasks, and regulation scaffolds did not affect revision activity. Finally, students revising their writings used both peer and self-feedback. The group W/ORS implemented a significantly higher proportion of

accurate peer feedback in the first task; however, there was no significant difference between the groups in the second task.

Reading Peer Feedback

Feedback receivers' lack of attention prevents transmission of feedback messages (Winstone et al., 2017b). This study firstly determined whether students read peer feedback to ensure the reception of the transmitted message. The students in the group WRS were more likely to read the peer feedback they received than the group W/ORS in the first task. Based on the literature and qualitative findings, three regulation scaffolds might have contributed to reading peer feedback more. They are self-assessment, reflection on feedback provision, and feedback request scaffolds.

Self-assessment during task performance can help students become aware of their performance and close the gap between actual and intended performance (Reinholz, 2016). During feedback provision, students can also assess their performance by comparing it with peers' performance, determine their strengths and weaknesses, and make revision plans (Bourgeois, 2016; Nicol, 2014; Panadero, 2016; Patchan & Schunn, 2015; Reinholz, 2016; To & Panadero, 2019). In this research, the students were encouraged to assess their performance in both writing and feedback provision activities through self-assessment and reflection on feedback provision scaffolds, respectively. Similar to the literature, interview findings indicated that both scaffolds triggered self-assessment and enhanced students' awareness of their performance level before peer feedback reception. In addition, self-assessment can increase students' attention to the received feedback since they can compare their self-assessment with external assessment (Gibbs & Simpson, 2004). For example, Yan (2020) found that the more students engaged with self-reflection during task performance, the more they sought external and internal feedback after task performance. As a result, they can confirm or disconfirm their self-assessment based on the external assessment, choose an appropriate action for the improvement of performance, and execute their action (Panadero et al., 2016; Yan & Brown, 2017). Therefore, self-assessment opportunities in the group WRS before the reception of

peer feedback could have led to more likelihood of reading peer feedback in the first task. In other words, students' continuous self-assessment in FPA can bring about more attention to received feedback.

Another scaffold related to reading peer feedback is feedback requests. In the interviews, students reported that requesting feedback was useful to identify their needs in their performance and emphasize them to their feedback providers. Correspondingly, Nicol (2012) states that students requesting feedback become sensitive to their weaknesses in their performance. As a result, their attention to incoming feedback increases (Gibbs & Simpson, 2004; Gielen et al., 2010a; Nicol, 2010). Therefore, it could be inferred that sending feedback requests might make students more alerted to receive peer feedback.

In contrast to the first task, reading peer feedback did not differ in the second task. Almost all students in both groups read their peer feedback. It can be attributed to the practice effect. After the first writing task, students' feedback uptake in terms of reading peer feedback could have enhanced. This could have diminished the effect of regulation scaffolds to make a difference in the variable in the second task. As a result, the study might have found no effect of the regulation scaffolds on reading peer feedback in the second task.

Revision of Writing

Although the majority of the students read their peer feedback, the number of students who revised their writings did not exceed half of them in both groups and tasks. Also, revision of writings was independent from the use of regulation scaffolds. In other words, the revision was not performed by most of the students, regardless of the use of regulation scaffolds. Similarly, Wichmann et al. (2018) report that students' feedback uptake in peer assessment is low, and they engage in little revision. One main reason behind the failure in the revision activity of this study can be the demanding process of revision of writing (MacArthur, 2019). It requires comparisons among the first performance, peer feedback, and the potential revision to integrate peer feedback into performance coherently; as a result, the high cognitive

load on students can emerge (Kollar & Fischer, 2010). In addition to the complicated nature, fewer attempts in the revision of performance in both groups can be discussed with four interplaying factors proposed by Winstone et al. (2017a). They are characteristics of feedback receivers and senders, characteristics of messages, and contextual factors.

Characteristics of feedback receivers include their motivation, self-efficacy, academic skills, self-regulation, and prior experience (Brown et al., 2016; Panadero et al., 2018a; Winstone et al., 2017a). Characteristics of senders are related to learners' perceptions about senders' credibility, attention, and attitude (Berndt et al., 2018; Hovards et al., 2014; Winstone et al., 2017a). Before the intervention process, participants' characteristics were measured and analyzed. The majority of them had experience in writing and peer assessment. However, students did not have a strong willingness to receive feedback and strong beliefs about their peers' ability to give detailed, informative, accurate, fair, and useful feedback. Although training about peer assessment and self-regulated writing strategies was provided to all participants to prepare students for the FPA activities in the online environment, it might not have been satisfactory to contribute to the development of the aforementioned characteristics of feedback receivers and senders and to ensure the use of peer feedback.

Characteristics of messages that lead to feedback uptake include clearness, elaborateness, and constructiveness of feedback with accurate suggestions (Gielen et al., 2010a; van der Pol et al., 2008; Winstone et al., 2017a; Wu & Schunn, 2020). In the interviews, students also attributed non-revision of their writings to ineffective feedback they received. Similar to the literature, feedback with only positive evaluations, without specific suggestions, and not elaborated was deemed ineffective to improve performance in the interviews. Although feedback quality was not too low especially in the first task with regard to proportions of elaborations, negative verifications, and suggestive elaborations, some students receiving ineffective feedback might have encountered difficulty in revising their writings.

Contextual factors in feedback uptake mainly pertain to the structure of assessment with instructional scaffolds. Researchers suggest the use of scaffolds through which students are trained before peer assessment (Li, 2017; Winstone et al., 2017a), receive feedback based on their requests (Nicol, 2010), reflect on the received feedback (Duijnhouwer, Prins, & Stokking, 2012; Nicol, 2010; Wichmann et al., 2018), and establish a dialog with their peers (Kim & Ryu, 2013; Nicol, 2010; Winstone et al., 2017a) to enhance feedback uptake. All these scaffolds were available in the group WRS. However, it made no difference in the percentage of the students revising their writings. It implied that other factors interfered with or moderated the effect of the regulation scaffolds. Characteristics of feedback receivers, senders, and feedback messages are potential factors as described earlier.

Additional specific reasons for non-revision were pronounced by the participants in the interviews. One of them was difficulty in rewriting writing. In particular, the need to change entire writing based on feedback caused some students not to revise their writings. As both writing and implementation of multiple peer feedback are demanding tasks that bring about high cognitive load (Patchan et al., 2016), students might prefer not to revise their writings. Another reason was related to students' positive self-feedback regarding their writing performance. It causes students to reject that shortcoming expressed in the feedback was really shortcoming (Walker, 2015). On the whole, it can be concluded that besides the use of instructional scaffolds, there can be different factors impacting revision of performance such as characteristics of feedback receivers, senders, and messages.

Implementation Rate of Peer Feedback

Revision performance of the students was also analyzed to compare the groups in regard to the implementation rate of peer feedback. First, it was realized that there were revisions that could not be attributed to peer feedback in the final version of students' writings in both groups and tasks. Therefore, they were ascribed to self- or internal feedback. Similarly, in the study by Pham and Usaha (2016), the majority of the revisions in students' writings were made independent from peer feedback. On

the other hand, Wichmann et al. (2018) revealed that students almost never made changes independently from the received peer feedback in their writings.

In addition to the reception of peer feedback, students' revisions may result from their reflections on how they could improve their writings and their evaluations of peers' writings (Kaufman & Schunn, 2011). In other words, while learners perform a task, they generate internal or self-feedback even if external feedback is not available (Nicol et al., 2014). Although self- or internal feedback provided by learners themselves are often disregarded in feedback research (Nicol et al., 2014), this study paid great attention to it since it had a central place in the FPA model for self-regulated and co-regulated learning. For example, while explaining writing strategies in training, the researcher encouraged students in both groups to continuously monitor their progress and think about how they could enhance their writings during writing, feedback provision, feedback reception, and revision activities. In addition, students in the group WRS benefitted from regulation scaffolds through which they could assess their writing process and consider the improvement strategies. As a result, students might not have relied on only peer feedback to revise their writings. Self-feedback generated by the learners themselves was also applied to improve writings.

The intriguing finding regarding this research question was that the group W/ORS outperformed the group WRS in the proportion of accurate peer feedback implemented in the first task; however, there was no significant difference between the groups in the second task. Overall, this finding indicated the lack of effect of regulation scaffolds on the use of peer feedback. It contradicted with prior research findings. Nicol (2010) proposes that only transmission of feedback information does not bring about learning improvement; in fact, students need to analyze the message, pose questions about it, negotiate with others about it, relate it with prior understanding, and use it to improve performance. Such a feedback process can enhance students' ability to monitor, evaluate, and regulate their learning (Nicol, 2010). Correspondingly, the use of question prompts (Jurkowski, 2018), back-feedback forms (Gielen et al., 2010b; Kim, 2009), and dialogs (Kim & Ryu, 2013)

that enable students to consider, process, and use peer feedback were found useful to improve performance. In this study, there were similar scaffolds to enhance feedback uptake. They were mindful processing of feedback and dialog scaffolds. The superior performance of the group W/ORS in the first task and lack of impact of regulation scaffolds can be explained with different reasons as the effect of feedback on behavior is confounded by many factors (Ilgen et al., 1979). Characteristics of receivers and feedback can be two main factors to discuss this finding.

With regard to the characteristics of receivers, learners have different capacities and willingness to use feedback (Jonsson & Panadero, 2018; Winstone et al., 2017b). Although the two groups did not differ in the measurements before the intervention, the students who attempted to revise their writings in the groups might not be equal in this ability and desire to use whole peer feedback. Moreover, expressing what they need to do to improve their writings in the scaffold for mindful processing might have been satisfactory for them as they could create both mental and physical note of the received feedback and necessary actions (Jonsson & Panadero, 2018). This might have caused students in the group WRS to take a more passive role in the implementation of peer feedback.

Another reason regarding the insignificant influence of the regulation scaffolds is related to feedback characteristics. The amount of feedback, elaboration in feedback, and focus of feedback might have prevented the effect of regulation scaffolds. First, the amount of feedback was compared for the two groups of students revising their writings in two writing tasks. The number of feedback comments students received regarding the shortcomings in their writings was higher in the first task compared to the second task, and the group WRS had noticeably more feedback with shortcomings than the group W/ORS in the first task. Quantity of feedback is a concern to foster students' satisfaction with feedback; however, students can be overwhelmed by a large amount of feedback (Nicol & Macfarlane-Dick, 2006; Winstone et al., 2017a). They can experience cognitive load while integrating them into their performance (Patchan et al., 2016). Complex tasks such as writing can also make it more demanding (MacArthur, 2019). Correspondingly, Patchan et al. (2016)

found that increase in the amount of feedback decreased the likelihood of using comments. Therefore, the superiority of the group W/ORS in the implementation rate of peer feedback in the first task can be ascribed to less amount of peer feedback they received regarding their shortcomings. A low number of such feedback comments in the second task might also have made the use of regulation scaffolds for enhancing feedback uptake unnecessary.

Second, elaboration in peer feedback was considered to explain the lack of effect of regulation scaffolds. The feedback comments the students were expected to implement were the specific and accurate ones. In other words, the researcher checked whether students applied the comments giving details about the wrong, missing, redundant, or unclear aspects instead of expressing just errors regarding the assessment criterion. As these comments carried elaborated information, the students might not have needed reflection and dialog scaffolds for further processing of feedback. The study by Duijnhouwer et al. (2012) can provide empirical evidence for this claim. They investigated the effect of reflection on feedback and feedback with improvement strategies on students' writing performance. The authors did not find the main effect of reflection on writing performance. However, they indicated that students who received feedback without improvement strategies but reflected on feedback had higher writing performance than the ones who did not reflect on feedback. On the contrary, the students who received feedback with improvement strategies but did not reflect on feedback had higher writing performance than those who reflected on feedback. Correspondingly, students in the interviews reported that they did not need reflection when there were feedback comments with improvement strategies. The authors inferred that both receptions of improvement strategies and reflection on feedback were redundant. Therefore, the use of the scaffolds in feedback reception might not have influenced the implementation of peer feedback in the current study as feedback comments with elaborations were satisfactory to trigger revision.

The final reason regarding feedback characteristics to explain the difference in the implementation rate of peer feedback can be the focus of feedback. Patchan et al.

(2016) divided feedback comments into three categories with regard to their focus: low prose, high prose, and substance. Low prose issues include grammar, word choice, and spelling, whereas high prose issues include transitions, provision of evidence, and counter-arguments. Substance issues pertain to the content of the writing. Patchan et al. (2016) found that “students were less likely to implement comments that focused on high-prose issues.” (p. 17). They can be more inclined to repair less challenging problems (Gao et al., 2019). In this study, the focus of feedback students received was not analyzed. Therefore, it is not possible to compare two groups with regard to the focus of feedback. However, it could be speculated that the group W/ORS might have received more feedback on low prose issues in the first writing task; as a result, they outperformed the group WRS in the implementation rate of peer feedback.

There is a call for more research on students’ use of peer feedback and conditions that will foster feedback use (Gielen et al., 2010a; Walker, 2015; Winstone et al., 2017a). This study addressed this need by investigating students’ uptake of peer feedback in two treatment conditions and two writing tasks. The use of regulation scaffolds enhanced reading peer feedback in the first task, but they did not contribute to the revision and implementation rate of peer feedback in both tasks. Potential factors that could have confounded the effect of the scaffolds have been discussed in line with Winstone et al.’s (2017a) model. They were related to characteristics of feedback receivers and senders and characteristics of messages. On the whole, this study suggests that the use of regulation scaffolds can increase attention to the received feedback in the first FPA practices, but the use of peer feedback may depend on other factors regarding the characteristics of students and feedback.

5.1.3 Perceived Contributions of the Online FPA Environment

The perceived contributions of the online FPA environment were analyzed descriptively and then were compared between the groups W/ORS and WRS to answer the third research question. There were five aspects for the investigation of

students' perceived contributions: self-assessment, peer feedback provision, peer feedback uptake, peer cooperation, and learning outcomes on writing. The mean scores of both groups on these aspects were near or above the agreement point of the scale. Therefore, it implied that the online FPA environment, either W/ORS or WRS, contributed to the students in the research. However, the group WRS perceived significantly more contribution in the establishment of peer interaction and enhancement of knowledge about genre characteristics. Five aspects of the contributions are discussed below in detail.

Self-Assessment

The first contribution of the online FPA environment pertained to self-assessment. It was expected that the group WRS would outperform the group W/ORS in self-assessment because the former group had the scaffolds that encouraged students to assess their writing process and performance in each activity of FPA. On the other hand, there was no significant difference between the groups with regard to self-assessment since the scores of both groups were above or quite close to six on a seven-point scale.

This result can indicate that basic support provided to both groups and FPA itself might be adequate to ensure self-assessment. All students in the research were trained about a sample writing process emphasizing self-assessment before the use of the online FPA environment. It might have led students to assess their writing process in the online environment. More importantly, FPA itself contributed to the self-assessment of all students in the research. There is a close link between peer assessment and self-assessment (Wanner & Palmer, 2018). Internalization of success criteria and use them for the assessment of peers' performance foster learners' effective self-assessment and self-regulation (Wiliam, 2010). Furthermore, reception of peer feedback enhances learners' self-assessment (Panadero et al., 2017; Topping, 2009) since learners have the opportunity to reflect on the quality of their task performance, evaluate the degree to which their performance meets expected criteria, and revise their task accordingly (Andrade & Valtcheva, 2009). In the interviews,

students' statements regarding the experiences in FPA activities verified the related literature. In particular, there were students from both groups reporting that they realized mistakes in their writings while providing and receiving peer feedback. This finding also indicated the occurrence of self-assessment in the online FPA environment.

Although the two groups did not significantly differ in self-assessment, scores of the group WRS were slightly higher than the group W/ORS in almost all items. Analysis of the students' use of regulation scaffolds and experiences presented evidence of intense self-assessment in the group WRS. In the interviews, it was realized that students started to make self-assessment of their writing, domain knowledge, and writing strategies in the goal setting and planning scaffold of the writing activity. They then used the self-assessment scaffold, which was deemed helpful to realize their performance level in the interviews. In the content of feedback requests students sent to their feedback providers, there were also sentences including self-assessment results. In the peer feedback provision activity, they used the scaffold for reflection on feedback provision. Students reported that it enabled them to become aware of their writing performance. In feedback reception activity, the scaffold for mindful processing of feedback required students to assess their writing process, too.

In the FPA model for self-regulated and co-regulated learning, self-assessment is located in the center of the model. Each activity in FPA is connected to self-assessment. With specific design interventions, all stages of peer assessment can support self-assessment and self-regulation (Reinholz, 2016). Therefore, the integration of regulation scaffolds to all activities in FPA might have enhanced the opportunity of self-assessment in this study.

Peer Feedback Provision

The second aspect to which the online FPA environment contributed was peer feedback provision. It was expected that perceptions of the group WRS would be significantly higher in this regard due to the use of the regulation scaffolds. However,

the two groups did not differ in the perceived contribution of the online FPA environment to the peer feedback provision.

Similar to self-assessment, scores of both groups were about six on a seven-point scale. Therefore, it can be inferred that the online environment, either W/ORS and WRS, helped students determine how to give feedback, identify the points on which they would provide peer feedback, give detailed and fair peer feedback, and use a kind language. Before the intervention, students generally had positive beliefs about the characteristics of peer feedback they would provide. However, their beliefs regarding the detailedness and informativeness of their feedback were not high. The aforementioned perceived contributions of the online FPA environment indicated that it facilitated the composition process of peer feedback and enhanced the provision of detailed feedback.

Basic but robust scaffolds provided to both groups in the study can explain a considerable amount of contribution of the online FPA environment, either W/ORS and WRS, to the peer feedback provision. Before the use of the online FPA environment, all students were trained in peer feedback and informed about the assessment criteria of the writing tasks. These preparatory activities were found beneficial to guide students in feedback provision in the interviews. In fact, students reported that training helped them use kind language, give details, and express both negative and positive aspects of the performance in feedback provision activity of the online FPA environment. Similarly, empirical studies that used training in peer feedback revealed its contribution to the provision of a higher level (Alqassab et al., 2018) and accurate (Könings et al., 2019) feedback in particular. Moreover, the sharing of assessment criteria and explanations was deemed useful by the students in the interviews as they became knowledgeable about them and provided more comprehensive, elaborated, and suggestive feedback in the online environment. Likewise, Leenknecht and Prins (2018) revealed the positive impact of training in assessment criteria and standards on primary education students' knowledge of assessment criteria and standards, although they could not find its significant impact on the content of peer feedback. They suggested that support should be maintained

during feedback provision with structured feedback forms to improve feedback quality.

Accordingly, support for feedback provision continued in the online environment for both groups in this study. Criteria form, prompt regarding how to give feedback, and anonymity were the common scaffolds in the feedback provision activity of the two online FPA environments. The students mentioned the contributions of these scaffolds in the interviews, as well. It was revealed that the use of criteria form facilitated the provision of comprehensive feedback, while anonymity enabled students to feel comfortable and give objective feedback. In the literature, supporting students with prompts (Gan & Hattie, 2014) or with structured forms including both prompts and list of criteria (Gielen & De Wever, 2015b 2015c; Peters et al., 2018) were indicated more effective on the provision of quality feedback than no support conditions. The prior research also pronounced the impact of anonymity. For example, Howard et al. (2010) and Lin (2018) found that the anonymous group provided more critical and suggestive peer feedback than the non-anonymous group. In addition, qualitative inquires (e.g., Rotsaert et al., 2018a; Vanderhoven et al., 2015) favored anonymity as it could mitigate students' pressure and fear of disapproval by their peers in feedback provision.

In contrast to insignificant differences in perceived contributions of the online FPA environment to the peer feedback provision, the results of the first research question revealed different effects of regulation scaffolds on the peer feedback written in the environment. While they positively influenced the quality of peer feedback content in the first task, their impact on the number of feedback segments was negative. However, considering students' overall experiences, it could be inferred that preparatory activities and basic scaffolds available in the current research might be perceived as adequate by the students for supporting peer feedback provision in an online environment.

Peer Feedback Uptake

Peer feedback uptake was the third dimension of the potential contributions of the online FPA environment. It was expected that the group WRS would perceive higher contributions in this regard than the group W/ORS. However, the results did not reveal any significant differences between the two groups.

In relation to perceived feedback uptake, analysis of reading peer feedback, revision of writings, and implementation rate of peer feedback in the second research question presented mixed findings. While the group WRS was more likely to read peer feedback, the group W/ORS implemented a higher proportion of peer feedback in the first task. On the other hand, there was no significant difference between the groups in the second task. The common finding regarding feedback uptake was that majority of the students did not attempt to revise their writings in both tasks. Correspondingly, the use of regulation scaffolds did not affect students' perceived contributions of the online FPA environment to peer feedback uptake.

Lack of significant effect of regulation scaffolds on feedback uptake was attributed to other factors indicated by Winstone et al. (2017a) in the discussion of the previous research question. They included characteristics of feedback receivers and senders and characteristics of feedback messages. The same reasons can be expressed to explain insignificant differences in the perceived contributions of the online environment to peer feedback uptake. Concerning characteristics of feedback receivers, students' motivation, self-efficacy, skills, and prior experiences in writing and peer assessment (Brown et al., 2016; Panadero et al., 2018a; Winstone et al., 2017a) might have interfered with their feedback uptake and realization of potential contributions of regulation scaffolds. Moreover, students' perceptions about senders' or peers' credibility (Berndt et al., 2018; Hovards et al., 2014; Winstone et al., 2017a) could have prevented them from perceiving contributions of the scaffolds. Finally, reception of ineffective feedback messages with regard to clearness, elaborateness, and constructiveness (Gielen et al., 2010a; van der Pol et al., 2008; Winstone et al., 2017a; Wu & Schunn, 2020) might have cancelled out benefits of regulation

scaffolds. As a result of the analysis of students' online behaviors and perceptions, it can be concluded that regulation scaffolds might not add further value to feedback use in FPA. It is essential to consider the confounding effect of the characteristics of learners and feedback messages.

Peer Cooperation

The fourth aspect of the perceived contributions of the online FPA environment was peer cooperation. It was expected that the students in the group WRS would perceive more contribution in this regard owing to feedback requests and dialog scaffolds. The results revealed that among three items regarding peer cooperation, there was one item in which the group WRS had a significantly higher mean score. Specifically, the group WRS possessed significantly higher perceptions regarding the contribution of the environment to the peer interaction about writing homework.

FPA is regarded as a form of collaborative learning when there are interactions between students to identify assessment criteria, determine how to give feedback, provide constructive feedback, and discuss received feedback (Gikandi & Morrow, 2016; Kollar & Fischer, 2010; Prins Sluijsmans, Kirschner, & Strijbos, 2005). Most of the existing peer assessment practices presented limited interaction opportunities between assessors and assessees because students only provided and received peer feedback (Deiglmayr, 2018; Strijbos et al., 2009; Strijbos & Sluijsmans, 2010; Strijbos & Wichmann, 2017). On the other hand, social interaction and collaboration in peer assessment increase when students request feedback from their peers and reflect on the received feedback through negotiation (Gan & Hattie, 2014; Strijbos et al., 2009).

This research included aforementioned peer interaction opportunities in FPA. The students in the group WRS could send feedback requests, respond to peers' requests, and establish a dialog with their peers regarding the received feedback. Therefore, peer interaction was not restricted to only peer feedback provision and reception in contrast to the group W/ORS. In the interviews, students also mentioned contributions of feedback request and dialog scaffolds to peer cooperation. They

reported that they could share their needs by sending feedback requests before feedback provision, and their peers could help them by providing specific feedback addressing their needs. Dialog scaffold was also positively appraised by the students to continue peer interaction in feedback reception. It enabled feedback receivers to clarify their writing, thank their feedback providers, express satisfaction and agreement with feedback, share plans for improvement of writing, and request elaboration of feedback. Then, feedback providers could reply to thanks, disagreements, requests, and incomprehensible feedback. On the other hand, the dialog scaffold in this study could not reach its full potential to enhance interaction because the majority of the students did not respond to peers' messages, and there were usability problems. Despite such problems regarding the use of this scaffold, the contribution of the online FPA environment to peer interaction was perceived higher by the group WRS. On the whole, it might be concluded that feedback requests and dialog about received feedback could increase students' perceived peer interaction in FPA.

Learning Outcomes on Writing

The final potential contribution of the online FPA environment was related to perceived learning outcomes on writing. The expectation was that the group WRS would outperform the group W/ORS in the related items. Correspondingly, the results indicated superior perceptions of the group WRS. In particular, students in the group WRS perceived more contribution of the online FPA environment to the knowledge increase in the characteristics of the writing genre, improvement of written expression skill, and enhancement of self-confidence in written expression. However, a significant difference between the groups was obtained in one item among three items. The item was related to the perceived increase of knowledge in the genre.

Both provision and reception of peer feedback contribute to the improvement of task performance and learning (Bourgeois, 2016; Nicol, 2014; Panadero, 2016; Patchan & Schunn, 2015; Reinholz, 2016; To & Panadero, 2019; Topping, 2009). Meta-

analysis studies also revealed the significant and positive impact of peer assessment on academic performance (Double, McGrane, & Hopfenbeck, 2019; Li, Xiong, Hunter, Guo, & Tywoniw, 2020). In addition, the impact of technology-facilitated peer assessment on learning achievement increases with training, anonymity, and the use of extra supporting strategies and tools (Zheng et al., 2020). However, there is a need for more studies that can provide an in-depth understanding of the effect of technology-facilitated peer assessment on learning achievement and the roles of instructional scaffolds. This study can fulfill this need by elucidating how scaffolds can contribute to perceived learning in online peer assessment.

Although this study did not measure students' final writing performance with rubrics and learning achievement with objective tests, students' perceptions regarding learning outcomes on writing implied more gains in writing in the group WRS. Students' reports regarding experiences with the use of regulation scaffolds can explain this finding. In writing activity, all students had access to information resources to recall prior knowledge about genre. However, their guidance on writing and contribution to the improvement of knowledge about writing genre were mentioned by the students in the group WRS mostly. In addition, the students in the group WRS could use goal setting and planning scaffold before writing. It was deemed beneficial by the students in the interviews to guide writing and trigger self-assessment of writing, attainment of writing goal, writing strategies, and domain knowledge and then study genre. Self-assessment and reflection on feedback provision scaffolds also enabled students to realize their writing performance in a specific genre. The literature supports the use of these scaffolds as well to bring about higher learning outcomes, cognitive processing, and self-regulation skills (Brown & Harris, 2013; Deiglmayr, 2018). In regard to writing tasks, the interventions targeting students' self-regulation skills were indicated as effective in enhancing writing (Graham & Harris, 2000). This study also suggests that regulation scaffolds can increase the perceived contributions of the online FPA environment to the learning outcomes on writing.

5.1.4 Use of the Regulation Scaffolds

The fourth research question aimed to describe the use of the regulation scaffolds in the FPA activities of the group WRS in two writing tasks. Analysis of students' online records revealed usage percentage of the scaffolds, problematic issues, and content of peer interactions. It also facilitated the interpretation of quantitative findings, as presented in the discussion of the findings regarding the first three research questions.

Regarding usage percentage of the regulation scaffolds, the common finding to the four FPA activities is that their use except for dialog scaffold increased in the second task. The increase in the use of the scaffolds can be attributed to two factors: learning of new assessment technology and more need for instructional support. First, the initial writing task might have served to learn and adjust the online FPA environment. Correspondingly, the researcher guided students on the use of the environment and helped them solve their problems more frequently during the first task. The prior studies that conducted peer assessment in technology-enhanced environments reported a similar result. For example, Russell et al. (2017) found that the use of new peer assessment technology was confusing for the students in the first task, but they better understood and used the technology in the second task. Moreover, Deeley (2018) revealed that the students' dissatisfaction with the use of new assessment technology at the beginning of the assessment process decreased later on. It can be inferred that students need time to learn new technology-enhanced assessment tools (Russell et al., 2017). To alleviate cognitive load caused by technology and help students concentrate on tasks, it is necessary to prepare them well for the use of the technology and provide guiding resources and assistance to them (Chen, 2016; Russell et al., 2017). In this study, the researcher demonstrated features of the online FPA environment in training and guided them during two writing tasks via e-mails and WhatsApp groups. The online FPA environment also had a help section that included documents and videos showing how to complete the FPA activities. Although training was found useful to guide students on the use of

the online FPA environment, it could have been better for students to practice the FPA activities before the two writing tasks to learn the online environment well.

The second reason behind the increased use of regulation scaffolds can be needing instructional support more in the second task. Both tasks required students to compose writing, give and receive peer feedback, and revise their writings. Due to the practice effect, the students who complete FPA activities in the first task might feel less need for the scaffolds in the second task. However, this claim was not true in this research. It can be ascribed to writing on different genres. The students composed stories in the first task, whereas they wrote poems in the second task. Analysis of students' answers in the goal setting and planning scaffold revealed more problems regarding the understanding of the writing genre in the second task (poem writing). Moreover, a considerable amount of students reported that feedback provision on poems was more challenging compared to stories in the interviews. This conclusion was derived from writing characteristics of poems and learners' knowledge and skill in poems. All of these findings can indicate that the difficulty of the second task was greater for the students. To mitigate task difficulty, they might have preferred to use the regulation scaffolds in the second task more.

There was an intriguing finding regarding the usage percentage of the regulation scaffolds. The dialog scaffold in the feedback reception activity was the only scaffold whose use by the students decreased in the second task. Students' experiences in the use of the dialog scaffold in the first task might have affected their continuance to use it in the second task. Interview findings revealed students' experiences and elucidated the decrease in the use of dialog scaffold. In the interviews, students mostly reported problems with this scaffold. They expressed that they encountered usability problems, they could not get messages, and they received defensive responses when they used this scaffold. Students' satisfaction with online learning experience can be affected by perceived usability, information quality, and interaction opportunities of online environments (e.g., Chiu, Hsu, Sun, Lin, & Sun, 2005; Ilgaz & Gülbahar, 2015; Roca, Chiu, & Martínez, 2006). When students are unsatisfied with online learning experience due to the aforementioned reasons, they

have less intention to continue using online learning environments (e.g., Chiu et al., 2005; Lee, 2010; Roca et al., 2006). Therefore, a decline in the use of dialog scaffold in the second task can be attributed to the unsatisfying user experience that resulted from usability and communication problems.

The last remarkable finding concerning the usage percentage of the regulation scaffolds pertained to the self-assessment scaffold in the revision activity. It was the least used scaffold in both tasks. The students could monitor and assess their writing performance and process for the last time by using this scaffold. Prior to the use of this scaffold, the students used different scaffolds in writing, peer feedback provision, and peer feedback reception activities for monitoring and self-assessment. Therefore, the fatigue effect, “becoming tired or bored with the task” (American Psychological Association, 2020), might have been experienced in the last activity of FPA that required prolonged engagement. Similar to this study, Yan (2020) found that self-assessment actions were least performed at the appraisal stage, the final stage after teacher feedback was received, compared to the preparatory and performance phases of the assignments. Moreover, the author determined that the students who more frequently monitored their task performance were less likely to do it at the appraisal stage. Therefore, continuous self-assessment before revision could have caused less use of self-assessment scaffold in this research. Another reason behind the low usage of the self-assessment scaffold in the revision activity can be related to the unnecessary of a scaffold. Students might have got used to self-assessment in the previous FPA activities and done it internally without external support in the revision activity. Students’ revisions based on internal feedback support this argument. Overall, this result suggests that students might be less inclined to assess their performance explicitly at the end of the FPA.

In addition to usage percentages of the regulation scaffolds, the following parts discuss problematic issues and content of peer interactions in writing, peer feedback provision, and peer feedback reception activities separately and with comparisons between two tasks.

Use of the Regulation Scaffolds in Writing

Regarding the use of the regulation scaffolds in the writing activity, two noteworthy findings were obtained. First, there were problematic answers to the questions in the goal setting and planning scaffold. Second, the content of feedback requests was revealed. In addition, malfunction of the scaffold in the second task was identified.

In the goal setting and planning scaffold, some students' answers to the questions for the planning of writing were erroneous, missing, general, or unclear. Such answers were observed more frequently in the second writing task. They can indicate a lack of understanding or misunderstanding about writing genres for some students. In the interviews, the students who paid attention to the questions deemed the scaffold useful to assess and improve their genre knowledge and writings. However, it might not elicit accurate and complete answers, especially when students do not have adequate domain knowledge or evaluate and enhance it as this study reveals. The problematic answers before task performance can also signal potential problems in the quality of their writing. In addition, lack of understanding or misunderstanding about the writing genre might have affected students' quality of their feedback since domain knowledge and task performance have a profound impact on the peer feedback provision (Alqassab et al., 2018; Li et al., 2012; Noroozi et al., 2016; Patchan & Schunn, 2015). The interview findings corroborate this claim since students reported that they encountered problem in giving quality feedback in the second task due to low knowledge and skill in the related writing genre. Therefore, this problem calls attention to enhance the effectiveness of peer assessment. There were preparatory activities in the current study (training about writing strategies and sharing of assessment criteria of the writing task) that provided knowledge about the task. However, more specific learning activities that assess and promote students' knowledge and skill before FPA can better prepare students for task performance and feedback provision.

Feedback requests were another focus area in the use of regulation scaffolds. Students sending feedback requests could initiate peer interaction in the writing

activity of the online FPA environment WRS. To explore how students sent feedback requests in two writing tasks, qualitative analysis was conducted. First, thematic analysis results revealed that the content of feedback requests was related to explanation about writing choices, self-assessment results, and requests. In self-assessment results, students shared sentences including their negative and positive self-feedback and uncertainty. Request sentences consisted of requests for either performance information or improvement information. Moreover, the information sought in the requests was general or specific. Tsivitanidou et al. (2012) also analyzed and classified peer feedback requests. There were four categories: “requesting help, requesting an opinion, asking for clarification/information, and asking for possible changes for improvement” (Tsivitanidou et al., 2012, p. 451). The content of feedback requests in Tsivitanidou et al.’s (2012) study included only request categories in contrast to the content of the requests in this study. Statements regarding the explanation of writing choices and self-assessment results in the current research provided additional information about writings while students requested feedback from their assessors. Such a function of feedback requests is in line with the function of cover letters in assessment. Using cover letters, students can give information about the main points and sub-points of their writings, what they experienced in the writing process, strengths and weaknesses of their writings, and questions for the reader or assessor (Elbow & Sorcinelli, 2011). As a result, assessors can obtain more input about both peers’ writing performance and process, which can enhance their understanding of peers’ needs and provision of more explanatory answers to requests (Webb & Mastergeorge, 2003). In the interviews of this research, some students also indicated the need to know more information about their peers’ writing process in feedback provision. Therefore, feedback requests that included explanation about writing choices and self-assessment results might have been more beneficial for feedback providers.

Frequencies of the themes and related codes were also compared within and between the two tasks to describe the functioning of this scaffold in the whole intervention process. It can elucidate whether the scaffold was used as expected and unveil further

differences between the students with regard to the quality of their requests (Agricola et al., 2020; Voet et al., 2018). The first finding was that students' self-assessment results in the first task mostly revealed their erroneous or missing aspects and uncertainties about their writings. In contrast, they were more inclined to indicate what they did well in the second task. The function of feedback requests in the second task was an unexpected and undesired situation because students were prompted to express their needs on which they would like to receive peer feedback. Therefore, malfunction of the feedback request scaffold in the second task was attributed to the lower number of peer feedback segments and the insignificant difference in the quality of peer feedback between the groups W/ORS and WRS, as discussed before. Students' orientation to express positive self-feedback in the second task can be explained with their expertise in the task. In the interviews, some students reported that they had less knowledge and skill in poem writing. Finkelstein and Fishbach (2012) indicate that novice people are more motivated to seek positive feedback, while expert people are more willing to seek negative feedback from others. Their motivation behind such preference was that novice people can benefit from positive feedback to gain self-confidence and pursue and commit their goals, whereas expert people use negative feedback to monitor their progress and improve their weaknesses (Finkelstein & Fishbach, 2012). Therefore, the students who deemed themselves less capable of writing poems might have chosen to seek more positive feedback. However, the superiority of positive self-feedback in feedback requests can be problematic because they can negatively affect the quantity and quality of peer feedback, as in this study. Therefore, it is important to ensure that students indicate their needs in their feedback requests in addition to positive self-feedback.

The second result was that the number of specific requests was lower than general requests in both tasks. According to Webb and Mastergeorge (2003), when students request explanations concerning a particular aspect of the problem, they can receive more explanations because their peers can grasp their confusion or uncertainty more easily and describe their characteristics such as their willingness to learn, levels of understanding, and potential use of the received explanations. On the other hand,

general requests for help usually obtain low-level help since they can indicate a lack of motivation and low ability of the students seeking help (Webb & Mastergeorge, 2003). Hence, it is critical for students to send specific requests. However, as this study revealed, students may not ask specific questions in feedback requests. It is more likely to occur when they have a limited understanding of task standards, and they were unaware of their strengths and weaknesses (Bloxham & Campbell, 2010; Webb & Mastergeorge, 2003). Bloxham and Campbell (2010) propose the discussion of assignment standards, demonstration of high-quality question examples, and classroom or online activities to help students pose specific and more meaningful questions. Although this study provided the aforementioned supports, the results suggest more instruction about requesting feedback effectively.

Finally, the number of requests for performance information outweighed the number of requests for improvement information. Similarly, Tsivitanidou et al. (2012) found that students' feedback requests were mostly for requesting help about technical issues, whereas the number of their requests asking for possible changes was the least. Moreover, they determined that there was a positive correlation between the number of requests for changes and the number of changes proposed by peers. In other words, when students asked for possible changes, there was more likelihood for them to receive answers proposing changes. Therefore, it is important for students to express their requests for improvement information or possible changes to receive more suggestive feedback comments. It can also enhance the quality of peer feedback content in FPA. Based on the result regarding the lower proportion of the requests for improvement information, this research suggests that students need to be guided to send requests asking their peers how they can improve their performance.

Overall, this study reveals that students many not send effective feedback requests in FPA. Boud and Molloy (2013) highlight the low readiness of the learners for seeking information about requirements of the performance, characteristics of quality performance, and level of their own performance compared to criteria and standards. They suggest enhancing students' capacity and disposition to seek and use feedback effectively. Therefore, there is a need for interventions that can encourage

feedback-seeking and teach how to send quality requests (Winstone et al., 2017). The present research also corroborates this need. Besides, it adds that interventions can guide students to explain the process of their task performance, express their needs with specific statements, and ask information about how to improve their performance in their feedback requests.

Use of the Regulation Scaffolds in Peer Feedback Provision

The striking finding regarding the use of regulation scaffolds in peer feedback provision activity was missing responses to some feedback requests. Not all students responded to their peers' feedback requests, but the number of these students decreased in the second task. As mentioned earlier, feedback requests motivate assessors to provide feedback by promoting a feeling of individual responsibility (Gielen et al., 2010a). To illustrate, Tsivitanidou et al. (2012) found that students were more likely to receive feedback when they sent feedback requests to their peers. However, Tsivitanidou et al. (2012) also reported that eight students out of 21 did not get any peer feedback. This implies that there can be a risk of missing feedback, even if assessors receive specific feedback requests from their peers. The impact of nonresponse to requests was experienced by some students who sent them in the current research. In the dialog scaffold, they expressed their dissatisfaction and disappointment with the feedback not answering their requests. This problem can also negatively affect the achievement of the students (Webb & Mastergeorge, 2003). Therefore, there is a need for solutions that can maximize students' response rate to their peers' feedback requests. Webb and Mastergeorge (2003) suggest that teachers can discuss responsibilities of help seekers and help givers with students, remind these responsibilities regularly, and encourage students for peer collaboration while observing their behaviors in the learning environments.

Use of the Regulation Scaffolds in Peer Feedback Reception

The dialog scaffold in the peer feedback reception activity has attracted attention with regard to its usage percentage, amount of interaction, and content of the interaction. As explained and discussed before, it was the only scaffold whose usage

percentage decreased in the second task. Moreover, the amount of interaction was limited in the dialog scaffold because the majority of the messages were not read and responded by the receivers. Finally, the content of the dialogs revealed the potential of the scaffold for students to discuss the peer feedback and receive elaboration of the feedback.

With regard to the amount of interaction, the two-way dialog was rare in the scaffold. Although most of the feedback receivers sent messages to initiate dialog, only about one-third of them were read in both tasks. As a result, the response rate to the messages was low. This problem prevented the sustainability of interaction in peer assessment. It can be related to usability problems of the dialog scaffold, asynchronous interaction, and students' willingness. Concerning usability problems, students could not have read and responded to the messages in the dialog scaffold as some of them experienced difficulty in access to the messages and did not get a notification for new messages via e-mails and phone messages. Another reason behind low interaction can be asynchronous communication in the dialog scaffold. In other words, students did not have to interact with their peers in the dialog scaffold at the same time. Although it provided a more flexible time frame to discuss peer feedback, the students could not send and receive an immediate or quick response in the asynchronous environment. Moreover, some students reported that they did not check their messages regularly. Therefore, asynchronous communication might have been challenging to ensure continuity of dialog in feedback reception activity. A similar problem was also found in the research by Guardado and Shi (2007). The students in the Guardado and Shi's (2007) research reported limited and delayed interaction in the online environment in contrast to face-to-face peer assessment. It caused some feedback comments to remain unclarified according to the students. Lastly, the students who were unwilling to spare time to discuss the received feedback outside classroom hours might also have hindered the sustainability of peer interaction (Zhu & Carless, 2018). Correspondingly, Guardado and Shi (2007) found that extra time and energy required in online interaction caused limited interaction in peer assessment. On the whole, it can be concluded that practitioners need to pay

special attention to the use of asynchronous communication tools in the design of online FPA environments to ensure meaningful learning (Gikandi & Morrow, 2016; Gikandi et al., 2011). Although the researcher guided students to respond to and discuss the received feedback in training and during the feedback reception activity, this finding required improvement in the use of dialog scaffold to enhance peer interaction in the online environments.

Finally, analysis of the content of the messages supported the role of the dialogs in the discussion of peer feedback and reception of more feedback in FPA. In the dialog scaffold, first, feedback receivers could thank their feedback providers, clarify their writings, explain their satisfaction or dissatisfaction with the feedback, state their agreements or disagreements with the feedback, share whether they were planning to improve their writings with the feedback, and request elaboration for some feedback. Hence, the students could share their evaluation of the feedback and continue to interact for the argumentation and elaboration of feedback. As a response to feedback receivers' messages, feedback providers replied to thanks, disagreements, and requests or incomprehensible feedback. Therefore, they could negotiate with their feedback receivers and provide elaboration of the feedback. Previous studies (e.g., Agricola et al., 2020; Zheng et al., 2018; Zhu & Carless, 2018) revealed that feedback receivers' interaction with their feedback providers was an opportunity for questioning, answering, and better understanding and interpretation of feedback. Meanwhile, feedback providers can also realize the feedback comments inaccurate, unclear, or misinterpreted by the receiver (Elbow & Sorcinelli, 2011); as a result, they can enhance the quality of their feedback later on (e.g., Zheng et al., 2018). On the whole, a reflective knowledge building process can occur between feedback providers and receivers (Kim & Ryu, 2013; Nicol, 2012; Zheng et al., 2018). The aforementioned opportunities of the dialog scaffold were found mostly based on students' self-reports in the questionnaires and interviews after the dialog process in prior studies. However, feedback communication was not investigated in the research on dialogic feedback in depth (Ajjawi & Boud, 2017). Analyzing feedback communication in situ can explain sources of students' experiences in FPA

such as their personal meanings from feedback and cognitive and affective changes owing to feedback (Ajjawi & Boud, 2017). This study illustrates the nature of interaction in an online FPA environment and provides objective evidence supporting students' experiences in the interviews.

5.1.5 Students' Experiences in FPA Activities

Within the scope of the last research question, students' experiences in FPA activities were explored with the focus group interviews. Two main themes emerged after data analysis: (1) contributions of the FPA activities and (2) problems in the FPA activities. Some results regarding these themes were used while discussing and explaining prior research findings. In the following parts, all major findings are discussed in detail.

Contributions of the FPA Activities

The FPA activities provided different types of contributions. They were categorized into seven subthemes. They were guidance, improvement of knowledge and skills, self-assessment, psychosocial safety, reception of quality feedback, motivation, and peer cooperation.

First, the most highlighted contribution of the FPA activities was **guidance**. They guided peer feedback provision, writing, use of the SWAPPER, and peer feedback reception, in particular. The SWAPPER WRS provided more guidance, on peer feedback provision in particular, according to students' reports. This finding firstly indicates that the students could experience the facilitating role of an online FPA environment enhanced with preparatory activities and basic or regulation scaffolds. It was noteworthy because literature reports that students encounter difficulty in writing (Ungan, 2007; Ülper, 2012), providing quality feedback, and receiving them mindfully due to their cognitive complexity (Kim & Ryu, 2013; Prins et al., 2005; O'Donnell & Topping, 1998; Strijbos et al., 2009; Wichmann et al., 2018). Instructional scaffolding is one of the conditions that influence the effectiveness of

peer assessment (Panadero et al., 2018b). It helps students develop knowledge and skills to complete performance task and peer assessment successfully (Deiglmayr, 2018). The instructional scaffolding in this study was found effective in guiding students on each FPA activity. Especially, the use of the regulation scaffolds in the SWAPPER promoted guidance perceived by the students.

The activities and scaffolds that guided students in this intervention process were preparatory activities, goal setting and planning, anonymity, feedback requests, and criteria form. While preparatory activities, anonymity, and criteria form were provided to both groups, goal setting and planning and feedback requests were available only in the group WRS. Preparatory activities were generally emphasized with regard to their roles in the provision of different types of guidance. Specifically, training and sharing of assessment criteria and explanations facilitated peer feedback provision, writing, use of the SWAPPER, and peer feedback reception.

The great portion of the participants had experience in peer assessment, but the majority of them did not receive training in peer assessment before this study. Training provided at the beginning of the intervention guided feedback provision and reception in the online environment and facilitated the use of the environment according to students' reports. Other results regarding the contributions of the FPA activities revealed that it also enabled students to feel more comfortable before FPA activities, and it motivated them to provide peer feedback. For effective technology-supported peer assessment activities, Chen (2016) proposes that students need three types of competence: affective, strategic, and technical. Affective competence is related to students' valuing of collaboration among peers to enhance their own and peers' performance. Strategic competence requires the ability to interact with peers in a negotiable and supportive way. Finally, technical competence is required to use the functions of computers and other technologies. Chen (2016) recommends training to develop these competencies of the students. Therefore, it is important to provide training that informs learners about the aim, general organization, and educational value of peer assessment, how to provide peer feedback, how to interpret the received feedback for the improvement of work, and how to use technology for

peer assessment (Lladó et al., 2014; Sadler, 1998). Such training can eliminate students' concerns and doubts about peer assessment, anxiety and unwillingness to assess peers' work, and stress and discomfort of being assessed (Li, 2017; Lladó et al., 2014; Nicol, 2014). Moreover, it can result in higher-level (Alqassab et al., 2018) and accurate (Könings et al., 2019) feedback and greater learning gains in peer assessment (Li et al., 2020). By revealing different contributions of the training, this study also supports this activity to prepare students for peer assessment in online environments.

Sharing of assessment criteria and explanations was another preparatory activity that contributed to the students in diverse ways. It both improved knowledge about assessment criteria and guided feedback provision, feedback reception, and writing in the online environment according to students. Similarly, Leenknecht and Prins (2018) point out that students' discussion of assessment criteria and standards prior to peer assessment improves their knowledge about the assessment criteria of the task. As a result, students can determine realistic goals, feel motivated, assess their progress towards their goals during task performance (Panadero et al., 2017). Moreover, the discussion of assessment criteria enhances peer feedback provision. For example, Liu and Li (2014) found that it decreased the discrepancy between students' ratings of peers' performance and teachers' ratings and increased the quality of peer feedback. Sluijsmans, Brand-Gruwel, van Merriënboer, and Martens (2004) investigated the effect of students' negotiation on assessment criteria before peer assessment. With the guidance of their teachers, student teachers constructed assessment criteria to judge lesson plans. Students' construction of assessment criteria led them to use more assessment criteria in their peer feedback compared to the ones in the control group. On the whole, it might be inferred that students' discussion or construction of assessment criteria can guide and foster task performance and provision of quality feedback.

With regard to guidance, the role of goal setting and planning scaffold in the SWAPPER WRS was also emphasized. It guided the group WRS on both writing and peer feedback provision. Writing is a challenging task that needs attention

control, self-monitoring, and volitional control (Schunk, 2012). In this demanding task, the use of self-regulation strategies improves writing performance as planning, monitoring, evaluating, and revising in self-regulation are fundamental activities for a successful writing process (Graham & Harris, 2000). However, the literature reveals that novice writers rarely determine writing goals, compose text without considering the target audience, rarely monitor their writing in regard to their goals, and rarely revise their text at an organizational level compared to the expert ones (Zimmerman & Risemberg, 1997). One of the suggestions of Graham et al. (2013) is providing scaffolds or supports that help students set clear and specific writing goals and collect and organize their ideas for their writing to foster writing development. Accordingly, this study provided goal setting and planning scaffold to the group WRS, and it was found beneficial to guide students on writing.

Goal setting and planning scaffold also improved knowledge about writing criteria according to the group WRS' reports. Such knowledge helped peer feedback provision later on. The contribution of goal setting and planning at task performance to peer feedback provision was a remarkable finding. It was discussed to explain why the group WRS had a higher feedback quality in the first task than the group W/ORS. Supporting students' domain knowledge and skills for complex tasks decreases cognitive load in peer feedback provision since they gain domain-specific skills necessary to give quality feedback while benefitting from the support (Könings et al., 2019; van Zundert et al., 2012a, 2012b). One potential way to support domain knowledge and quality of peer feedback is providing training in which students are informed about, construct, or use the assessment criteria before their task performance as mentioned earlier (Alqassab et al., 2018; Ross, 2006; Leenknecht & Prins, 2018; Sluijsmans et al., 2002). Similarly, all students in this study were informed about the assessment criteria of the task before the use of the online FPA environment. However, the group WRS could engage with them with goal setting and planning scaffold in the writing activity, too. The contribution of this scaffold to feedback provision implies that students can be guided to use assessment criteria during their task performance with this scaffold, as well.

Second, the FPA activities contributed to **the improvement of knowledge and skills**. Specifically, it enhanced knowledge about writing genre and writing criteria, writing performance, and critical thinking skill. The remarkable finding was that improvement of knowledge about writing genre was reported by the students only in the group WRS. Similarly, results regarding the third research question revealed that students in the group WRS perceived significantly more contribution of the online FPA environment to the knowledge increase in the characteristics of the writing genre. Use of the information resources had a role in this contribution according to students' reports in the interviews. Although both groups had access to information resources, the group WRS was directed to the page with information resources to remember knowledge about writing genre before they determine their goals and plan their writing. This direction might have increased contribution of the online FPA environment to the improvement of knowledge and skills.

Another noteworthy finding was related to the improvement of writing performance. Some students expressed that they improved their writings based on peer feedback and self-feedback. It was also obtained while comparing students' initial and final writings with the received peer feedback to investigate feedback uptake. The striking finding was that the improvement of writing was reported by only seven students out of 27 in the interviews. It can be attributed to the low number of students who revised their writings in the SWAPPER. As mentioned before, the number of students who revised their writings did not exceed half of them in both groups and tasks. Therefore, the contribution of the FPA activities to improvement of writing might have been perceived less by the students.

Third, the FPA activities contributed to **self-assessment**. Self-assessment started to occur in writing by using the regulation scaffolds in the group WRS and continued in the remaining FPA activities according to students' reports. In fact, students performed self-assessment while using goal setting and planning scaffold in writing, comparing their writings with peers' writings in peer feedback provision, realizing their mistakes in peer feedback reception, and reviewing their writings in revision. This confirms both Reinholz's (2016) model and the FPA model for self-regulated

and co-regulated learning that put self-assessment into the center of the model. Therefore, it might be concluded that all FPA activities are connected to self-assessment and can support it especially when learners are directed in this regard with scaffolds.

The interview results also indicated that the FPA activities mainly triggered self-assessment of writing. In contrast to the group W/ORS, the group WRS declared that they conducted self-assessment of attainment of writing goal, writing strategies, and domain knowledge as well. Therefore, self-assessment finding was more dominant in the group WRS. Use of goal setting and planning scaffold in SWAPPER WRS had a leading role in experiencing different types of self-assessment.

Goal setting and planning scaffold required students in the group WRS to determine their writing goals, self-evaluative standards, and writing strategies and plan the content of their writing. Students' reports revealed that it triggered self-assessment of writing, domain knowledge, and writing strategies before writing in the online FPA environment and self-assessment of attainment of goal during writing. In all phases of the self-regulated learning process, students can metacognitively monitor and assess declarative and procedural knowledge and their cognitive experiences based on their own or teachers' standards (Winne, 2011; Winne & Hadwin, 1998). Self-assessment at the preparatory phase of learning leads to awareness of personal and environmental resources, the composition of the attainable learning goal, and the selection of suitable learning strategies (Yan, 2019). This study indicated that monitoring and self-assessment started to occur in the preparatory stage of the self-regulated learning process owing to this scaffold. Therefore, the use of goal setting and planning scaffold in this study might have given students the opportunity to prepare for writing performance with a strong cognitive structure. Results also revealed that self-assessment continued during writing as goal setting enabled students to automatically monitor their progress toward their goals without the use of self-assessment scaffold. Correspondingly, Panadero et al. (2016b) state that the students having a goal and assessment criteria before the task performance can evaluate their progression based on their criteria during the performance phase. On

the whole, it can be inferred that the goal setting and planning scaffold has a facilitator role in activating and maintaining self-assessment.

Fourth, the FPA activities contributed to **psychosocial safety**. They prevented possible social conflicts among students and enabled them to feel comfortable and sincere while giving peer feedback. Anonymity scaffold had a major role in such contributions.

In peer assessment, most of the students are unwilling and worried about providing honest and critical feedback to their peers (Cartney, 2010; Li, 2017; Panadero, 2016). In addition, interpersonal relations among peers, such as friendship, can cause students to give biased feedback comments (Strijbos et al., 2009). It was also one of the major challenges identified in the problem analysis study for the development of the online FPA environment in this research. Therefore, it is crucial to provide a learning environment where students disregard interpersonal relations and do not afraid to give accurate and constructive peer feedback (Li, 2017). Anonymous peer assessment can make the students feel less inhibited and more comfortable during feedback provision (Howard et al., 2010; Li, 2017). For example, Vanderhoven et al. (2015) found that secondary education students felt less peer pressure, less fear of disapproval by their peers, and a more positive attitude towards peer assessment when they gave anonymous peer feedback. Similar results were echoed in the following studies by Lin (2018), Rotsaert et al. (2018a), and Kobayashi (2020) that favored anonymity. Owing to such advantages of anonymity, empirical studies revealed that students provided more critical feedback (Howard et al., 2010) and suggestions and perceived more learning from peer assessment (Lin, 2018). Although this research did not investigate the specific effect of anonymity with an experimental design, it also supports anonymity in peer assessment based on students' positive psychosocial experiences.

Fifth, the FPA activities contributed to the **reception of quality feedback**. Participants described quality feedback as feedback indicating mistakes, objective, elaborated, and from two sources. Content of peer feedback can influence students'

perceptions of the adequacy of peer feedback and willingness to improve performance based on the feedback (Huisman, Saab, van Driel, & van Den Broek, 2018; Strijbos et al., 2010). For example, explanatory (e.g., Huisman et al., 2018; Tsui & Ng, 2000; Strijbos et al., 2010) and suggestive feedback (e.g., Tsivitanidou et al., 2012; Tsui & Ng, 2000) is deemed more useful by the students. It can enhance understanding of feedback comments and lead to the revision of performance (Gielen et al., 2010a; Nelson & Schunn, 2009; van der Pol et al., 2008; Walker, 2015). In addition to explanatory and suggestive feedback, feedback coming from different peers increases the probability of error detection in the performance, reliability and validity of peer feedback, and feedback receivers' use of feedback (Cho & Schunn, 2007). Correspondingly, the students in this research perceived reception of feedback with such characteristics as a contribution of the online FPA environment.

Sixth, the FPA activities contributed to students' **motivation**. They led some students to feel the necessity to give peer feedback and curiosity in peer feedback provision and reception. Moreover, regarding performance task, motivational contributions were willingness to write, attention to writing well, and self-efficacy in writing. In the problem analysis study conducted for the development of the online FPA environment, the participants mentioned students' unwillingness to write and provide feedback, lack of responsibility, low self-confidence in writing, and fear of writing as problems. Online peer assessment can lead to higher learner participation because the students who are less proficient, from different cultures, and incompetent at face-to-face interaction can feel safer and more comfortable in the online environment (Chen, 2016; Guardado & Shi, 2007; McCarthy, 2017). Moreover, the use of online environments can foster students' sense of responsibility more as their contribution to peers' learning becomes more visible by their teachers (Chen, 2016). The related studies revealed the benefits of online peer assessment to feeling enjoyed, motivated, and self-confident in the performance task at university context (e.g., Demir et al., 2018; Nicol et al., 2014). Implemented with high school students in an online FPA environment, this study corroborates previous research findings concerning the contributions of peer assessment to motivation. In addition, it

indicates the potential of the intervention in solving problems identified in the first stage of the study. Based on the findings, the following components can be suggestable to integrate into future practices to enhance students' motivation in peer assessment in particular: training, anonymity, and feedback requests.

Finally, the FPA activities contributed to **peer cooperation**. According to the students, peer cooperation was established in the SWAPPER by sharing writings and needs and messaging about received feedback. They enabled students to give and receive peer help. While the participants from the group W/ORS mentioned only sharing of writings, the ones from the group WRS also commented on sharing of needs and messaging about received feedback owing to feedback requests and dialog scaffolds. Peer assessment with feedback requests can promote dialogue and cooperation between learners in peer assessment (Deiglmayr, 2018; Nicol, 2014). For example, Gielen et al. (2010b) revealed that the participants sending feedback requests reported helpfulness of received feedback more frequently than the other students. Empirical studies (e.g., Kim & Ryu, 2013; Zheng et al., 2018) also supported dialog between peers to promote cooperation in peer assessment. They reported that it could enhance students' engagement and reflection on their learning, understanding of the received peer feedback, and the quality of their feedback. Finally, the results concerning the third research question also revealed that the students in the group WRS perceived significantly more contribution of the online FPA environment to peer interaction in regard to peer cooperation aspect of the questionnaire. Therefore, it is recommendable to consider feedback requests and dialog about received feedback in the design of prospective FPA practices to foster peer cooperation.

Problems in the FPA Activities

There were also problems in the FPA activities. Seven subthemes were created to categorize them. They were related to the functioning of scaffolds, characteristics of writing assessed, feedback quality and quantity, revision of writing, usability, learner characteristics, and information adequacy.

First, the major problems pertained to the **functioning of scaffolds**. They were communication failure in dialog scaffold, loss of anonymity, demotivation in feedback provision without requests, and low attention to questions in scaffolds. Except for the loss of anonymity, the aforementioned problems emerged only in the group WRS. Consequently, the group WRS reported considerably more problems regarding the functioning of scaffolds.

One of these problems was communication failure in the dialog scaffold of the SWAPPER WRS. Specifically, there was low and defensive dialog according to some students in the group WRS. The low dialog was also detected in the analysis of the use of the regulation scaffolds. It was ascribed to usability problems, asynchronous interaction, and students' willingness in the prior parts of the discussion.

Another problem in the use of the dialog scaffold was receiving defensive responses. The experiences of one student revealed that feedback receivers might show defensive behaviors with an unkind language since they were criticized. Such reactions could also make feedback providers annoyed. As mentioned earlier, peer assessment requires affective competence for students to appreciate the importance of the criticisms they received from their peers and strategic competence to communicate with their peers in a supportive and negotiable way (Chen, 2016). However, students may fear to receive negative feedback from their peers (Cartney, 2010; Panadero, 2016). Similarly, the problem analysis study for the development of the online FPA environment indicated that students might be worried about being assessed and intolerant of peer criticisms. Therefore, students were trained at the beginning of the intervention to prevent such behaviors and feelings. In addition, there was a prompt in the dialog scaffold to guide students about how to respond to the received feedback. However, they were not adequate to ensure the successful communication of feedback receivers with providers. Consequently, it is necessary to improve design solutions to handle this problem. Otherwise, lack of feedback receivers' constructive responses in dialogic peer assessment can prevent feedback providers from giving more and quality feedback and reflecting on their evaluative

skills (Jug, Jiang, & Bean, 2019; Zhu & Carless, 2018). As a solution to this problem, the students proposed that the online FPA environment can provide more guidance with some sample messages they can use to respond to their feedback providers. Based on this suggestion, a potential design solution can be sentence openers. “Sentence openers are pre-defined ways to start a contribution that are usually followed by additional text to complete the student’s thought.” (Lazonder, Wilhem, & Ootes, 2003, p. 292). They help students construct their messages more clearly, effectively, and with in-depth arguments, which can enhance the cognitive level of knowledge building, learning, and collaboration in online learning environments (Ak, 2016; Avci, 2020; Yiong-Hwee & Churchill, 2007).

Another problem regarding the functioning of scaffolds was the loss of anonymity. Although author names in the online FPA environment were not visible to all participants, some students in both groups interacted with each other to find their feedback providers and receivers in the classroom. Therefore, anonymity was eliminated by those students. The threat of losing anonymity in FPA was observed for the first time in the literature by this study to the best of our knowledge. The design of this study can explain why such a finding was obtained. In the current research, ninth-grade students completed FPA activities as homework outside the class hours. They had one or two weeks to give peer feedback. Therefore, they had adequate time to interact and reveal identities in FPA. This engendered loss of confidentiality of their assessors and assessees (Li, 2017). On the other hand, in prior research (e.g., Howard et al., 2010; Rotsaert et al., 2018a; Vanderhoven et al., 2015), anonymous peer feedback provision was limited to class hours in one day. Hence, students did not have time to learn their feedback providers and receivers. Another difference between this study and prior research is the use of qualitative inquiry to explore the functioning of the scaffolds. Previous studies (e.g., Kobayashi, 2020; Li, 2017; Lin, 2018; Rotsaert et al., 2018a) investigated the effect of anonymity on feedback quantity and quality, performance improvement, and perceptions. However, it was not ensured whether anonymity was maintained in the whole FPA process with interviews, observations, or other qualitative data collection methods in

these studies. Finally, the participant group of this study was the ninth grade students. Nonetheless, most of the existing studies on peer assessment were conducted with higher education students (Tenório et al., 2016; Topping, 2010; van Zundert et al., 2010). Characteristics of the students in your age groups might have affected the implementation of peer assessment. For example, in the interviews, some students reported that they felt curious about the authors of the writings during feedback provision. The students who could not control their curiosity sought them in the classroom, which resulted in the breach of anonymity. On the other hand, college students might have more developed self-control to obey the anonymity rule. Overall, this study reveals the risk of losing anonymity in FPA, especially when students have time for peer interaction and cannot manage their curiosity about their feedback providers and receivers. This calls attention to the potential design solutions to maintain anonymity or mitigate the psychosocial demands of FPA with alternative ways.

Demotivation in feedback provision without requests was also a problem regarding the functioning of scaffolds. It emerged in the group WRS using feedback requests. Feedback requests enable assessors to give feedback focusing on students' needs (Bloxham & Campbell, 2010). On the other hand, they can disregard the other aspects of the performance that are not questioned by the learners. For example, this study revealed that some assessors were demotivated to give peer feedback on the assessment criteria without requests. They thought that their peers did not have problems in their writing, and giving feedback to them would be ridiculous. This situation can yield more concise feedback. Correspondingly, the group WRS' number of feedback segments was lower than the group W/ORS' segments in this study. However, it might decrease the content validity of the feedback. In other words, the feedback limited to the requests may not be comprehensive to cover all aspects of the performance. Therefore, the group receiving feedback requests might differ in the use of criteria in peer feedback. Future research can investigate these issues more in-depth and orient students to provide feedback on all aspects.

Second, the problems in the FPA activities were related to the **characteristics of writing assessed**. According to the students from both groups, peer feedback provision was more challenging due to the following characteristics of the writing assessed: short writings, the subjectivity of writing, requirements in writing criteria, quality writings, long writings, and implicit expression in writing. The noteworthy finding was that shortness, subjectivity, and implicit expression problems were more peculiar to the writings in poem genre and reported more frequently for the feedback provision on this genre. This finding indicated that although the performance task was the same (writing) in the two FPA practices of this study, specific differences in the two tasks (the genre of the writings) influenced feedback provision. It was used to discuss why regulation scaffolds did not affect the quality of peer feedback in the second task for poem writing.

One of the conditions that affect learning in peer assessment is related to task characteristics (Strijbos & Wichmann, 2018). The result regarding the influence of the writing genre called attention to the definition of tasks with more details in the research on the effect of FPA. Literature reviews (Huisman et al., 2019; Zheng et al., 2020) reveal that peer assessment was mostly applied for writing tasks in prior research and it enhanced writing performance; however, they did not give specific information about the writing tasks. Moreover, focus on the genre of writings was inadequate in the previous studies on peer feedback (Yu & Lee, 2016). This study elucidates that genre of writings might have an impact on feedback provision. For example, poems can be perceived as more difficult by the students to provide feedback than stories due to their subjectivity, length, and implicit expression. Therefore, it is recommendable to analyze task characteristics while selecting tasks for FPA activities and consider them while contrasting peer feedback provision between two tasks.

Third, there were problems regarding **feedback quality and quantity** in both groups. As reported before, students were satisfied with the feedback indicating mistakes, objective, elaborated, and from two sources. On the other hand, they expressed their dissatisfaction with the lack of feedback and the feedback inaccurate,

with only positive comments, and without elaboration and specific suggestion. In the literature, students' discontent with the received feedback was frequently reported even if instructional scaffolds were used. To illustrate, students complained about peer feedback that was superficial (Kim, 2009; Kim & Ryu, 2013) and with only positive evaluations (Guardado & Shi, 2007) even when different types of instructional scaffolds were integrated into peer assessment to enhance feedback quality. As a result, some students revealed their doubts about peers' ability to provide useful feedback (Kim, 2009) and unwillingness to continue peer assessment (Gielen et al., 2010b). The results in this study reveal what kind of peer feedback comments derive satisfaction or dissatisfaction according to students' perceptions. Analysis of the students' messages in the dialog scaffold also indicated similar characteristics of satisfying and unsatisfying feedback. The salient characteristics of satisfying peer feedback that were emphasized in both dialog scaffold and interviews were related to the elaboration, indication of mistakes, and specific suggestions. They can be considered in the design of training that aims to teach students how to provide effective feedback (Huisman et al., 2018).

Another remarkable finding regarding feedback quality and quantity was brought by the students who gave a great amount of effort to provide quality feedback. They shared their disappointment in the interviews when they received peer feedback without specific suggestions and elaborations. Reception of quality feedback is essential for the motivation of the students who allocated time and effort for the provision of peer feedback. Otherwise, it may not be worthwhile to give feedback for these students if they do not receive useful feedback on their performance (van der Pol et al., 2008). For instance, McConlogue (2015) found that one student who struggled to provide quality feedback was dismayed when she received peer feedback without suggestions about how to improve, elaboration, and accurate information. It also caused the student to lose her trust in her peers' evaluative capabilities. Cartney (2010) also pronounced a similar problem. The students in Cartney's (2010) research proposed that their tutors should penalize their peers giving superficial feedback. Not all students become totally engaged in peer

assessment (Cartney, 2010; McConlogue, 2015). According to the findings of the current and prior research, this situation might cause negative emotions for the ones who fulfill their responsibilities in peer assessment.

Fourth, the **revision of writings** was problematic in both groups. The students did not revise their writings due to several reasons. The main reason of non-revision was related to ineffective feedback according to both groups. In particular, peer feedback comments with only positive evaluations, without specific suggestions, and not elaborated were deemed ineffective for the revision of writings. They were also characteristics of peer feedback with which students were unsatisfied in the feedback reception activity. As peer feedback becomes more widespread in writing tasks, it is essential to understand the useful feedback features that lead to the implementation of peer feedback (Patchan et al., 2016). However, there is a lack of sound knowledge that reveals which specific feedback features and mechanisms bring about the implementation of peer feedback (Wu & Schunn, 2020). This study provided findings similar to prior quantitative and qualitative research by highlighting elaboration and suggestions in peer feedback.

With regard to elaboration, both Gielen et al. (2010a) and Noroozi et al. (2016) revealed that justifications or explanations in feedback had a significant effect on feedback receivers' final performance. The authors concluded that it is crucial for feedback providers to state their justifications while they are giving negative feedback. Walker (2015) also found that students were most likely to make revisions in their writings when they received feedback with explanations. Walker (2015) asserted that it was due to students' better understanding of the comments in the feedback. Lastly, Pham and Usaha (2016) explored why some students did not revise their writings based on peer feedback. One of the reasons was peer feedback comments that did not explain the problems thoroughly, which made the understanding of the feedback difficult.

Concerning the role of suggestions in feedback, Nelson and Schunn (2009) found that feedback with suggestions has a positive impact on the understanding of the

problems in the performance and implementation of feedback. A similar finding was also reported in the study by van der Pol et al. (2008). They revealed that feedback with concrete suggestions positively affected revision of writing performance. Lack of negative judgments and suggestions for improvement was also appraised unhelpful for the use of peer feedback by the students in Tsivitanidou et al.'s (2012) study. Therefore, based on prior and current research findings, this study proposes that elaborations or explanations and suggestions in peer feedback can lead to the revision of performance in FPA.

Non-revision of writings also stemmed from difficulty in changing writing and positive self-feedback. Feedback receivers might refuse the feedback since they can deem the problem too hard to modify (Wichmann et al., 2018). In other words, students might be more inclined to escape from revisions when they need to do complex repairs because it requires demanding cognitive processes and a considerable amount of effort and it can bring about high cognitive load (Kollar & Fischer, 2010; MacArthur, 2019). Hence, difficulty in changing writing was a reason for non-revision in this study. Another reason was positive self-feedback. It is related to how students evaluate the received peer feedback with regard to their own assessment results. According to Narciss' (2008) interactive, two feedback loop model, when students receive external feedback, they compare it with internal feedback and standards. Provided that students realize weaknesses in their performance with these comparisons, they decide to correct their performance. Otherwise, the revision of the performance does not occur. For example, they may reject that shortcoming expressed in the feedback was really shortcoming (Walker, 2015). Correspondingly, in prior research (e.g., Pham & Usaha, 2016; Tsivitanidou et al., 2012), some students who did not revise their writings thought that there was nothing wrong or their ideas were better than their peers' suggestions. This situation also occurred in this study. On the whole, this research suggests that ineffective feedback, difficulty in changing writing, and positive self-feedback can be potential factors of non-revision of the performance based on students' reports.

Fifth, **usability** problems emerged in the study. The great majority of the problems were experienced by the group WRS. They were mainly related to dialog scaffold available only in the SWAPPER WRS. Students in the interviews expressed the lack of notification for incoming messages, difficult access to messages, and incapability to delete messages in the dialog scaffold. These usability problems also prevented initiation and continuity of peer interaction in the feedback reception activity of the group WRS. Although the usability of the online FPA environment was improved three times in the DBR study, the final implementation of the environment revealed the need to develop it one more time. The use of technology can facilitate dialogic assessment and feedback; however, there is a potential risk of students' resistance to using technology because of the inefficient working of technology (Deeley, 2018). For example, students in Deeley's (2018) research reported that they encountered difficulty in the use of new assessment technology at the beginning of the assessment process, which caused frustration, stress, and disengagement. Russell et al. (2017) also found that students had negative perceptions about the use of new peer assessment technology because its use was confusing for them in the first task. These studies and findings of the current research indicate the importance of the ease of use of the new assessment technologies by the students to ensure satisfying user experience. In other words, the user-friendliness of the technology has a critical role in effective technology-enhanced peer assessment practices in addition to instructional supports (Chen, 2016).

Sixth, difficulties in feedback provision were experienced due to **learner characteristics**. Low knowledge, skill, and interest in writing genre challenged provision of quality feedback. Specifically, students in the interview group WRS reported that giving feedback on poems required more specific knowledge and skill compared to stories, which challenged peer feedback provision on the former genre. Correspondingly, the results regarding the fourth research question revealed that the group WRS gave more problematic answers to the questions regarding poem writing in the goal setting and planning scaffold. On the other hand, the interest of one student in poems made feedback provision on this genre easier. This result implies

that learners' characteristics about the task can affect peer feedback provision. Accordingly, in the FPA model for self-regulated and co-regulated learning, proposed in this study, the impact area of individual factors is extended to feedback provision and reception activities. Moreover, there is related research that indicates a significant effect of learners' knowledge, skill, and affective characteristics on peer feedback provision (e.g., Alqassab et al., 2019; Li et al., 2012; Noroozi et al., 2016; Patchan & Schunn, 2015). Different from previous research, students' peer feedback provision on two particular writing genres in this study might also have brought about an emphasis on knowledge and skills. According to Yu (2021), providing genre-based feedback can be more demanding because it requires consideration of more specific elements in the evaluation of writings. When students have limited knowledge and skill about genre-based feedback, they might give incorrect genre-based feedback and pay inadequate attention to all genre characteristics (Yu, 2021). This highlights the role of knowledge and skill in genre-based feedback provision which is an arduous task for students. On the whole, this study suggests that it is important to consider learner characteristics while investigating the effect of FPA on learning or analyzing the impact of instructional scaffolds on peer feedback provision.

Finally, the problems were related to **information adequacy** in FPA activities. They were reported by the students in the group WRS. One problem regarding information adequacy was students' lack of knowledge about peers' selections for their writings. In particular, two feedback providers in the group WRS needed to know more information about their peers' task performance (such as their writing topics and strategies) to give more accurate and process feedback. Addressing this need, the feedback request scaffold in the writing activity was used by some students to share their writing choices such as themes, meter, and images of their poems with their feedback providers. However, this finding indicated a call for a specific scaffold or activity in which students can inform feedback providers about their writing process. Students in the group WRS suggested sharing their records in the scaffolds of the writing activity with feedback providers. For productive co-regulated learning,

individuals ought to actively monitor and regulate both their own and others' cognitive, metacognitive, motivational, and behavioral processes (Järvelä & Hadwin, 2013). In technology-enhanced environments, the use of chat tools and the exchange of learning objects and kits are offered to support the monitoring and regulation of others (Hadwin et al., 2010). Chat tools can be used to give feedback on products and support the use of self-regulated learning strategies (Hadwin et al., 2010). Students can also exchange learning objects and kits (e.g., notes and glossaries) with their peers by using chat tools so that their peers can have more control over their performance process and establish dialog to support their self-regulated learning skills (Hadwin et al., 2010). Similarly, Kollar and Fischer (2010) advocate more interaction among peers in feedback provision to increase exchange and cognitive processing in peer assessment. It helps feedback providers grasp their peers' expertise and plan their peer feedback accordingly to meet their needs (Kollar & Fischer, 2010). Although this study used feedback requests to initiate interaction among peers, the findings and literature imply that there was a need for more interaction opportunities that enable students to share more information about their writings and writing process for the feedback provision activity. It can result in a higher level of feedback quality, co-regulation, and collaboration in peer assessment.

5.2 Conclusion

The primary purpose of this research was to investigate the effect of regulation scaffolds on FPA activities in the online environment. FPA activities were conducted for two writing tasks with the participation of ninth-grade students who used the online environment W/ORS and WRS. In accordance with the research purpose, first, the study analyzed the impact of regulation scaffolds on (1) peer feedback provision, (2) feedback uptake, and (3) perceived contributions of the online FPA environment. Second, it described (4) students' use of the regulation scaffolds and (5) experiences in FPA activities.

Peer feedback provision differed with the use of regulation scaffolds. Although their use negatively affected the number of feedback segments in both tasks, they contributed to the quality of feedback content in the first task. The lower number of feedback segments in the online environment WRS was attributed to the feedback requests because they were not used as intended in the second task in particular and caused some students to disregard criteria without requests in feedback provision. The regulation scaffolds that enhanced feedback quality were goal setting and planning and feedback requests. According to students' reports, goal setting and planning was beneficial to improve domain knowledge and skill, while feedback requests motivated assessors and guided them on feedback provision. On the other hand, feedback quality was not affected by the regulation scaffolds in the second task, possibly due to the malfunction of feedback requests, the difficulty of the writing genre for feedback provision, and the practice effect. On the whole, regulation scaffolds have the potential to enhance peer feedback provision, especially in the first FPA practices; however, there are conditions that determine its impact. It is necessary to ensure that the scaffolds work as intended, and the task is appropriate for feedback provision.

Feedback uptake included mixed findings regarding the impact of the regulation scaffolds. They promoted reading peer feedback in the first task, whereas they did not contribute to the revision and implementation rate of peer feedback in both tasks. Self-assessment and feedback request scaffolds were indicated fruitful to enhance reading peer feedback, but the practice effect was a possible reason for the elimination of the effect of the scaffolds in the second task. Lack of their impact on revision was ascribed to the demanding process of revision and characteristics of feedback receivers, senders, and messages. Similar reasons were also pronounced in the discussion of the findings regarding the implementation rate of peer feedback. Overall, this study concludes that attention to the received feedback might increase with regulation scaffolds in the first FPA practices; nevertheless, their impact on feedback use can be confounded by learner and feedback characteristics.

Perceived contributions of the online FPA environment indicated the potential of the environment in the improvement of self-assessment, peer feedback provision, peer feedback reception, peer cooperation, and learning outcomes on writing, even if regulation scaffolds were absent. Training in peer assessment and writing, sharing of assessment criteria, criteria form, anonymity, and FPA itself enabled all students to benefit from the online environment. On the other hand, the use of regulation scaffolds increased the contribution of the environment to the establishment of peer interaction and the enhancement of knowledge about the writing genre. Qualitative results revealed that feedback requests and dialog scaffolds increased interaction opportunities in FPA. Knowledge and skill in the task domain improved with the use of information resources and goal setting and planning scaffold because some students in the interview group WRS reported that they could recall and improve knowledge about writing genre and receive guidance on writing with these scaffolds. To conclude, basic scaffolds (e.g., training and anonymity) can be adequate to provide a considerable contribution to the students; however, the use of regulation scaffolds can optimize the benefits of the online FPA environment with regard to peer interaction and knowledge gains.

Analysis of *students' use of the regulation scaffolds* elucidated usage percentage of the scaffolds, problematic situations, and peer interaction. The usage percentage of all scaffolds except the dialog scaffold rose in the second task. The increase was associated with the learning of new assessment technology and more need for support in the second task. In addition, students' reports revealed that the decrease in the use of dialog scaffold stemmed from usability, communication, and interaction problems in the scaffold. Further problematic situations were identified in the use of the scaffolds for goal setting and planning, feedback requests, and dialog. They implied the need to prepare students for the use of these scaffolds with more structured and guided activities. Finally, analysis of feedback requests and dialog messages indicated how peer interaction evolved in FPA and provided sound evidence regarding students' experiences. On the whole, controlling the functioning

of the scaffolds presents further insights about the intervention process and pinpoints the components of the intervention that require improvement.

Students' experiences in FPA activities provided in-depth information about the intervention process and explained quantitative findings obtained in the prior research questions. They were related to contributions of the FPA activities and problems in the FPA activities. Contributions of the FPA activities were guidance, improvement of knowledge and skills, self-assessment, psychosocial safety, reception of quality feedback, motivation, and peer cooperation. Problems in the FPA activities pertained to the functioning of scaffolds, characteristics of writing assessed, feedback quality and quantity, revision of writing, usability, learner characteristics, and information adequacy. These experiences were matched with a particular FPA activity and scaffold of the intervention. Consequently, preparatory activities, information resources, and goal setting and planning scaffolds were suggested for future FPA practices. Anonymity, feedback request, and dialog scaffolds were also recommended provided that potential problems in the use of these scaffolds were solved. Other noteworthy findings were related to the impact of task and learner characteristics on feedback provision and the influence of quality of feedback on peer feedback reception and revision. Based on the students' experiences, it can be concluded that the use of online FPA environments with scaffolds provides different types of contributions, but it is not without problems. The problems need to be identified and resolved to lead satisfying learning experiences.

The use of online environments for peer assessment requires a meticulous organization of the activities considering social, pedagogical, and technological systems to optimize its benefits (Guardado & Shi, 2007; Pachler et al., 2010). Existing design suggestions regarding the online peer assessment environments are insufficient to ensure meaningful learning experience based on theoretical perspectives (Gikandi & Morrow, 2016; Gikandi et al., 2011; Law & Baer, 2020; Zheng et al., 2020). Hence, there is a need for more studies investigating how to design and implement peer assessment to make it more effective in online

environments. This study proposed use of the regulation scaffolds that included components based on the new assessment model improved for FPA. It investigated their impact on peer feedback provision, feedback uptake, and perceived contributions. While they supported the quality of peer feedback and attention to the received feedback in the first task, their effect disappeared in the second task. Moreover, revision of performance and implementation of peer feedback were not affected by these scaffolds. On the other hand, they contributed to perceived peer interaction and knowledge gains in FPA. Descriptive and qualitative findings regarding the use of the scaffolds and students' experiences elucidated both contributions of and problems in the FPA activities and scaffolds. As a result, prior findings were explained with sound evidence, and novel issues in FPA were explored. On the whole, this research investigated the entire online FPA process deeply to present a comprehensive description of the role of the scaffolds. Consequently, this study provides implications for theory, directions for future research, and design guidelines to optimize learning in online FPA practices.

5.3 Implications for Theory

This study improved Andrade's (2013) model of assessment for FPA based on the literature. Its aim was to enhance self- and co-regulated learning in FPA activities. Then, the improved model was used in the design of the online FPA environment WRS. The findings obtained from online records and interview data corroborated the model as they revealed the role of individual factors and specific cognitive and discursive activities in the self- and co-regulated learning.

First, teachers' sharing of task goal and criteria enabled students to determine evaluative standards, monitor their writing, and provide feedback based on them to regulate their own and peers' learning and task performance. Second, regarding individual factors, learners' knowledge and interest were found to have influenced their task planning and performance, peer feedback provision, and peer feedback reception. Third, goal setting and planning reinforced learners' knowledge and

adoption of evaluative standards. Furthermore, it triggered the assessment of their writing performance and process and their improvement in different stages of self-regulated learning. Its contribution was also mentioned for peer feedback provision activity, which implied its influence on the regulation of others' performance. Fourth, feedback requests triggered self-assessment in task performance and oriented students to seek help from their peers. They were also beneficial for assessors to regulate both their feedback provision and peers' writing performance. Fifth, students could reflect on their performance and realize their mistakes during feedback provision, which indicated continuous self-assessment in FPA. Sixth, while students were in dialog with their peers in feedback reception, they reflected on their performance, indicated their plan for improvement and corrected their feedback providers' faulty feedback. They can also be regarded as learners' self- and co-regulatory attempts in FPA. Finally, quantitative results supported the theoretical model for FPA, as well. Its use led to higher feedback quality and attention to peer feedback in the first task.

On the whole, this study proposed a theoretical model by linking FPA with self- and co-regulated learning. Empirical results contributed to the scarce literature on the influence of the use of a model on self-regulated learning and FPA activities (Panadero et al., 2018a). They provided different pieces of evidence to support the model; therefore, it can be promising to guide both FPA research and practices. However, there is a need for more studies to validate it in diverse contexts.

5.4 Implications for Practice

Before the main research, a DBR study was conducted to develop the online FPA environment. In the development process, three cycles were completed to evaluate and refine the online environment. At the end of the process, tentative design guidelines to enhance feedback provision and uptake were proposed, as listed in the methodology chapter. Considering the results of the main study, they were supported

or refined. They can be used by teachers, instructional designers, and other practitioners who aim to optimize the effectiveness of FPA activities.

It is important to note that the guidelines were derived from FPA activities for writing tasks and with the participation of high school students in an online environment. However, they can be transferable to other online contexts and face-to-face environments because they do not force the use of a specific system or tool but suggest how a FPA environment can be designed to facilitate and enhance learning.

Based on the findings of the current study, it is recommendable for future FPA practices to:

1. *Train students in performance tasks, FPA, and the online environment to prepare them for FPA activities*

The researcher provided two-hours training about writing, FPA, and use of the online environment. Content, instructional strategies, and materials of the training are listed in Table 3.7. According to students' reports, training guided feedback provision and reception in the online environment and facilitated the use of the environment in this study. Therefore, it is recommendable to provide training in these issues before FPA activities. However, the research findings also implied the need to enrich the current content of the training. First, the characteristics of the writing genre can be reminded in addition to explanations about general writing strategies and processes. Moreover, students' knowledge about genre can be assessed and improved if necessary so that they can produce quality writings and feedback comments in FPA activities. Second, students can practice online FPA activities before the actual activities so that they can learn and get used to the environment. Finally, trainers can increase emphasis on the provision of elaboration and suggestions in peer feedback as they can influence feedback receivers' satisfaction with feedback and use of the feedback.

2. *Train students in feedback-seeking and helping to ensure delivery of quality feedback requests and comprehensive responses to requests in FPA*

In the feedback request scaffold, there were prompts and sample requests to guide students about feedback seeking. However, they were not adequate to ensure quality feedback requests. In addition, not all feedback requests were responded by feedback providers, and assessment criteria without requests were ignored by some providers. Therefore, it is necessary to train students about how to send quality feedback requests and how to respond to requests. Based on the findings of this research, training can emphasize the explanation of task performance, the expression of needs, and the delivery of specific requests for the improvement of the performance in feedback requests. Moreover, it can explain the responsibilities of the students to respond to feedback requests and give feedback for all assessment criteria. These responsibilities can be reminded during feedback provision, as well.

3. *Discuss task goals, criteria, and standards with students to prepare them for FPA activities*

In this study, the teachers shared task goals, criteria, and standards with students in the classrooms. It guided feedback provision and reception and writing in the online environment according to the students. Hence, it is advisable to share them before the activities. However, there were some students in the interviews who wanted to add more criteria to the list while they were providing peer feedback. Therefore, discussion of the criteria with students instead of sharing can provide more opportunities for students' contribution to the assessment process and construction of the mutually agreeable assessment criteria.

4. *Provide resources supporting domain knowledge and task skill for FPA activities*

In the online FPA environment of this study, there were resources that included textual and visual information about writing genre and writing process, sample writings, links to related websites, and explanation about assessment criteria of the

writing task. Students in the interviews found them useful to remember and improve knowledge about writing genre before composing their writings. Moreover, they guided students on how to write in a specific genre. Therefore, it is suggestable to provide such information resources and direct students to review them in order to support their domain knowledge and task skill. They can be added to online environments or distributed in face-to-face environments.

5. Support goal setting and planning for complex tasks to enhance self-assessment, task performance, and feedback provision in FPA

In the goal setting and planning scaffold, the students could determine their writing goals, self-evaluative standards, and writing strategies and plan their writing with guiding questions. It triggered self-assessment and helped students determine how to write, become more knowledgeable about assessment criteria, and provide peer feedback. Because of such benefits, it is recommendable to support goal setting and planning, especially for the complex tasks that have more intrinsic cognitive load and leave less memory space for peer assessment. The questions for goal setting and planning can be provided in a form in online environments or in a paper in face-to-face environments.

6. Provide peer interaction opportunities in each activity of FPA to enhance the quality of peer feedback and knowledge construction

This study increased peer interaction opportunities in FPA with feedback requests in the writing activity and dialog scaffold in the feedback reception activity. Students' perceptions also revealed their contribution to the peer interaction in FPA. According to students' reports, feedback requests helped feedback seekers emphasize needs and they helped feedback providers give quality feedback and feel sincerity and necessity to write feedback. Dialog scaffold was also found useful to discuss the feedback and receive elaboration of the feedback even if there were some problems. The findings also indicated the need to increase interaction opportunity in feedback provision. Especially, some students expressed the need to know their peers' writing choices and processes so that they could provide feedback more accurately and addressing

writing strategies. To meet this need, students can interact with their peers in feedback provision activity to receive specific information about their performance and give feedback accordingly. Overall, these results imply that it is recommendable to provide peer interaction opportunities in each activity of FPA to enhance the quality of peer feedback and knowledge construction. Different tools (e.g., forums, blogs, and chats) can be used for interaction in online environments. Moreover, face-to-face settings can be organized for regular peer meetings about the assessment and discussion of task performance.

7. Use anonymity to mitigate psychosocial demands of FPA, but consider the risk of losing anonymity when time intervals for FPA activities are long

In this study, feedback receivers and providers were anonymous. As a result, the students reported that they could feel comfortable and give and receive objective or unbiased feedback. Moreover, anonymity prevented potential conflicts or tensions among peers due to social relations and the quality of task performance and feedback. Therefore, anonymity is suggested to mitigate the psychosocial demands of FPA. However, it is important to note that there is a risk of losing anonymity, as this study reveals. Especially when FPA is not confined to class hours, the students have time to interact with their peers to find their feedback providers and receivers. To solve this problem, practitioners can explain the importance of anonymous peer assessment to the students. Moreover, instead of anonymity, they can train students to control the negative impacts of non-anonymous peer assessment, since Li (2017) found it effective to alleviate pressure in peer assessment and enhance the usefulness of peer assessment.

8. Provide criteria form in feedback provision to ensure comprehensive and relevant feedback

A criteria form including assessment criteria and input fields for each criterion was given to the students in the feedback provision activity of this research. According to the students in both DBR and main study, it led students to consider their peers' writing from different aspects. Therefore, it facilitated the provision of

comprehensive and relevant feedback. This study suggests the use of criteria forms to enhance feedback quality. These forms can be created in either online environments or papers for written feedback.

9. Enable students to establish a sustainable dialog about received feedback in asynchronous FPA activities

There was a problem regarding the sustainability of the dialog about received feedback in the DBR study. Even if feedback receivers sent messages to their feedback providers, feedback providers did not respond to them. Then, the researcher highlighted the importance of dialog in the training of the main study and reminded students to check their messages during feedback reception activity. However, these solutions were not adequate because the problem was not solved and continued in the main study. Asynchronous interaction outside the classroom hours and usability problems were indicated as the major reasons for this problem. Based on the students' suggestions, one potential way to overcome this problem in online environments can be systems' notifications for the new messages via e-mails and phone messages instead of practitioners' general reminders. Moreover, there can be a requirement for the use of this scaffold. Practitioners may require students to send at least two messages to both their feedback providers and receivers.

10. Guide students about the use of positive affective language in peer interaction with sample responses both before and during FPA

In the online FPA environment, there were prompts guiding students to use polite language while reflecting their emotions in peer feedback provision and reception. Despite these prompts, in the final cycle of the DBR study, it was realized that there were humiliating messages in the dialog scaffold. As a result, in the training of the main study, the researcher showed a sample dialog between peers in feedback reception and warned them not to use harsh language threatening their peers' self-esteem. On the other hand, this solution was not completely effective in eliminating inflammatory language in peer interaction, either. Students' suggestion for this problem was to provide sample messages that can be directly selected and used in

the online environment. Therefore, it can be important to guide students about the use of positive affective language in peer interaction with sample responses both before and during FPA. They can be listed in any online environments or provided by teachers in face-to-face environments.

11. Use motivational elements to maintain student engagement in FPA

In the DBR study, the teachers expressed that the students might be bored and overwhelmed in the online environment since it consisted of different demanding activities students were required to perform. Based on their suggestions, the researcher added motivational elements to the environment, including texts and visuals with attractive colors, videos, proverbs highlighting the importance of the task, and motivational feedback for each task completion. They were deemed positively by the students in the final cycle of the DBR study. However, they might not have been adequate in the actual study because the participants who had a lower willingness in peer assessment and peer feedback beliefs before the intervention dropped out of the study. Therefore, it is recommendable to use strong motivational elements to maintain student engagement in FPA. They can be integrated into different online environments or provided by teachers verbally and with paper-based materials in face-to-face environments.

12. Ensure the usability of the new FPA technology for students to use it effectively and efficiently

In the DBR study, the usability of the online FPA environment was evaluated and refined three times. However, usability problems existed in the main study, as well. For example, students encountered difficulty in localizing problems in their peers' writings, finding the messaging area, and stating other options not available on the list. Such problems can cause extraneous cognitive load, which can leave less space for demanding peer feedback provision and reception activities. Therefore, it is recommendable for practitioners to ensure the usability of the new FPA technology for students to use it effectively and efficiently. Although it is not an exact solution, pilot studies with a low number of students can indicate major usability problems.

5.5 Recommendations for Future Research

This study has recommendations for future research. They were proposed based on the findings, limitations, context, and theoretical model of the research. It is recommendable for further studies to:

1. Examine the particular effect of goal setting and planning in FPA activities

Among the regulation scaffolds, goal setting and planning was one of the most highlighted scaffolds. Its contributions to self-assessment, task performance, and feedback provision were noted. It was also a novel method to enhance the effectiveness of FPA. Therefore, there is a need for more studies that focus on this scaffold. Future studies can examine the only effect of this scaffold with experimental designs to bring about strong cause-effect explanations.

2. Investigate the effect of individual characteristics on feedback provision

As stated in the FPA model for self-regulated and co-regulated learning, individual characteristics (knowledge, skills, motivation, and beliefs) have an impact on the content and quality of the provided peer feedback. Although this study did not aim to examine the effect of these characteristics, qualitative inquiries revealed that learners' knowledge, skill, and interest in writing in a genre influenced their feedback provision. On the other hand, feedback providers' domain knowledge, beliefs, and emotions have been neglected in the research on FPA (Alqassab et al., 2018; Panadero et al., 2018b). This study recommends investigating the effect of these characteristics for future studies to provide more empirical evidence to the literature.

3. Consider the influence of specific task characteristics on feedback provision

The performance task was writing in this study; however, the genre of writings differed. Interview results revealed that genre characteristics such as subjectivity, length, and implicit expression influenced peer feedback provision and caused challenges. This implied that it is necessary to consider specific task characteristics

(e.g., content and length of the task performance) while evaluating and comparing the quantity and quality of peer feedback provision even if there are the same tasks.

4. *Analyze the effect of feedback requests in FPA, but ensure that it works as intended*

Feedback requests were one of the scaffolds used to interpret the group WRS' outperformance in the quality of peer feedback and reading peer feedback in the first task. In addition, the malfunction of this scaffold was one of the reasons for the lower number of feedback segments in the group WRS and lack of difference in the feedback quality between the groups in the second task. Due to conflicting results, there is a need for more experimental studies analyzing the effect of feedback requests in FPA (Agricola et al., 2020; Voet et al., 2018), but it is important to ensure that students send feedback requests as intended.

5. *Determine solutions to decrease psychosocial demands of FPA as an alternative to the anonymity*

Although anonymity has been a common method to decrease the psychosocial demands of FPA, this study revealed that it might not be viable when students tend to reveal their identities with their peers. Therefore, there is a need for research that will investigate alternative ways. They can be more helpful for students to accomplish peer assessment in real face-to-face environments because they provide and receive peer feedback non-anonymously (Rotsaert et al., 2018a). One potential solution has been training students to control the negative effects of non-anonymous FPA (Li, 2017). However, more research studies need to be conducted to determine the effect of this solution and alternative ones.

6. *Assess the accuracy of peer feedback in addition to its content to gauge the quality of peer feedback*

In this study, the quality of peer feedback was measured in terms of its content. Another indicator of the quality of qualitative peer feedback is its accuracy. It refers to the provision of scientifically valid and correct content (Hovardas et al., 2014;

Panadero, 2016; Peters et al., 2018). It can be a concern for future research because all peer feedback comments may not be accurate. For example, the researcher realized a difference between the number of all feedback comments and the accurate ones while calculating the implementation rate of specific and accurate comments.

7. Investigate potential solutions to enhance revision of performance in FPA

Learners need to use peer feedback to increase their learning from peer assessment (Gielen et al., 2010a; van der Pol et al., 2008; Winstone et al., 2017a). However, students' feedback uptake in peer assessment is low, and they engage in little revision (Wichmann et al., 2018). Correspondingly, the proportion of the students who revised their writings in this research did not exceed half of the students who received peer feedback. In addition, the regulation scaffolds did not contribute to students' revision of their writings. Hence, there is a need for more research studies that will investigate potential solutions to enhance the revision of performance in FPA.

8. Consider the confounding variables (characteristics of feedback receivers, senders, and messages) in the implementation of peer feedback

This study revealed that the implementation of peer feedback was superior in the group W/ORS in the first task, but there was no significant difference between the groups in the second task. It was an unexpected result because it was assumed that the group WRS would outperform the group W/ORS. This finding was attributed to three interplaying factors in feedback uptake: characteristics of feedback receivers, senders, and feedback messages (Winstone et al., 2017a). Although there were some measurements regarding these factors (e.g., beliefs about peer feedback to be provided and received and the amount of the received feedback), they could not be controlled with statistical analysis due to the low number of students. However, it is recommendable for future research to consider these confounding variables while investigating the implementation of peer feedback.

9. *Analyze the effect of scaffolds in FPA on the improvement of performance, knowledge, and skill with rubrics and objective tests*

In this research, students' writing quality was not evaluated before and after peer feedback reception. Moreover, there were no pre-tests and post-tests to measure students' improvement in their writing performance, knowledge, and skills. Instead, the researcher measured students' perceptions regarding learning outcomes on writing with three items in a questionnaire. The interviews were also used to bring explanations in this regard. Therefore, the study relied on students' self-reports, and it did not provide a comprehensive account of learning. To obtain more objective and valid evidence of learning, the use of rubrics and objective tests can be proposed for future research.

10. *Investigate the development of students' self-regulated learning skill in FPA environments with regulation scaffolds*

Formative assessment, including both self-assessment and peer assessment, is considered as a method of self-regulated learning instruction (Allal, 2016). This study designed a FPA environment with both self-assessment and peer assessment; in addition, it integrated specific scaffolds that can enhance students' self-regulated and co-regulated learning based on an assessment model. Therefore, it has the potential to function as self-regulated learning instruction and improve students' self-regulated learning skills. Accordingly, future research studies can investigate the development of students' self-regulated learning skills in such a FPA environment. They can provide empirical evidence to support the relationship between peer assessment and self-regulated learning, although it is generally assumed that peer assessment promotes self-regulation (Panadero et al., 2016b). Finally, it is recommendable to use trace data in the online environment to (dis)confirm findings obtained from questionnaires and interview protocols because the validity and reliability of such self-reported measurements are questionable in self-regulated learning research (Boekaerts & Corno, 2005).

11. Investigate the effect of regulation scaffolds in different educational contexts

This study was conducted with 70 ninth-grade students in a social sciences high school in Turkey for two writing tasks. In order to enhance the generalizability of the findings, it is necessary to conduct further studies in different educational contexts. This research can be redesigned for writing tasks in different genres, different performance tasks and courses, high school students from different types of schools, a large number of students from lower or upper educational stages, and students from different cultures.

12. Consider the practice effect in FPA and determine when fading of scaffolding is necessary

Students' feedback quality increases with multiple practice opportunities even if students receive only assessment criteria, and there is no additional scaffold (Gielen & De Wever, 2015a, 2015b; Rotsaert et al., 2018a). In this study, there were two FPA practices. While students in the group WRS provided higher feedback quality and paid more attention to the received peer feedback in the first task, there was no significant difference between the groups in the second task. One of the possible reasons for the insignificant difference was related to the practice effect. Therefore, it is questionable to continue scaffolding in the second task. It may be necessary to start the fading of scaffolding in the second practice. However, this study cannot make a certain conclusion about this suggestion since the task conditions of the two FPA practices were not the same. Hence, it is recommendable for further studies to consider the practice effect in FPA and determine when the fading of scaffolding is necessary.

REFERENCES

- Adachi, C., Tai, J., & Dawson, P. (2018a). A framework for designing, implementing, communicating and researching peer assessment. *Higher Education Research & Development*, 37(3), 453-467.
- Adachi, C., Tai, J. H. M., & Dawson, P. (2018b). Academics' perceptions of the benefits and challenges of self and peer assessment in higher education. *Assessment & Evaluation in Higher Education*, 43(2), 294-306.
- Agricola, B. T., Prins, F. J., & Sluijsmans, D. M. (2020). Impact of feedback request forms and verbal feedback on higher education students' feedback perception, self-efficacy, and motivation. *Assessment in Education: Principles, Policy & Practice*, 27(1), 6-25.
- Ajjawi, R., & Boud, D. (2017). Researching feedback dialogue: An interactional analysis approach. *Assessment & Evaluation in Higher Education*, 42(2), 252-265.
- Ak, Ş. (2016). The role of technology-based scaffolding in problem-based online asynchronous discussion. *British Journal of Educational Technology*, 47(4), 680-693.
- Allal, L. (2010). Assessment and the regulation of learning. In P. Peterson, E. Baker, & B. McGaw, (Eds.), *International encyclopedia of education*, (Vol. 3, pp. 348-352). Oxford: Elsevier.
- Allal, L. (2016). The co-regulation of student learning in an assessment for learning culture. In L. Allal & D. Laveault (Eds.), *Assessment for learning: Meeting the challenge of implementation* (pp. 259–273). Berlin: Springer.
- Alqassab, M., Strijbos, J. W., & Ufer, S. (2018). Training peer-feedback skills on geometric construction tasks: role of domain knowledge and peer-feedback levels. *European Journal of Psychology of Education*, 33(1), 11-30.

- Alqassab, M., Strijbos, J. W., & Ufer, S. (2019). Preservice mathematics teachers' beliefs about peer feedback, perceptions of their peer feedback message, and emotions as predictors of peer feedback accuracy and comprehension of the learning task. *Assessment & Evaluation in Higher Education*, 44(1), 139-154.
- American Psychological Association. (2020). *APA dictionary of psychology, fatigue effect*. <https://dictionary.apa.org/fatigue-effect>
- American Psychological Association. (2020). *APA dictionary of psychology, practice effect*. <https://dictionary.apa.org/practice-effect>
- Andrade, H. L. (2013). Classroom assessment in the context of learning theory and research. In J. H. McMillan (Ed.), *Sage handbook of research on classroom learning* (pp. 17-34). California: Sage Publications.
- Andrade, H. L. (2019). A critical review of research on student self-assessment. *Frontiers in Education*, 4, 1-13.
- Andrade, H., & Brookhart, S. M. (2016). The role of classroom assessment in supporting self-regulated learning. In L. Allal & D. Laveault (Eds.), *Assessment for learning: Meeting the challenge of implementation* (pp. 293-309). Heidelberg: Springer.
- Andrade, H., & Valtcheva, A. (2009). Promoting learning and achievement through self-assessment. *Theory into Practice*, 48(1), 12-19.
- Ashenafi, M. M. (2017). Peer-assessment in higher education—twenty-first century practices, challenges and the way forward. *Assessment & Evaluation in Higher Education*, 42(2), 226-251.
- Avcı, Ü. (2020). Examining the role of sentence openers, role assignment scaffolds and self-determination in collaborative knowledge building. *Educational Technology Research and Development*, 68(1), 109-135.

- Azevedo, R., Johnson, A., Chauncey, A., & Graesser, A. (2011). Use of hypermedia to assess and convey self-regulated learning. In Zimmerman B. J., & Schunk D. H. (Eds.), *Handbook of self-regulation of learning and performance* (pp. 102-121). New York, NY: Routledge.
- Baker, K. M. (2016). Peer review as a strategy for improving students' writing process. *Active Learning in Higher Education*, 17(3), 179-192.
- Bangert-Drowns, R. L., Kulik, C. L. C., Kulik, J. A., & Morgan, M. (1991). The instructional effect of feedback in test-like events. *Review of Educational Research*, 61(2), 213-238.
- Bennett, S., Dawson, P., Bearman, M., Molloy, E., & Boud, D. (2017). How technology shapes assessment design: Findings from a study of university teachers. *British Journal of Educational Technology*, 48(2), 672-682.
- Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5-31.
- Bloxham, S., & Campbell, L. (2010). Generating dialogue in assessment feedback: Exploring the use of interactive cover sheets. *Assessment & Evaluation in Higher Education*, 35(3), 291-300.
- Boekaerts, M., & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology*, 54(2), 199-231.
- Bolzer, M., Strijbos, J. W., & Fischer, F. (2015). Inferring mindful cognitive-processing of peer-feedback via eye-tracking: Role of feedback-characteristics, fixation-durations and transitions. *Journal of Computer Assisted Learning*, 31(5), 422-434.

- Boud, D., & Brew, A. (1995). Developing a typology for learner self-assessment practices. *Research and Development in Higher Education*, 18(1), 130-135.
- Boud, D., & Molloy, E. (2013). Rethinking models of feedback for learning: The challenge of design. *Assessment & Evaluation in Higher Education*, 38(6), 698-712.
- Bourgeois, L. (2016). Supporting students' learning: From teacher regulation to co-regulation. In L. Allal & D. Laveault (Eds.), *Assessment for learning: Meeting the challenge of implementation*, (pp. 345-363). Heidelberg: Springer.
- Bourke, R. (2016). Liberating the learner through self-assessment. *Cambridge Journal of Education*, 46(1), 97-111.
- Bouwer, R., Béguin, A., Sanders, T., & van den Bergh, H. (2015). Effect of genre on the generalizability of writing scores. *Language Testing*, 32(1), 83-100.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Brinko, K. T. (1993). The practice of giving feedback to improve teaching: What is effective?. *The Journal of Higher Education*, 64(5), 574-593.
- Broadfoot, P. M., Daugherty, R., Gardner, J., Gipps, C. V., Harlen, W., James, M., Stobart, G. (1999). *Assessment for learning: Beyond the black box*. Cambridge, UK: University of Cambridge School of Education.
- Brown, G. T. L., & Harris, L. R. (2013). Student self-assessment. In J. H. McMillan (Ed.), *Sage handbook of research on classroom learning* (pp. 367-393). California: Sage Publications.

- Brown, G. T., Peterson, E. R., & Yao, E. S. (2016). Student conceptions of feedback: Impact on self-regulation, self-efficacy, and academic achievement. *British Journal of Educational Psychology*, 86(4), 606-629.
- Bruce, I. (2008). *Academic writing and genre: A systematic analysis*. London: Bloomsbury Publishing.
- Brush, T. A., & Saye, J. W. (2002). A summary of research exploring hard and soft scaffolding for teachers and students using a multimedia supported learning environment. *The Journal of Interactive Online Learning*, 1(2), 1-12.
- Burgess, A. W., Roberts, C., Black, K. I., & Mellis, C. (2013). Senior medical student perceived ability and experience in giving peer feedback in formative long case examinations. *BMC Medical Education*, 13, 1-5.
- Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research*, 65(3), 245-281.
- Carless, D. (2016). Feedback as dialogue. In M. A. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–6). Retrieved from http://link.springer.com/referenceworkentry/10.1007/978-981-287-532-7_389-1
- Carless, D., & Boud, D. (2018). The development of student feedback literacy: Enabling uptake of feedback. *Assessment & Evaluation in Higher Education*, 43(8), 1315-1325.
- Cartney, P. (2010). Exploring the use of peer assessment as a vehicle for closing the gap between feedback given and feedback used. *Assessment & Evaluation in Higher Education*, 35(5), 551-564.
- Chen, T. (2016). Technology-supported peer feedback in ESL/EFL writing classes: A research synthesis. *Computer Assisted Language Learning*, 29(2), 365-397.

- Cheng, K. H., Liang, J. C., & Tsai, C. C. (2015). Examining the role of feedback messages in undergraduate students' writing performance during an online peer assessment activity. *The Internet and Higher Education*, 25, 78-84.
- Chiu, C. M., Hsu, M. H., Sun, S. Y., Lin, T. C., & Sun, P. C. (2005). Usability, quality, value and e-learning continuance decisions. *Computers & Education*, 45(4), 399-416.
- Cho, K., & MacArthur, C. (2010). Student revision with peer and expert reviewing. *Learning and Instruction*, 20(4), 328-338.
- Cho, K., & Schunn, C. D. (2007). Scaffolded writing and rewriting in the discipline: A web-based reciprocal peer review system. *Computers & Education*, 48(3), 409-426.
- Cizek, G. J. (2010). An introduction to formative assessment: History, characteristics, and challenges. In H. L. Andrade & G. J. Cizek (Eds.), *Handbook of formative assessment* (pp. 3-17). New York, NY: Routledge.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Boston, MA: Pearson.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed method research* (2nd ed.). Los Angeles, CA: Sage.
- Deeley, S. J. (2018). Using technology to facilitate effective assessment for learning and feedback in higher education. *Assessment & Evaluation in Higher Education*, 43(3), 439-448.
- Deiglmayr, A. (2018). Instructional scaffolds for learning from formative peer assessment: effects of core task, peer feedback, and dialogue. *European Journal of Psychology of Education*, 33(1), 185-198.

- Demir, M. (2018). Using online peer assessment in an Instructional Technology and Material Design course through social media. *Higher Education*, 75(3), 399-414.
- Dochy, F. J. R. C., Segers, M., & Sluijsmans, D. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education*, 24(3), 331-350.
- Double, K. S., McGrane, J. A., & Hopfenbeck, T. N. (2020). The impact of peer assessment on academic performance: A meta-analysis of control group studies. *Educational Psychology Review*, 32, 481-509.
- Draper, S. W. (2009). What are learners actually regulating when given feedback?. *British Journal of Educational Technology*, 40(2), 306-315.
- Duijnhouwer, H., Prins, F. J., & Stokking, K. M. (2012). Feedback providing improvement strategies and reflection on feedback use: Effects on students' writing motivation, process, and performance. *Learning and Instruction*, 22(3), 171-184.
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350-383.
- Elbow, P., & Sorcinelli, M. D. (2011). Using high-stakes and low-stakes writing to enhance learning. In W. J. McKeachie & M. Svinicki (Eds.), *McKeachie's teaching tips. Strategies, research, and theory for college and university teachers* (13th ed., pp. 213–234). Wadsworth: Cengage Learning.
- Falchikov, N., & Boud, D. (1989). Student self-assessment in higher education: A meta-analysis. *Review of Educational Research*, 59(4), 395-430.
- Finkelstein, S. R., & Fishbach, A. (2012). Tell me what I did wrong: Experts seek and respond to negative feedback. *Journal of Consumer Research*, 39(1), 22-38.

- Frankel, J.R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: The McGraw-Hill Companies, Inc.
- Hadwin, A. F., Järvelä, S., & Miller, M. (2011). Self-regulated, co-regulated, and socially shared regulation of learning. In Zimmerman B. J., & Schunk D. H. (Eds.), *Handbook of self-regulation of learning and performance* (pp. 65-84). New York, NY: Routledge.
- Hadwin, A. F., Oshige, M., Gress, C. L., & Winne, P. H. (2010). Innovative ways for using gStudy to orchestrate and research social aspects of self-regulated learning. *Computers in Human Behavior*, 26(5), 794-805.
- Hadwin, A. F., Wozney, L., & Pontin, O. (2005). Scaffolding the appropriation of self-regulatory activity: A socio-cultural analysis of changes in teacher–student discourse about a graduate research portfolio. *Instructional Science*, 33(5-6), 413-450.
- Hannafin, M. J., Land, S., & Oliver, K. (1999). Open learning environments: Foundations, methods, and models. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory*, (pp. 115-140). Mahwah: Lawrence Erlbaum Associates, Inc.
- Harris, L. R., & Brown, G. T. L. (2010, May). "My teacher's judgment matters more than mine": Comparing teacher and student perspectives on self-assessment practices in the classroom. Paper presented to the SIG-Classroom Assessment at the American Educational Research Association Annual Conference, Denver, CO.
- Harris, L. R., Brown, G. T., & Dargusch, J. (2018). Not playing the game: Student assessment resistance as a form of agency. *The Australian Educational Researcher*, 45(1), 125-140.
- Harris, L. R., Brown, G. T., & Harnett, J. A. (2014). Understanding classroom feedback practices: A study of New Zealand student experiences, perceptions, and emotional responses. *Educational Assessment, Evaluation and Accountability*, 26(2), 107-133.

- Harris, L. R., Brown, G. T., & Harnett, J. A. (2015). Analysis of New Zealand primary and secondary student peer-and self-assessment comments: Applying Hattie and Timperley's feedback model. *Assessment in Education: Principles, Policy & Practice*, 22(2), 265-281.
- Hattie, J., & Gan, M. (2011). Instruction based on feedback. In R. E. Mayer & P. A. Alexander (Eds.), *Handbook of research on learning and instruction* (pp. 249-271). New York, NY: Routledge.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Hovardas, T., Tsivitanidou, O. E., & Zacharia, Z. C. (2014). Peer versus expert feedback: An investigation of the quality of peer feedback among secondary school students. *Computers & Education*, 71, 133-152.
- Howard, C. D., Barrett, A. F., & Frick, T. W. (2010). Anonymity to promote peer feedback: Pre-service teachers' comments in asynchronous computer-mediated communication. *Journal of Educational Computing Research*, 43(1), 89-112.
- Huisman, B., Saab, N., van den Broek, P., & van Driel, J. (2019). The impact of formative peer feedback on higher education students' academic writing: A Meta-Analysis. *Assessment & Evaluation in Higher Education*, 44(6), 863-880.
- Huisman, B., Saab, N., van Driel, J., & van Den Broek, P. (2018). Peer feedback on academic writing: undergraduate students' peer feedback role, peer feedback perceptions and essay performance. *Assessment & Evaluation in Higher Education*, 43(6), 955-968.
- Ilgaz, H., & Gülbahar, Y. (2015). A snapshot of online learners: e-Readiness, e-Satisfaction and expectations. *International Review of Research in Open and Distributed Learning*, 16(2), 171-187.

- Ilgen, D. R., Fisher, C. D., & Taylor, M. S. (1979). Consequences of individual feedback on behavior in organizations. *Journal of Applied Psychology*, 64(4), 349.
- Järvelä, S., & Hadwin, A. F. (2013). New frontiers: Regulating learning in CSCL. *Educational Psychologist*, 48(1), 25-39.
- Jonsson, A., & Panadero, E. (2018). Facilitating students' active engagement with feedback. In A. A. Lipnevich & J. K. Smith (Eds.), *The Cambridge handbook of instructional feedback* (pp. 249-271). Cambridge: Cambridge University Press.
- Jug, R., Jiang, X. S., & Bean, S. M. (2019). Giving and receiving effective feedback: A review article and how-to guide. *Archives of Pathology & Laboratory Medicine*, 143(2), 244-250.
- Jurkowski, S. (2018). Do question prompts support students in working with peer feedback?. *International Journal of Educational Research*, 92, 1-9.
- Gan, M. J., & Hattie, J. (2014). Prompting secondary students' use of criteria, feedback specificity and feedback levels during an investigative task. *Instructional Science*, 42(6), 861-878.
- Gao, Y., Schunn, C. D. D., & Yu, Q. (2019). The alignment of written peer feedback with draft problems and its impact on revision in peer assessment. *Assessment & Evaluation in Higher Education*, 44(2), 294-308.
- Ge, X., Chen, C. H., & Davis, K. A. (2005). Scaffolding novice instructional designers' problem-solving processes using question prompts in a web-based learning environment. *Journal of Educational Computing Research*, 33(2), 219-248.
- Gibbs, G., & Simpson, C. (2004). Does your assessment support your students' learning. *Journal of Teaching and Learning in Higher Education*, 1(1), 1-30.

- Gielen, M., & De Wever, B. (2015a). Scripting the role of assessor and assessee in peer assessment in a wiki environment: Impact on peer feedback quality and product improvement. *Computers & Education*, 88, 370-386.
- Gielen, M., & De Wever, B. (2015b). Structuring the peer assessment process: A multilevel approach for the impact on product improvement and peer feedback quality. *Journal of Computer Assisted Learning*, 31(5), 435-449.
- Gielen, M., & De Wever, B. (2015c). Structuring peer assessment: Comparing the impact of the degree of structure on peer feedback content. *Computers in Human Behavior*, 52, 315-325.
- Gielen, S., Dochy, F., & Onghena, P. (2011). An inventory of peer assessment diversity. *Assessment & Evaluation in Higher Education*, 36(2), 137-155.
- Gielen, S., Peeters, E., Dochy, F., Onghena, P., & Struyven, K. (2010a). Improving the effectiveness of peer feedback for learning. *Learning and Instruction*, 20(4), 304-315.
- Gielen, S., Tops, L., Dochy, F., Onghena, P., & Smeets, S. (2010b). A comparative study of peer and teacher feedback and of various peer feedback forms in a secondary school writing curriculum. *British Educational Research Journal*, 36(1), 143-162.
- Gikandi, J. W., & Morrow, D. (2016). Designing and implementing peer formative feedback within online learning environments. *Technology, Pedagogy and Education*, 25(2), 153-170.
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education*, 57(4), 2333-2351.
- Graham, S., & Harris, K. R. (2000). The role of self-regulation and transcription skills in writing and writing development. *Educational Psychologist*, 35(1), 3-12.

- Graham, S., Gillespie, A., & McKeown, D. (2013). Writing: Importance, development, and instruction. *Reading and Writing*, 26(1), 1-15.
- Gravett, K., & Winstone, N. E. (2019). 'Feedback interpreters': The role of learning development professionals in facilitating university students' engagement with feedback. *Teaching in Higher Education*, 24(6), 1-16.
- Guardado, M., & Shi, L. (2007). ESL students' experiences of online peer feedback. *Computers and Composition*, 24(4), 443-461.
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*, 29(1981), 75-91.
- Kaufman, J. H., & Schunn, C. D. (2011). Students' perceptions about peer assessment for writing: their origin and impact on revision work. *Instructional Science*, 39(3), 387-406.
- Kim, M. (2009). The impact of an elaborated assessee's role in peer assessment. *Assessment & Evaluation in Higher Education*, 34(1), 105-114.
- Kim, M. C., & Hannafin, M. J. (2011). Scaffolding problem solving in technology-enhanced learning environments (TELEs): Bridging research and theory with practice. *Computers & Education*, 56(2), 403-417.
- Kim, M., & Ryu, J. (2013). The development and implementation of a web-based formative peer assessment system for enhancing students' metacognitive awareness and performance in ill-structured tasks. *Educational Technology Research and Development*, 61(4), 549-561.
- Kobayashi, M. (2020). Does anonymity matter? Examining quality of online peer assessment and students' attitudes. *Australasian Journal of Educational Technology*, 36(1), 98-110.

- Kollar, I., & Fischer, F. (2010). Peer assessment as collaborative learning: A cognitive perspective. *Learning and Instruction*, 20(4), 344-348.
- Könings, K. D., van Zundert, M., & van Merriënboer, J. J. (2019). Scaffolding peer-assessment skills: Risk of interference with learning domain-specific skills?. *Learning and Instruction*, 60, 85-94.
- Ladyshevsky, R. K. (2013). The role of peers in feedback processes. In D. Boud & E. Molloy (Eds.), *Feedback in Higher and Professional Education Understanding it and doing it well* (pp. 174-189). Oxon: Routledge.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159-174.
- Law, S., & Baer, A. (2020). Using technology and structured peer reviews to enhance students' writing. *Active Learning in Higher Education*, 21(1), 23-38.
- Lazonder, A. W., Wilhelm, P., & Ootes, S. A. (2003). Using sentence openers to foster student interaction in computer-mediated learning environments. *Computers & Education*, 41(3), 291-308.
- Lee, E., & Hannafin, M. J. (2016). A design framework for enhancing engagement in student-centered learning: own it, learn it, and share it. *Educational Technology Research and Development*, 64(4), 707-734.
- Lee, M. C. (2010). Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation-confirmation model. *Computers & Education*, 54(2), 506-516.
- Leenknecht, M. J., & Prins, F. J. (2018). Formative peer assessment in primary school: the effects of involving pupils in setting assessment criteria on their appraisal and feedback style. *European Journal of Psychology of Education*, 33(1), 101-116.

- Li, H., Xiong, Y., Hunter, C. V., Guo, X., & Tywoniw, R. (2020). Does peer assessment promote student learning? A meta-analysis. *Assessment & Evaluation in Higher Education*, 45(2), 193-211.
- Li, L. (2017). The role of anonymity in peer assessment. *Assessment & Evaluation in Higher Education*, 42(4), 645-656.
- Li, L., Liu, X., & Zhou, Y. (2012). Give and take: A re-analysis of assessor and assessee's roles in technology-facilitated peer assessment. *British Journal of Educational Technology*, 43(3), 376-384.
- Lin, G. Y. (2018). Anonymous versus identified peer assessment via a Facebook-based learning application: Effects on quality of peer feedback, perceived learning, perceived fairness, and attitude toward the system. *Computers & Education*, 116, 81-92.
- Liu, N. F., & Carless, D. (2006). Peer feedback: The learning element of peer assessment. *Teaching in Higher Education*, 11(3), 279-290.
- Liu, X., & Li, L. (2014). Assessment training effects on student assessment skills and task performance in a technology-facilitated peer assessment. *Assessment & Evaluation in Higher Education*, 39(3), 275-292.
- Lladó, A.P. , Soley, L. F., Fraguell Sansbelló, R. M., Pujolras, G. A., Planella, J. P., Roura-Pascual, N., Martinez, J. J. S., & Moreno, L. M. (2014). Student perceptions of peer assessment: An interdisciplinary study. *Assessment & Evaluation in Higher Education*, 39(5), 592-610.
- MacArthur, C. A. (2007). Best practices in teaching evaluation and revision. In S. Graham, C. A. MacArthur, & J. Fitzgerald (Eds.), *Best practices in writing instruction* (pp. 141-162). New York: Guilford Press.
- MacArthur, C. A. (2019). Evaluation and revision. Graham, S., MacArthur, C. A., & Fitzgerald, J. (Eds.), *Best practices in writing instruction* (pp. 287-308). New York: Guilford Press.

- Mardia, K. V. (1971). The effect of nonnormality on some multivariate tests and robustness to nonnormality in the linear model. *Biometrika*, 58(1), 105–121.
- McCarthy, J. (2017). Enhancing feedback in higher education: Students' attitudes towards online and in-class formative assessment feedback models. *Active Learning in Higher Education*, 18(2), 127-141.
- McCaslin, M. (2009). Co-regulation of student motivation and emergent identity. *Educational Psychologist*, 44(2), 137-146.
- McConlogue, T. (2015). Making judgements: investigating the process of composing and receiving peer feedback. *Studies in Higher Education*, 40(9), 1495-1506.
- McMillan, P. (2013). Why we need research on classroom assessment. In J. H. McMillan (Ed.), *Sage handbook of research on classroom learning* (pp. 3-16). California: Sage Publications.
- Mercader, C., Ion, G., & Díaz-Vicario, A. (2020). Factors influencing students' peer feedback uptake: instructional design matters. *Assessment & Evaluation in Higher Education*, 45(8), 1169-1180.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco: John Wiley & Sons.
- Meusen-Beekman, K. D., Joosten-ten Brinke, D., & Boshuizen, H. P. (2016). Effects of formative assessments to develop self-regulation among sixth grade students: Results from a randomized controlled intervention. *Studies in Educational Evaluation*, 51, 126-136.
- Miao, M., Badger, R., & Zhen, Y. (2006). A comparative study of peer and teacher feedback in a Chinese EFL writing class. *Journal of Second Language Writing*, 15(3), 179-200.

- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Miller, M. D., Linn, R. L., & Gronlund, N. E. (2009). *Measurement and assessment in teaching* (10th ed.). New Jersey: Pearson Education.
- Ministry of National Education. (2018). Türk dili ve edebiyatı (9., 10., 11, ve 12. sınıflar) öğretim programı. Retrieved February 14, 2021, from <http://mufredat.meb.gov.tr/ProgramDetay.aspx?PID=353>
- Mostert, M., & Snowball, J. D. (2013). Where angels fear to tread: Online peer-assessment in a large first-year class. *Assessment & Evaluation in Higher Education*, 38(6), 674-686.
- Müldür, M., & Yalçın, A. (2019). Öz düzenlemeye dayalı yazma eğitiminin ortaokul öğrencilerinin bilgilendirici metin yazma becerisine, yazmaya yönelik öz düzenleme becerisine ve yazma öz yeterlik algısına etkisi. *Elementary Education Online*, 18(4), 1779-1804.
- Narciss, S. (2008). Feedback strategies for interactive learning tasks. In J. M. Spector, M. D. Merrill, J. Van Merriënboer, & M. P. Driscoll (Eds.), *Handbook of research on educational communications and technology* (3rd ed.) (pp. 125-144). New York, NY: Lawrence Erlbaum Associates.
- Nelson, M. M., & Schunn, C. D. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional Science*, 37(4), 375-401.
- Nicol, D. (2010). From monologue to dialogue: improving written feedback processes in mass higher education. *Assessment & Evaluation in Higher Education*, 35(5), 501-517.
- Nicol, D. (2012). Resituating feedback from the reactive to the proactive. In D. Boud & E. Molloy (Eds.), *Feedback in higher and professional education: Understanding it and doing it well* (pp. 34-49). London: Routledge.

- Nicol, D. (2014). Guiding principles for peer review: Unlocking learners' evaluative skills. In C. Kreber, C. Andersen, N. Entwistle, & J. McArthur (Eds.), *Advances and innovations in university assessment and feedback* (pp. 197-224). Edinburgh: Edinburgh University Press.
- Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education: A peer review perspective. *Assessment & Evaluation in Higher Education*, 39(1), 102-122.
- Nitko, A. J., & Brookhart, S. M. (2006). *Educational assessment of students* (5th ed.). New Jersey: Pearson Education.
- Noroozi, O., Biemans, H., & Mulder, M. (2016). Relations between scripted online peer feedback processes and quality of written argumentative essay. *The Internet and Higher Education*, 31, 20-31.
- Novakovich, J. (2016). Fostering critical thinking and reflection through blog-mediated peer feedback. *Journal of Computer Assisted Learning*, 32(1), 16-30.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- O'Donnell, A. M., & Topping, K. (1998). Peers assessing peers: Possibilities and problems. In K. Topping & S. Ehly (Eds.), *Peer-assisted learning* (pp. 255-278). Mahwah, NJ: Lawrence Erlbaum.
- Pachler, N., Daly, C., Mor, Y., & Mellar, H. (2010). Formative e-assessment: Practitioner cases. *Computers & Education*, 54(3), 715-721.
- Panadero, E. (2016). Is it safe? Social, interpersonal, and human effects of peer assessment: a review and future directions. In G. T. L. Brown & L. R. Harris (Eds.), *Handbook of social and human conditions in assessment* (pp. 247-266). New York: Routledge.

- Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*, 8, 1-28.
- Panadero, E., Andrade, H., & Brookhart, S. (2018a). Fusing self-regulated learning and formative assessment: a roadmap of where we are, how we got here, and where we are going. *Australian Educational Research*, 45(1), 13-31.
- Panadero, E., Brown, G. T., & Strijbos, J. W. (2016a). The future of student self-assessment: A review of known unknowns and potential directions. *Educational Psychology Review*, 28(4), 803-830.
- Panadero, E., Jonsson, A. & Alqassab, M. (2018b). Providing formative peer feedback. In A. Lipnevich & J. K. Smith (Eds.), *The Cambridge handbook of instructional feedback* (pp. 409-431). Cambridge: Cambridge University Press.
- Panadero, E., Jonsson, A., & Botella, J. (2017). Effects of self-assessment on self-regulated learning and self-efficacy: Four meta-analyses. *Educational Research Review*, 22, 74-98.
- Panadero, E., Jonsson, A., & Strijbos, J. W. (2016b). Scaffolding self-regulated learning through self-assessment and peer assessment: Guidelines for classroom implementation. In D. Laveault & L. Allal (Eds.), *Assessment for learning: Meeting the challenge of implementation* (pp. 311-326). Dordrecht: Springer International Publishing.
- Panadero, E., & Romero, M. (2014). To rubric or not to rubric? The effects of self-assessment on self-regulation, performance and self-efficacy. *Assessment in Education: Principles, Policy & Practice*, 21(2), 133-148.
- Papinczak, T., Young, L., & Groves, M. (2007). Peer assessment in problem-based learning: A qualitative study. *Advances in Health Sciences Education*, 12(2), 169-186.

- Parr, J. M. (2013). Classroom assessment in writing. In J. H. McMillan (Ed.), *Sage handbook of research on classroom learning* (pp. 489-501). California: Sage Publications.
- Patchan, M. M., & Schunn, C. D. (2015). Understanding the benefits of providing peer feedback: How students respond to peers' texts of varying quality. *Instructional Science*, 43(5), 591-614.
- Patchan, M. M., Schunn, C. D., & Correnti, R. J. (2016). The nature of feedback: How peer feedback features affect students' implementation rate and quality of revisions. *Journal of Educational Psychology*, 108(8), 1098.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). California: Corwin Press.
- Peters, O., Körndle, H., & Narciss, S. (2018). Effects of a formative assessment script on how vocational students generate formative feedback to a peer's or their own performance. *European Journal of Psychology of Education*, 33(1), 117-143.
- Peterson, E. R., & Irving, S. E. (2008). Secondary school students' conceptions of assessment and feedback. *Learning and Instruction*, 18(3), 238-250.
- Pham, V. P. H., & Usaha, S. (2016). Blog-based peer response for L2 writing revision. *Computer Assisted Language Learning*, 29(4), 724-748.
- Prins, F. J., Sluijsmans, D. M., Kirschner, P. A. (2006). Feedback for general practitioners in training: Quality, styles, and preferences. *Advances in Health Sciences Education*, 11(3), 289-303.
- Prins, F. J., Sluijsmans, D. M., Kirschner, P. A., & Strijbos, J. W. (2005). Formative peer assessment in a CSCL environment: A case study. *Assessment & Evaluation in Higher Education*, 30(4), 417-444.

- Reinholz, D. (2016). The assessment cycle: a model for learning through peer assessment. *Assessment & Evaluation in Higher Education*, 41(2), 301-315.
- Roca, J. C., Chiu, C. M., & Martínez, F. J. (2006). Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. *International Journal of Human-Computer Studies*, 64(8), 683-696.
- Ross, J. A. (2006). The reliability, validity, and utility of self-assessment. *Practical Assessment, Research, and Evaluation*, 11, 1-13.
- Rotsaert, T., Panadero, E., Estrada, E., & Schellens, T. (2017). How do students perceive the educational value of peer assessment in relation to its social nature? A survey study in Flanders. *Studies in Educational Evaluation*, 53, 29-40.
- Rotsaert, T., Panadero, E., & Schellens, T. (2018a). Anonymity as an instructional scaffold in peer assessment: its effects on peer feedback quality and evolution in students' perceptions about peer assessment skills. *European Journal of Psychology of Education*, 33(1), 75-99.
- Rotsaert, T., Panadero, E., Schellens, T., & Raes, A. (2018b). "Now you know what you're doing right and wrong!" Peer feedback quality in synchronous peer assessment in secondary education. *European Journal of Psychology of Education*, 33(2), 255-275.
- Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research*, 27(2), 94-104.
- Russell, J., Van Horne, S., Ward, A. S., Bettis, E. A., & Gikonyo, J. (2017). Variability in students' evaluating processes in peer assessment with calibrated peer review. *Journal of Computer Assisted Learning*, 33(2), 178-190.
- Sadler, D. R. (1998). Formative assessment: Revisiting the territory. *Assessment in Education: Principles, Policy & Practice*, 5(1), 77-84.

- Santangelo, T., Harris, K. R., & Graham, S. (2016). Self-regulation and writing: An overview and meta-analysis. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 174– 193). New York: Guilford.
- Schunk, D. H. (1996). Goal and self-evaluative influences during children's cognitive skill learning. *American Educational Research Journal*, 33(2), 359-382.
- Schunk, D. H. (2012). *Learning theories* (6. Ed.). Boston, MA: Pearson Education Inc.
- Seifert, T., & Feliks, O. (2019). Online self-assessment and peer-assessment as a tool to enhance student-teachers' assessment skills. *Assessment & Evaluation in Higher Education*, 44(2), 169-185.
- Sharma, P., & Hannafin, M. J. (2007). Scaffolding in technology-enhanced learning environments. *Interactive Learning Environments*, 15(1), 27-46.
- Sluijsmans, D. M., Brand-Gruwel, S., van Merriënboer, J. J., & Martens, R. L. (2004). Training teachers in peer-assessment skills: Effects on performance and perceptions. *Innovations in Education and Teaching International*, 41(1), 59-78.
- Smith, H., Cooper, A., & Lancaster, L. (2002). Improving the quality of undergraduate peer assessment: A case for student and staff development. *Innovations in Education and Teaching International*, 39(1), 71-81.
- Stiggins, R. (2005). From formative assessment to assessment for learning: A path to success in standards-based schools. *Phi Delta Kappan*, 87(4), 324-328.
- Strijbos, J. W., Martens, R. L., Prins, F. J., & Jochems, W. M. (2006). Content analysis: What are they talking about?. *Computers & Education*, 46(1), 29-48.

- Strijbos, J. W., Narciss, S., & Dünnebier, K. (2010). Peer feedback content and sender's competence level in academic writing revision tasks: Are they critical for feedback perceptions and efficiency?. *Learning and Instruction*, 20(4), 291-303.
- Strijbos, J. W., Ochoa, T. A., Sluijsmans, D. M., Segers, M. S., & Tillema, H. H. (2009). Fostering interactivity through formative peer assessment in (web-based) collaborative learning environments. In C. Mourlas, N. Tsianos, & P. Germanakod (Eds.), *Cognitive and emotional processes in web-based education: Integrating human factors and personalization* (pp. 375-395). Hershey, PA: Information Science Reference.
- Strijbos, J. W., & Sluijsmans, D. (2010). Unravelling peer assessment: Methodological, functional, and conceptual developments. *Learning and Instruction*, 20(4), 265-269.
- Strijbos, J. W., & Wichmann, A. (2018). Promoting learning by leveraging the collaborative nature of formative peer assessment with instructional scaffolds. *European Journal of Psychology of Education*, 33(1), 1-9.
- Strobl, C., Ailhaud, E., Benetos, K., Devitt, A., Kruse, O., Proske, A., & Rapp, C. (2019). Digital support for academic writing: A review of technologies and pedagogies. *Computers & Education*, 131, 33-48.
- Symonds, P. M. (1928). Factors influencing test reliability. *Journal of Educational Psychology*, 19(2), 73-87.
- Tenório, T., Bittencourt, I. I., Isotani, S., & Silva, A. P. (2016). Does peer assessment in on-line learning environments work? A systematic review of the literature. *Computers in Human Behavior*, 64, 94-107.
- Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research*, 68(3), 249-276.

- Topping, K. J. (2009). Peer assessment. *Theory into Practice*, 48(1), 20-27.
- Topping, K. J. (2010). Methodological quandaries in studying process and outcomes in peer assessment. *Learning and Instruction*, 20(4), 339-343.
- Tsai, C. C., & Liang, J. C. (2009). The development of science activities via on-line peer assessment: The role of scientific epistemological views. *Instructional Science*, 37(3), 293-310.
- Tsivitanidou, O. E., & Constantinou, C. P. (2016). A study of students' heuristics and strategy patterns in web-based reciprocal peer assessment for science learning. *The Internet and Higher Education*, 29, 12-22.
- Tsivitanidou, O., Zacharia, Z. C., Hovardas, T., & Nicolaou, A. (2012). Peer assessment among secondary school students: Introducing a peer feedback tool in the context of a computer supported inquiry learning environment in science. *Journal of Computers in Mathematics and Science Teaching*, 31(4), 433-465.
- Tsui, A. B., & Ng, M. (2000). Do secondary L2 writers benefit from peer comments?. *Journal of Second Language Writing*, 9(2), 147-170.
- Ungan, S. (2007). Yazma becerisinin geliştirilmesi ve önemi. *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 1(23), 461-472.
- Vanderhoven, E., Raes, A., Montrieux, H., Rotsaert, T., & Schellens, T. (2015). What if pupils can assess their peers anonymously? A quasi-experimental study. *Computers & Education*, 81, 123-132.
- van den Berg, I., Admiraal, W., & Pilot, A. (2006). Design principles and outcomes of peer assessment in higher education. *Studies in Higher Education*, 31(3), 341-356.

- van der Pol, J., Van den Berg, B. A. M., Admiraal, W. F., & Simons, P. R. J. (2008). The nature, reception, and use of online peer feedback in higher education. *Computers & Education*, 51(4), 1804-1817.
- van Gennip, N. A., Segers, M. S., & Tillema, H. H. (2009). Peer assessment for learning from a social perspective: The influence of interpersonal variables and structural features. *Educational Research Review*, 4(1), 41-54.
- van Popta, E., Kral, M., Camp, G., Martens, R. L., & Simons, P. R. J. (2017). Exploring the value of peer feedback in online learning for the provider. *Educational Research Review*, 20, 24-34.
- van Zundert, M. J., Könings, K. D., Sluijsmans, D. M. A., & van Merriënboer, J. J. G. (2012a). Teaching domain-specific skills before peer assessment skills is superior to teaching them simultaneously. *Educational Studies*, 38(5), 541-557.
- van Zundert, M. J., Sluijsmans, D. M., Könings, K. D., & van Merriënboer, J. J. (2012b). The differential effects of task complexity on domain-specific and peer assessment skills. *Educational Psychology*, 32(1), 127-145.
- van Zundert, M., Sluijsmans, D., & van Merriënboer, J. (2010). Effective peer assessment processes: Research findings and future directions. *Learning and Instruction*, 20(4), 270-279.
- Voet, M., Gielen, M., Boelens, R., & De Wever, B. (2018). Using feedback requests to actively involve assessees in peer assessment: effects on the assessor's feedback content and assessee's agreement with feedback. *European Journal of Psychology of Education*, 33(1), 145-164.
- Volet, S., Vauras, M., & Salonen, P. (2009). Self-and social regulation in learning contexts: An integrative perspective. *Educational Psychologist*, 44(4), 215-226.

- Walker, M. 2015. The quality of written peer feedback on undergraduates' draft answers to an assignment, and the use made of the feedback. *Assessment & Evaluation in Higher Education*, 40(2), 232-247.
- Wanner, T., & Palmer, E. (2018). Formative self-and peer assessment for improved student learning: the crucial factors of design, teacher participation and feedback. *Assessment & Evaluation in Higher Education*, 43(7), 1032-1047.
- Webb, N. M., & Mastergeorge, A. (2003). Promoting effective helping behavior in peer-directed groups. *International Journal of Educational Research*, 39(1-2), 73-97.
- Wichmann, A., Funk, A., & Rummel, N. (2018). Leveraging the potential of peer feedback in an academic writing activity through sense-making support. *European Journal of Psychology of Education*, 33(1), 165-184.
- Wiliam, D. (2014, April). Formative assessment and contingency in the regulation of learning processes. Paper presented at the American Educational Research Association, Philadelphia, USA.
- Wiliam, D. (2010). An integrative summary of the research literature and implications for a new theory of formative assessment. In H. L. Andrade & G. J. Cizek (Eds.), *Handbook of formative assessment* (pp. 18-40). New York, NY: Routledge.
- Winne, P. H. (2011). A cognitive and metacognitive analysis of self-regulated learning. In Zimmerman B. J., & Schunk D. H. (Eds.), *Handbook of self-regulation of learning and performance* (pp. 15-32). New York, NY: Routledge.
- Winne, P. H., & Hadwin, A. F. (1998). Studying as self-regulated learning. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 277-304). New Jersey, NJ: Lawrence Erlbaum Associates, Inc.

- Winstone, N. E., Nash, R. A., Parker, M., & Rowntree, J. (2017a). Supporting learners' agentic engagement with feedback: A systematic review and a taxonomy of recipience processes. *Educational Psychologist*, 52(1), 17-37.
- Winstone, N. E., Nash, R. A., Rowntree, J., & Parker, M. (2017b). 'It'd be useful, but I wouldn't use it': barriers to university students' feedback seeking and recipience. *Studies in Higher Education*, 42(11), 2026-2041.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17(2), 89-100.
- Wu, Y., & Schunn, C. D. (2020). From feedback to revisions: Effects of feedback features and perceptions. *Contemporary Educational Psychology*, 60, 101826.
- Xie, K., & Bradshaw, A. C. (2008). Using question prompts to support ill-structured problem solving in online peer collaborations. *International Journal of Technology in Teaching and Learning*, 4(2), 148-165.
- Yan, Z. (2020). Self-assessment in the process of self-regulated learning and its relationship with academic achievement. *Assessment & Evaluation in Higher Education*, 45(2), 224-238.
- Yan, Z., & Brown, G. T. (2017). A cyclical self-assessment process: towards a model of how students engage in self-assessment. *Assessment & Evaluation in Higher Education*, 42(8), 1247-1262.
- Yan, Z., Brown, G. T., Lee, J. C. K., & Qiu, X. L. (2020). Student self-assessment: why do they do it?. *Educational Psychology*, 40(4), 509-532.
- Yiong-Hwee, T., & Churchill, D. (2007). Using sentence openers to support students' argumentation in an online learning environment. *Educational Media International*, 44(3), 207-218.

- Yu, S. (2021). Giving genre-based peer feedback in academic writing: sources of knowledge and skills, difficulties and challenges. *Assessment & Evaluation in Higher Education*, 46(1), 36-53.
- Yu, S., & Lee, I. (2016). Peer feedback in second language writing (2005–2014). *Language Teaching*, 49(4), 461-493.
- Zheng, L., Cui, P., Li, X., & Huang, R. (2018). Synchronous discussion between assessors and assesseees in web-based peer assessment: impact on writing performance, feedback quality, meta-cognitive awareness and self-efficacy. *Assessment & Evaluation in Higher Education*, 43(3), 500-514.
- Zheng, L., & Huang, R. (2016). The effects of sentiments and co-regulation on group performance in computer supported collaborative learning. *The Internet and Higher Education*, 28, 59-67.
- Zheng, L., Zhang, X., & Cui, P. (2020). The role of technology-facilitated peer assessment and supporting strategies: A meta-analysis. *Assessment & Evaluation in Higher Education*, 45(3), 372-386.
- Zhu, Q., & Carless, D. (2018). Dialogue within peer feedback processes: clarification and negotiation of meaning. *Higher Education Research & Development*, 37(4), 883-897.
- Zimmerman, B. J. (2000). Attaining self-regulation a social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13-39). Cambridge: Academic Press.
- Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of metacognition in education* (pp. 299-315). New York, NY: Routledge.
- Zimmerman, B. J., & Risemberg, R. (1997). Becoming a self-regulated writer: A social cognitive perspective. *Contemporary Educational Psychology*, 22(1), 73-101.

Zumbrunn, S., Marrs, S., & Mewborn, C. (2016). Toward a better understanding of student perceptions of writing feedback: A mixed methods study. *Reading and Writing*, 29(2), 349-370.



APPENDICES

A. Approval of Human Subjects Ethics Committee at METU

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

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05 NİSAN 2018

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgili: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Zahide YILDIRIM

Danışmanlığını yaptığınız doktora öğrencisi Ecenaz ALEMDAĞ'ın "*Öz-Düzenleme ile Artırılmış Etkileşim Destekleri İçeren Çevrim İçli Akran Değerlendirme Ortamının Değerlendirme Süreci ve Öğrenme Çıktılarına Etkisi*" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay 2018-EGT-050 protokol numarası ile 06.04.2018 - 30.09.2020 tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN

Başkan V

Prof. Dr. Ayhan SOL

Üye

Prof. Dr. Ayhan Gürbüz DEMİR

Üye

Doç. Dr. Paşar KÖNDAKÇI

Üye

Doç. Dr. Zana CİTAK

Üye

Doç. Dr. Emre SELÇUK

Üye

Dr. Öğr. Üyesi Pınar KAYGAN

Üye

B. Permission of Ministry of Education



T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü

07.05.2018

Sayı : 81576613/605.01/9011778
Konu: Araştırma İzni

07.05.2018

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Öğrenci İşleri Daire Başkanlığı)

İlgi: a) Orta Doğu Teknik Üniversitesi Öğrenci İşleri Daire Başkanlığının 27/04/2018 tarihli ve 54850036-044-2216 sayılı yazısı
b) Millî Eğitim Bakanlığının 22/08/2017 tarihli ve 35558626-10.06.01-E.12607291 (2017/25) sayılı genelge

İlgi yazı (a) ile Orta Doğu Teknik Üniversitesi Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı Doktora Programı öğrencisi Ecenaz ALEMDAĞ'ın "Öz-Düzenleme ile Artırılmış Etkileşim Destekleri İçeren Çevrim İçi Akran Değerlendirme Ortamının Değerlendirilme Süreci ve Öğrenme Çıktılarına Etkisi" konulu doktora tezi kapsamında hazırladığı veri toplama araçlarının Ankara ve Zonguldak illerindeki her tür ve derecedeki liselerde öğretim gören öğrencilere uygulanmasına yönelik talep Genel Müdürlüğümüz tarafından incelenmiştir.

Denetimi il, ilçe millî eğitim müdürlükleri ve okul/kurum idaresinde olmak üzere, eğitim öğretim faaliyetlerini aksatmadan, gönüllülük esasına göre; onaylı bir örneği Bakanlığımızda muhafaza edilen ve uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılmış veri toplama araçlarının ilgi (b) genelge doğrultusunda uygulanmasına izin verilmiştir.

Gereğini bilgilerinize rica ederim.

Bilal TIRNAKÇI
Bakan a.
Genel Müdür

Ek: Veri Toplama Araçları (13 Sayfa)

Güvenli Elektronik İmza
Aşlı ile Aynıdır
08.05.2018

09. 05. 2018 - 8874

Emniyet Mahallesi Mülazım Sokak No:8 06580 Yenimahalle-ANKARA
Telefon No: (0 312) 296 94 00 Fax: (0 312) 313 61 36
E-Posta: yegitok@meb.gov.tr İnternet Adresi: http://yegitok.meb.gov.tr

Bilgi için: Seyda KARABOLUT Oc. Ahiye DEMİRBAŞ
Öğretmen Koordinatör
Telefon No: (0 312) 296 93 82

Bu evrak güvenli elektronik imza ile imzalanmıştır. <http://evrak.meb.gov.tr> adresinden 8808-4e1e-3291-b1e0-7e91 kodu ile teyit edilebilir.

C. Participant Information Form

Değerli Öğrenci,

Bu anket sizin demografik bilgileriniz, bilgisayar ve İnternet kullanımınız, kompozisyon yazma ile akran geri bildirimindeki deneyimlerinize ilişkin veri toplamayı amaçlamaktadır. Ankete verdiğiniz cevaplar tamamen gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir. İsminiz ve diğer bilgileriniz, hiçbir şekilde kimseyle paylaşılmayacaktır.

Lütfen soruları boş bırakmadan içtenlikle yanıtlayınız. Katılımınız için şimdiden teşekkür ederim.

Arş. Gör. Ecenaz Alemdağ

I. Demografik Bilgiler

1. Cinsiyetiniz: () Kadın () Erkek
2. Yaşınız:
3. E-posta adresiniz:
4. Sınıf ve şubeniz:

II. Bilgisayar ve İnternet Kullanımı

5. Bilgisayar kullanıyor musunuz? Kullanıyorsanız, kaç yıldır?
() Kullanmıyorum () 1-3 Yıl () 4-6 Yıl () 7 Yıldan fazla
6. Evde/Yurtta kullanabileceğiniz bir masaüstü veya dizüstü bilgisayarınız var mı?
() Evet () Hayır
7. Tabletiniz var mı?
() Evet () Hayır
8. İnternet kullanıyor musunuz? Kullanıyorsanız, kaç yıldır?
() Kullanmıyorum () 1-3 Yıl () 4-6 Yıl () 7 Yıldan fazla

9. İnternet kullanıyorsanız ne sıklıkla kullanıyorsunuz?
- () Ayda bir () Ayda birkaç kez () Haftada bir () Haftada birkaç kez
() Her gün
10. Evde/Yurtta rahatlıkla kullanabileceğiniz İnternet'iniz var mı?
- () Evet () Hayır
11. İnternet'e bağlanabilen cep telefonunuz var mı?
- () Evet () Hayır

III. Kompozisyon Yazma ve Akran Geri Bildirimi

12. Ortaokuldaki Türkçe dersinde kaç kere kompozisyon yazma çalışması yaptınız?
- () Hiç yapmadım () 1-3 kez () 4-6 kez () 7-10 kez () 10'dan fazla
13. *Geri bildirim*; bir kişiye, çalışmasındaki (örneğin sunumu, hazırladığı ürünü/materyali veya yazısındaki) doğru, yanlış ve eksik yerlere ilişkin bilgi verilmesidir.
- Daha önce bir ders kapsamında arkadaşınızın çalışmasını değerlendirip geri bildirim verdiniz mi?
- () Evet () Hayır
14. Soru 13'e cevabınız "Evet" ise; öğretmeniniz nasıl geri bildirim verilmesi gerektiği konusunda sizi bilgilendirdi mi?
- () Evet () Hayır
15. Daha önce bir ders kapsamında arkadaşınızdan çalışmanızla ilgili geri bildirim aldınız mı?
- () Evet () Hayır
16. Soru 15'e cevabınız "Evet" ise; öğretmeniniz geri bildirim alma sürecinde neler yapılması gerektiğiyle ilgili sizi bilgilendirdi mi?
- () Evet () Hayır

17. Türk Dili ve Edebiyatı dersinde arkadaşlarınızın kompozisyonlarına geri bildirim vermek ister misiniz?

- ☐ Kesinlikle istemem ☐ İstemem ☐ Ne istemem ne isterim
☐ İsterim ☐ Kesinlikle isterim

18. Türk Dili ve Edebiyatı dersinde arkadaşlarınızdan kompozisyonunuzla ilgili geri bildirim almak ister misiniz?

- ☐ Kesinlikle istemem ☐ İstemem ☐ Ne istemem ne isterim
☐ İsterim ☐ Kesinlikle isterim



D. Peer Feedback Beliefs Questionnaire

Değerli Öğrenci,

Geri bildirim; bir kişiye, çalışmasındaki (örneğin sunumu, hazırladığı ürünü/materyali veya yazısındaki) doğru, yanlış ve eksik yerlere ilişkin bilgi verilmesidir.

Türk Dili ve Edebiyatı dersinde arkadaşlarınızın kompozisyonlarını değerlendirip arkadaşlarınıza geri bildirim vereceğinizi ve sizin de arkadaşlarınızdan kompozisyonunuzla ilgili geri bildirim alacağınızı varsayalım. Aşağıdaki ifadeleri bu durumu düşünerek cevaplayınız. Aşağıda verilen ifadelere ne kadar katıldığınızı ilgili rakamı işaretleyerek belirtiniz.

Arkadaşlarıma kompozisyonları için vereceğim geri bildirimler,	Kesinlikle katılmıyorum	Katılmıyorum	Kısmen katılmıyorum	Ne katılıyorum ne katılmıyorum	Kısmen katılıyorum	Katılıyorum	Kesinlikle katılıyorum
1. Detaylı olacaktır.	1	2	3	4	5	6	7
2. İyi bir kompozisyonda bulunması gereken özellikler hakkında bilgi verici olacaktır.	1	2	3	4	5	6	7
3. Doğru bilgiler içeren yorumlar olacaktır.	1	2	3	4	5	6	7
4. Adaletli yorumlar olacaktır.	1	2	3	4	5	6	7
5. Arkadaşlarımı incitmeyecek bir dilde olacaktır.	1	2	3	4	5	6	7
6. Faydalı yorumlar olacaktır.	1	2	3	4	5	6	7

Arkadaşlarımdan kompozisyonum için alacağım geri bildirimler,	Kesinlikle katılmıyorum	Katılmıyorum	Kısmen katılmıyorum	Ne katılıyorum ne katılmıyorum	Kısmen katılıyorum	Katılıyorum	Kesinlikle katılıyorum
7. Detaylı olacaktır.	1	2	3	4	5	6	7
8. İyi bir kompozisyonda bulunması gereken özellikler hakkında bilgi verici olacaktır.	1	2	3	4	5	6	7
9. Doğru bilgiler içeren yorumlar olacaktır.	1	2	3	4	5	6	7
10. Adaletli yorumlar olacaktır.	1	2	3	4	5	6	7
11. Beni incitmeyecek bir dilde olacaktır.	1	2	3	4	5	6	7
12. Faydalı yorumlar olacaktır.	1	2	3	4	5	6	7

E. Feedback Implementation Checklist

In this checklist, implementation rate of the peer feedback is determined. First, the peer comments the students received regarding their shortcomings are listed in the table. Second, the specific and accurate ones are determined. These comments include correct and criteria specific information about the shortcomings. In other words, they give details about the wrong, missing, redundant, or unclear aspects instead of just expressing that there are errors regarding assessment criterion. In addition, these comments should be accurate according to writing rules and genre. Third, the revised writing is checked to determine whether the comment was applied or not. Finally, there can be some revisions in the writing that are not directly connected to the peer feedback. They stem from student's self-feedback. If you find such revision, please check "revision based on self-feedback" option.

Feedback receiver:

#	Comments regarding shortcoming	Specific and accurate	Implemented
1.		☐	☐
2.		☐	☐
3.		☐	☐
4.		☐	☐
5.		☐	☐
6.		☐	☐
7.		☐	☐
8.		☐	☐
Total			

☐ Revision based on self-feedback

F. Perceived Contributions of the Online FPA Environment Questionnaire

Değerli Öğrenci,

Türk Dili ve Edebiyatı dersinde Destekleyici Yazılı Anlatım ve Akran Değerlendirme (DAYANAK) ortamını kullandınız. Bu ortamda (1) yazı yazma, (2) geri bildirim verme, (3) geri bildirim alma ve (4) yazıyı düzeltme aşamalarından oluşan ödevler yaptınız. Bu ankette öncelikle belirtilen aşamaları düşünerek DAYANAK ortamının olası katkılarına ilişkin ifadeleri, ikinci olarak ise öğrenme sürecinizle ilgili ifadeleri cevaplamanız beklenmektedir.

Lütfen soruları boş bırakmayınız ve içtenlikle cevaplayınız. Verdiğiniz cevaplar gizli tutulacak ve sadece bu araştırma için kullanılacaktır. Cevaplarınız hiç kimse ile paylaşılmayacaktır.

Katılımınız için çok teşekkür ederim.

	Kesinlikle katılmıyorum	Katılmıyorum	Kısmen katılmıyorum	Ne katılmıyorum ne katılmıyorum	Kısmen katılıyorum	Katılıyorum	Kesinlikle katılıyorum
1. Yazımı değerlendirmek için kullanabileceğim ölçütler belirlememi sağladı.	1	2	3	4	5	6	7
2. Yazımın kalitesini değerlendirmemi sağladı.	1	2	3	4	5	6	7
3. Yazımla ilgili kendime geri bildirim vermemi sağladı.	1	2	3	4	5	6	7
4. Yazımı geliştirmem için yapabileceklerim konusunda düşünmemi sağladı.	1	2	3	4	5	6	7
5. Yazma stratejilerimin bana yardımcı olup olmadığını fark etmemi sağladı.	1	2	3	4	5	6	7
6. Arkadaşıma nasıl geri bildirim vermem gerektiği konusunda yardımcı oldu.	1	2	3	4	5	6	7
7. Arkadaşıma yazma ödevlerinde geri bildirim vereceğim noktaları belirlememe yardımcı oldu.	1	2	3	4	5	6	7
8. Arkadaşıma detaylı geri bildirimler vermemi sağladı.	1	2	3	4	5	6	7
9. Arkadaşıma adaletli geri bildirimler vermemi sağladı.	1	2	3	4	5	6	7

10. Geri bildirimlerimde arkadaşlarımı incitmeyecek bir dil kullanmaya dikkat etmemi sağladı.	1	2	3	4	5	6	7
11. Arkadaşımdan aldığım geri bildirimleri inceleme isteği uyandırdı.	1	2	3	4	5	6	7
12. Arkadaşımdan eleştirilerine açık olmamı sağladı.	1	2	3	4	5	6	7
13. Arkadaşımdan aldığım geri bildirimlerin kalitesini değerlendirmemi sağladı.	1	2	3	4	5	6	7
14. Arkadaşımdan aldığım geri bildirimlerine göre yazma ödevimi geliştirmemi sağladı.	1	2	3	4	5	6	7
15. Geri bildirimlerimle arkadaşlarıma yazma ödevlerinde yardım etmemi sağladı.	1	2	3	4	5	6	7
16. Arkadaşımdan yazma ödevimle ilgili yardım almamı sağladı.	1	2	3	4	5	6	7
17. Yazma ödevimle ilgili arkadaşlarımla etkileşim kurmamı sağladı.	1	2	3	4	5	6	7
18. Yazılan metin türünün özellikleriyle ilgili bilgimin artmasını sağladı.	1	2	3	4	5	6	7
19. Yazılı anlatım becerimi geliştirmeme yardımcı oldu.	1	2	3	4	5	6	7
20. Yazılı anlatımda kendime olan güvenimin artmasını sağladı.	1	2	3	4	5	6	7

G. Interview Protocol

Giriş

Merhaba,

Öncelikle görüşmeye katılmayı kabul ettiğiniz için teşekkür ederim. Bildiğiniz üzere Türk Dili ve Edebiyatı dersinde Destekleyici Yazılı Anlatım ve Akran Değerlendirme (DAYANAK) ortamında yazma ödevinizi yazdınız, arkadaşlarınızın yazısına geri bildirim verdiniz, arkadaşlarınızdan kendi yazınız için geri bildirim aldınız ve yazınızı geri bildirimlerinize göre düzelttiniz. Görüşmemizde bu ortamla ilgili deneyimlerinizi öğrenmeyi amaçlıyorum.

Cevaplarınız tamamıyla gizli tutulacak ve sadece bu araştırma için kullanılacaktır. Araştırma raporunda isimleriniz kesinlikle yer almayacaktır. Görüşmemize başlamadan önce sormak istediğiniz soru ya da belirtmek istediğiniz herhangi bir düşünceniz var mı?

İzin verirsiniz görüşmemizin ses kaydını yapmak istiyorum. Görüşmeye devam etmek istemezseniz istediğiniz zaman sonlandırabilirsiniz veya görüşme sonunda istemediğiniz bilgileri silebilirsiniz.

Görüşmenin yaklaşık 30 dakika süreceğini tahmin ediyorum. İzin verirsiniz görüşme sorularına başlamak istiyorum.

Isınma Soruları

1. Derslerde yazma çalışmaları yapmanın yanında kendi kendinize de bir konuda yazdığınız oluyor mu?
 - a. Oluyorsa sizi buna motive eden şeyler neler?
 - b. Olmuyorsa neden?
2. Sınıfınıza ilk geldiğimde size 5 dakika araştırmadan bahsetmiştim. Bir web sitesi üzerinden metin yazacağınızı, arkadaşlarınızın yazılarına geri bildirim verip geri bildirim alacağınızı söylemiştim. O an neler düşünmüştünüz?

İçerikle İlgili Sorular

1. DAYANAK ortamını kullanmaya başlamadan önce size yazılı anlatım, akran geri bildirim verme ve alma ile DAYANAK ortamıyla ilgili bir sunum yapmıştım. Bu sunum, DAYANAK ortamındaki aşamaları gerçekleştirmenizde yardımcı oldu mu?
 - a. Olduysa nasıl yardımcı oldu? Örnekendirir misiniz?
 - b. Bu sunumda öğrendiklerinizi diğer derslerde veya ödevlerinizde kullandınız mı?
 - Kullandıysanız ne zaman? Nasıl?

- c. Olmadıysa neden?
 - d. Bu eğitimin iyileştirilmesi için önerileriniz nelerdir?
2. Yazma ödevinize başlamadan önce hikâye ve şiir değerlendirme ölçütleri sizinle paylaşıldı. Ölçütleri açıklayan bir sayfa dağıtıldı ve bu sayfa DAYANAK ortamında da vardı. Ölçüt ve açıklamalarının paylaşılması DAYANAK ortamındaki aşamaları gerçekleştirmenizde yardımcı oldu mu?
- a. Olduysa nasıl yardımcı oldu? Örneklendirir misiniz?
 - b. Olmadıysa neden?
 - c. Bu paylaşım ile ilgili önerileriniz nelerdir?

Şimdi DAYANAK ortamıyla ilgili sorulara geçeceğim. Sorularım DAYANAK ortamındaki bilgi kaynakları, yazı yazma, geri bildirim verme, geri bildirim alma ve yazıyı düzeltme aşamalarıyla ilgilidir.

3. DAYANAK ortamındaki metin türü ve yazmayla ilgili bilgi kaynaklarını incelediniz mi?
- a. İncelediyseniz hangi kaynakları incelediniz?
 - Bu kaynaklar DAYANAK ortamındaki aşamaları gerçekleştirirken size yardımcı oldu mu?
 - Olduysa nasıl yardımcı oldu? Örneklendirir misiniz?
 - Olmadıysa neden?
 - b. İncelemediyseniz neden?
4. DAYANAK ortamının yazı yazma aşamasıyla ilgili neler düşünüyorsunuz?
- a. DAYANAK ortamında yazı yazmanın olumlu yönleri nelerdi? Neden? Örneklendirir misiniz?
 - Yazma sürecine hazırlanma soruları
 - Yazma sürecini değerlendirme soruları
 - Geri bildirim isteme (soru sorma)
 - b. Belirtilen yönlerin olması sonraki aşamaları gerçekleştirirken bir etki oluşturdu mu? Nasıl? Örneğin yazınızı değerlendirdiniz ve soru sordunuz. Geri bildirim alma aşamasında arkadaşınızın geri bildirimlerini merak ettiniz mi?
 - c. Yazı yazma aşamasında karşılaştığınız zorluklar veya olumsuz durumlar nelerdi? Neden? Örneklendirir misiniz?
 - d. Yazı yazma aşamasının iyileştirilmesi için önerileriniz nelerdir?
5. DAYANAK ortamının geri bildirim verme aşamasıyla ilgili neler düşünüyorsunuz?
- a. DAYANAK ortamında geri bildirim vermenin olumlu yönleri nelerdi? Neden? Örneklendirir misiniz?
 - Ölçütlerin verilmesi
 - Anonim olması

- Nasıl geri bildirim verilmesi gerektiği konusunda yönlendirmesi
 - Geri bildirim isteğinin/sorunun alınması (yararlı mı yoksa kısıtlayıcı mı?)
 - Birden fazla kişiye geri bildirim verme
 - Kendine sonuçlar çıkarma
- b. Geri bildirim verme aşamasında karşılaştığınız zorluklar veya olumsuz durumlar nelerdi? Neden? Örnekendirir misiniz?
- c. Geri bildirim verme aşamasının iyileştirilmesi için önerileriniz nelerdir?
- d. Hikâyeye ve şiire geri bildirim verme arasında sizce bir farklılık var mıydı? Varsa bunlar nelerdi?
- Alternatif soru: Arkadaşlarınızın hikâyelerine ve şiirlerine verdiğiniz geri bildirimleri karşılaştırdığınızda neler söyleyebilirsiniz?
6. DAYANAK ortamının geri bildirim alma aşamasıyla ilgili neler düşünüyorsunuz?
- a. Geri bildirim alma aşamasına geçtiğimizde neler hissettiniz? Neden?
- b. DAYANAK ortamında geri bildirim almanın olumlu yönleri nelerdi? Neden? Örnekendirir misiniz?
- Birden fazla kişiden geri bildirim alma
 - Alınan geri bildirimi yorumlama soruları
 - Geri bildirim aldığı kişiyle etkileşim kurma
 - Geri bildirim verdiği kişiyle etkileşim kurma
- c. Geri bildirim alma aşamasında karşılaştığınız zorluklar veya olumsuz durumlar nelerdi? Neden? Örnekendirir misiniz?
- d. Geri bildirim alma aşamasının iyileştirilmesi için önerileriniz nelerdir?
7. DAYANAK ortamının yazıyı düzeltme aşamasıyla ilgili neler düşünüyorsunuz?
- a. Aldığınız geri bildirimleri uyguladınız mı? Neden?
- Alınan geri bildirimin özellikleri (doğruluğu, açıklığı, kırıcı bir dilde ifade edilmesi gibi)
 - Akrandan gelmesi
 - Düzeltmenin zor olması
- b. DAYANAK ortamında yazıyı düzeltmenin olumlu yönleri nelerdi? Neden? Örnekendirir misiniz?
- c. Yazıyı düzeltme aşamasında karşılaştığınız zorluklar veya olumsuz durumlar nelerdi? Neden? Örnekendirir misiniz?
- d. Yazıyı düzeltme aşamasının iyileştirilmesi için önerileriniz nelerdir?

8. DAYANAK ortamının katkıları hakkında neler düşünüyorsunuz?

Alternatif soru: DAYANAK ortamı size nasıl katkı sağladı? Örneklendirir misiniz?

- a. Yazma isteği sağlama
- b. Ödev yaparken keyif alma
- c. Yazıdaki yanlışların farkına varma
- d. Metin türüyle ilgili bilginin artması
- e. Yazma performansını geliştirme
- f. Akran değerlendirme becerisini geliştirme
- g. Eleştirilere açık olma

9. DAYANAK ortamını kullanmanın diğer ödevlerde, sınavlarda veya derslerde bir faydası oldu mu?

Alternatif soru: DAYANAK ortamında yaptıklarını başka derslerde veya ödevlerde de uyguladın mı?

- a. Olduysa ne zaman? Nasıl?
 - Öğrenme sürecinde plan yapma, uygulama, izleme ve değerlendirme
 - Çalışma stratejileri kullanma
 - Arkadaşlardan geri bildirim alma
- b. Olmadıysa neden?

10. Başka neler eklemek istersiniz?

Katkılarınız için teşekkür ederim.

H. Storyboard of the SWAPPER W/ORS

Sayfa Adı: Ana sayfa Yazı yazma aşama sayfası	Ekran #1
	
Buton İşlevleri: Yazı oluşturmaya başla butonuna tıklandığı zaman ekran 2'ye gitmeli.	
Sayfa Adı: Yazıyı oluşturma sayfası	Ekran #2
	
Buton İşlevleri: - Kaydet ve düzenlemeye devam et butonuna tıklandığı zaman aynı sayfa yenilenmeli ve öğrenci yazısını yazmaya devam edebilmeli. Yazının kaydedildiğini öğrenciye bildirmek için, yazı yazarken her dakikada bir yazı içeriğinin altında gösterilen Başarıyla kaydedildi. bildirim notu kullanılmalı. - Kaydet ve ana sayfaya dön ile ana sayfaya dön butonu olmalı. Ana sayfa, “Ana sayfa Yazı oluşturma aşama sayfası” oluyor.	

Sayfa Adı: Ana sayfa Yazı oluşturma aşama sayfası (Öğrenci bir yazı oluşturduğu zaman)	Ekran #3
	
Buton İşlevleri: • “Yazıya düzelt” butonuna tıklandığı zaman ekran 2’ye gitmeli. • Öğrenci yazısının başlığına (bu sayfada “sorumluluğun önemi”) tıkladığı zaman ekran 4’e gitmeli.	

Sayfa Adı: Ana sayfadan yazı başlığına tıklandığı zaman	Ekran #4
	
Buton İşlevleri: • Yazıyı düzeltme tıklanınca ekran 2’ye gidiyor. • Ana sayfaya döne tıklanınca ekran 3’e gidiyor.	

**Buton İşlevleri:**

- Yazınıza tıklandığı zaman ekran 10'a gitmeli.
- Henüz geri bildirim verilmemişse yazı başlığı linkine (örneğin "sınav heyecanı") tıklandığı zaman da ekran 6'ya gitmeli. Eğer geri bildirim verilmişse ekran 9'a gitmeli.
- "Yazıyı oku" butonuna tıklandığında da ekran 6'ya gitmeli.

**Buton İşlevleri:**

- Geri bildirim ver butonuna tıklandığı zaman ekran 7'ye gitmeli.

Hikaye Yazma Odevi
Geri bildirim verme

Sınav heyecanı

Özetlen derin, beğenden eylesen. Halkların sevinen (kızıl) gel heyecanı. Bu yitirmeyen ağırlık, büyük karnesi de sürerli onun günlüğüni okumaya katılın...

Geri bildirim verme için yönergeler

Aktarılanlar yazılan dize okuyup sonra beğenilen öğütler doğrultusunda dikkat veriniz. Dikkat verirken (ajlar varsa) aktarılanlar isteklerini göz önünde tutarak kullanmayı unutmayınız.

Dikkat verirken aşağıda belirtilen unsurları göz önünde bulundurmalısınız:

- Dikkat verirken beğenilen öğütleri ilgili ve doğru aktararak kullanmayı unutmayınız.
- Genel ifadeler yerine aktarılanlar yazılacakları belli ötekileri beğenir (ozel ifadeler kullanmaya dikkat etmelisiniz).
- Okunur ve okunmaz dikkatlerini gerektirenler okunur yazmaya dikkat etmelisiniz.
- Arkadaşların yazıları iyileştirmek için önerilerde bulunmaya (özellikle beğenilmemesi).
- Aktarılanlar yazıya yazılacağı için dikkat kullanmaya dikkat etmelisiniz.

Geri bildiriminiz

Öğüt 5: Hikaye başlığına yazılan hitaplar ilgili ve dikkat çekici olmalı *

Geri bildirim:

Kaydet ve Ana Sayfaya Dön **Kaydet ve Ana Sayfaya Dön** **Ana Sayfaya Dön**

Bu formda * ile işaretli alanları doldurmanız zorunludur.

Buton İşlevleri:

- Kaydet butonuna basılınca yazılanlar kaydedilip sayfa yeniden yükleniyor.
- Kaydet ve ana sayfaya dön ile ana sayfaya döne tıklanınca ekran 8'e gitmeli.

Hikaye Yazma Odevi
Geri bildirim verme

Geri bildirim verme

Yazınız

Geri bildirim verme için yönergeler

Aktarılanlar yazılan dize okuyup sonra beğenilen öğütler doğrultusunda dikkat veriniz. Dikkat verirken (ajlar varsa) aktarılanlar isteklerini göz önünde tutarak kullanmayı unutmayınız.

Dikkat verirken aşağıda belirtilen unsurları göz önünde bulundurmalısınız:

- Dikkat verirken beğenilen öğütleri ilgili ve doğru aktararak kullanmayı unutmayınız.
- Genel ifadeler yerine aktarılanlar yazılacakları belli ötekileri beğenir (ozel ifadeler kullanmaya dikkat etmelisiniz).
- Okunur ve okunmaz dikkatlerini gerektirenler okunur yazmaya dikkat etmelisiniz.
- Arkadaşların yazıları iyileştirmek için önerilerde bulunmaya (özellikle beğenilmemesi).
- Aktarılanlar yazıya yazılacağı için dikkat kullanmaya dikkat etmelisiniz.

Geri bildirim vermeniz gereken yazılar

Okunur Yazı
Henüz geri bildirim vermemişsiniz.

Kaydet ve Ana Sayfaya Dön

Okunur Yazı
Daha önce geri bildirim vermemişsiniz.

Kaydet ve Ana Sayfaya Dön

Bu formda * ile işaretli alanları doldurmanız zorunludur.

Buton İşlevleri:

- Geri bildirim düzelt butonuna tıklanınca ekran 7'ye gitmeli.

Sayfa Adı: Ana sayfadan geri bildirim verilen yazının başlığına tıklandığı zaman gelen sayfa

Ekran #9

Buton İşlevleri:

- Geri bildirimi düzelt butonuna tıklanınca ekran 7'ye gitmeli.

Sayfa Adı: Geri bildirim verme aşamasında Yazınıza tıklandığı zaman

Ekran #10

Buton İşlevleri:

- Geri bildirimi düzelt butonuna tıklanınca ekran 7'ye gitmeli.

Sayfa Adı: Geri bildirim verme aşamasında kendi yazı başlığına tıklandığı zaman	Ekran #11
	
Buton İşlevleri: Ana sayfaya dön butonuna tıklanınca ekran 5'e gitmeli.	

Sayfa Adı: Ana sayfa Alınan geri bildirimleri inceleme aşama sayfası	Ekran #12
	
Buton İşlevleri: Geri bildirimleri incele butonuna tıklanınca ekran 13'e gitmeli.	

Buton İşlevleri:

- Yazıyı düzeltme tıklandığı zaman ekran 16'ya gitmeli.
- Yazı başlığına tıklandığı zaman ekran 17'ye gitmeli.

Not:

- Her iki geri bildirim de yazı alanının altında gözüktüyor.

Buton İşlevleri:

- Yazıyı düzeltme tıklandığı zaman ekran 16'ya gitmeli.

Buton İşlevleri:

- Yazıyı düzeltme tıklandığı zaman ekran 16'ya gitmeli.

I. Assumptions of Statistical Tests

Before answering research questions of the study, some parametric tests were planned to describe and compare the participants in the groups W/ORS and WRS with regard to willingness in peer assessment and peer feedback beliefs. In addition, quantitative strand of this mixed methods research required parametric tests to investigate potential significant differences between the groups W/ORS and WRS with regard to peer feedback provision, feedback uptake, and perceived contributions of the online FPA environment. Before performing the analyses comparing the two groups on the aforementioned aspects, assumptions of the tests were checked. In the following parts, results of assumption checks are explained.

Willingness in Peer Assessment and Peer Feedback Beliefs

Willingness in peer assessment was measured with two items in the survey. In addition, students' beliefs about the peer feedback to be provided and received were examined with 12 items in the survey. Independent samples-*t* test was chosen to investigate differences in each item. Assumptions of this test are independent observation, normal distribution, and homogeneity of variance (Gravetter & Wallnau, 2014). First, independent observation was assumed in both groups as one participant did not impact the behavior of another participant (Field, 2009).

Second, normality assumption was checked for each item. Nearly all tests resulted in *p* values less than .05 (Table 5.1), which indicated non-normality. Second, skewness and kurtosis values were reviewed. While skewness and kurtosis values of willingness items ranged from -2 to +2, four items regarding peer feedback beliefs had skewness and kurtosis greater than +2 or less than -2 in one of the groups. It implied violation of normality assumption for four items.

Table 5.1 Results of Normality Tests and Skewness and Kurtosis Values regarding Willingness in Peer Feedback and Peer Feedback Beliefs

Variable	Group	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
		Stat.	df	Sig.	Stat.	df	Sig.	Stat.	S.E.	Stat.	S.E.
Wil1	W/ORS	.30	26	.00	.82	26	.00	-1.20	.46	1.94	.89
	WRS	.31	44	.00	.84	44	.00	-.93	.36	.74	.70
Wil2	W/ORS	.27	26	.00	.83	26	.00	-.78	.46	.40	.89
	WRS	.30	44	.00	.84	44	.00	-.91	.36	.30	.70
PFP1	W/ORS	.20	26	.01	.93	26	.08	-.31	.46	.28	.89
	WRS	.22	44	.00	.89	44	.00	-.80	.36	-.14	.70
PFP2	W/ORS	.22	26	.00	.87	26	.00	-1.10	.46	1.25	.89
	WRS	.22	44	.00	.86	44	.00	-1.09	.36	.72	.70
PFP3	W/ORS	.27	26	.00	.76	26	.00	-1.97	.46	5.08	.89
	WRS	.30	44	.00	.76	44	.00	-1.85	.36	3.78	.70
PFP4	W/ORS	.29	26	.00	.72	26	.00	-1.59	.46	3.01	.89
	WRS	.27	44	.00	.69	44	.00	-2.09	.36	4.54	.70
PFP5	W/ORS	.34	26	.00	.66	26	.00	-2.19	.46	4.73	.89
	WRS	.30	44	.00	.71	44	.00	-1.54	.36	1.31	.70
PFP6	W/ORS	.18	26	.03	.85	26	.00	-1.23	.46	2.09	.89
	WRS	.28	44	.00	.79	44	.00	-1.71	.36	3.42	.70
PFR1	W/ORS	.15	26	.16	.95	26	.18	-.19	.46	-.53	.89
	WRS	.22	22	.00	.89	44	.00	-.89	.36	.22	.70
PFR2	W/ORS	.18	26	.03	.90	26	.02	-.73	.46	.50	.89
	WRS	.18	44	.00	.92	44	.00	-.64	.36	.17	.70
PFR3	W/ORS	.18	26	.03	.90	26	.01	-.83	.46	.29	.89
	WRS	.22	44	.00	.87	44	.00	-1.05	.36	1.50	.70
PFR4	W/ORS	.23	26	.00	.77	26	.00	-1.46	.46	1.33	.89
	WRS	.22	44	.00	.86	44	.00	-1.06	.36	.70	.70
PFR5	W/ORS	.22	26	.00	.81	26	.00	-1.26	.46	.76	.89
	WRS	.21	44	.00	.85	44	.00	-1.09	.36	.60	.70
PFR6	W/ORS	.20	26	.12	.85	26	.00	-1.34	.46	1.88	.89
	WRS	.24	44	.00	.84	44	.00	-1.29	.36	1.57	.70

Note. Wil: Willingness in peer assessment, PFP: Belief about peer feedback to be provided, PFR: Belief about peer feedback to be received

Finally, all histogram graphs were almost negatively skewed. Consequently, it was concluded that normality assumption of independent measures *t* test was not met for all items. The Mann-Whitney *U* test, its nonparametric alternative, was chosen to compare the two groups on willingness in peer assessment and peer feedback beliefs.

Peer Feedback Provision

Peer feedback provision of the two groups was compared with respect to both the number of feedback segments and peer feedback content in the two writing tasks. The tests planned to perform these comparisons were independent-measures *t* test and MANOVA. The following parts provide results of the assumption checks regarding these analyses.

Number of Feedback Segments

Independent samples-*t* test has independent observation, normal distribution, and homogeneity of variance assumptions (Gravetter & Wallnau, 2014). First, independent observation was assumed in both writing tasks as one participant did not impact the behavior of another participant (Field, 2009). Second, normality assumption was checked for two writing tasks according to different rules.

In the first task (story writing), Kolmogorov-Smirnov test resulted in non-significant values for both groups, but Shapiro-Wilk test yielded significant result for the group WRS, $W(44) = .93, p < .05$ (Table 5.2). Histogram graphs of both groups were nearly positively skewed (Figure 5.1). Although skewness and kurtosis values were between -2 and +2 in the two groups, it was concluded that normality assumption was not met in the story writing task.

In the second task (poem writing), results of both Kolmogorov-Smirnov and Shapiro-Wilk tests were significant in the two groups at $p = .05$ (Table 5.2). Moreover, skewness and kurtosis values of the group WRS were higher than 2, and histogram graph of this group was positively skewed (Figure 5.1). Consequently, it was inferred that there was non-normal sampling distribution of the scores regarding the number of feedback segments in the poem writing task. Significant departure from normality caused to use non-parametric alternative of independent-measures *t* test for both writing tasks.

Table 5.2 Results of Normality Tests and Skewness and Kurtosis Values regarding the Number of Feedback Segments in Two Writing Tasks

Task	Group	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
		Stat.	df	Sig.	Stat.	df	Sig.	Stat.	S.E.	Stat.	S.E.
#1	W/ORS	.16	26	.11	.92	26	.05	1.15	.46	1.68	.89
	WRS	.13	44	.07	.93	44	.01	.84	.36	.17	.70
#2	W/ORS	.20	23	.02	.89	23	.02	.71	.48	-.83	.94
	WRS	.21	33	.00	.77	33	.00	2.55	.41	9.27	.80

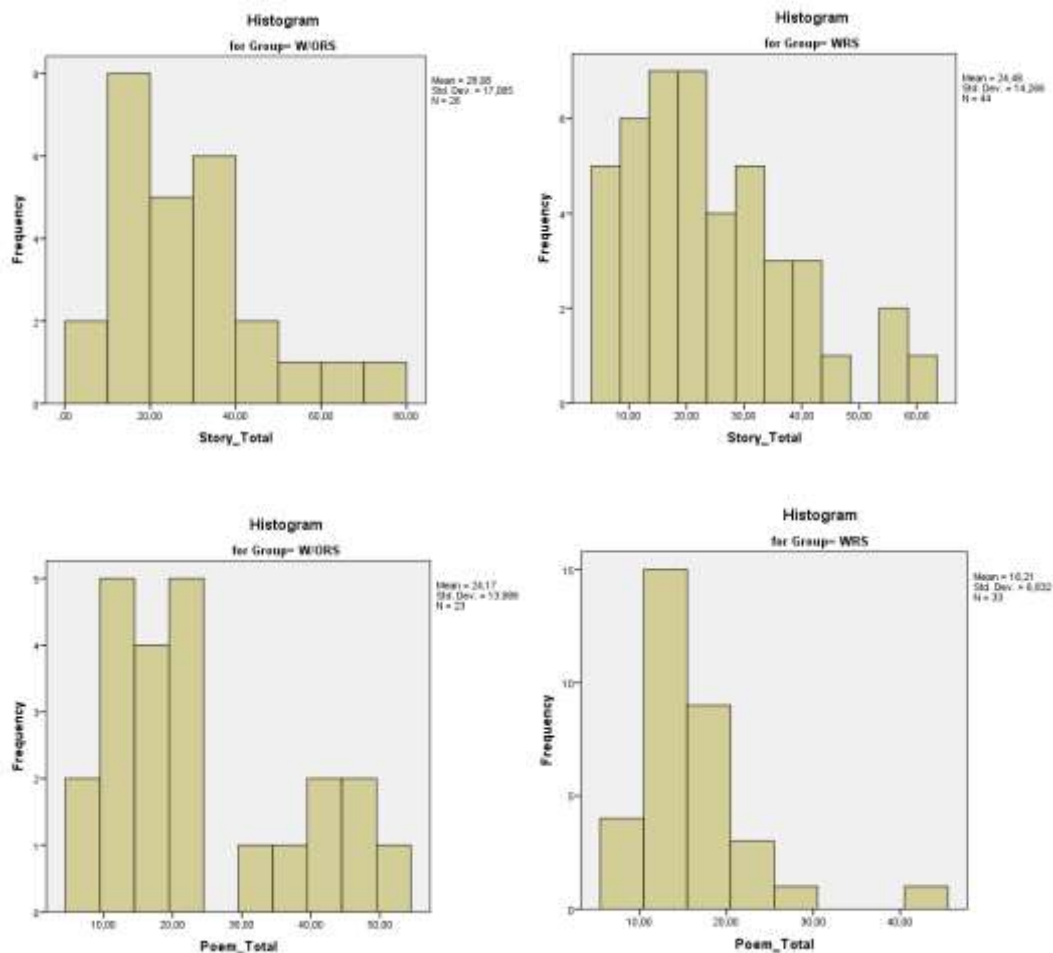


Figure 5.1. Histogram graphs of the groups W/ORS and WRS in the two writing tasks.

Peer Feedback Content

MANOVA was the test chosen to compare the two groups on the combination of peer feedback content variables in the two writing tasks. Assumptions of MANOVA were checked as preliminary analyses. Its assumptions are univariate and multivariate normality, absence of outliers, homogeneity of variance and covariance matrices, linearity, and absence of multicollinearity (Tabachnick & Fidell, 2013).

The First Task. First, univariate normality was tested. Both Kolmogorov-Smirnov and Shapiro-Wilk tests produced insignificant results at $p = .05$ level (Table 5.3). Also, skewness and kurtosis values were between -1 and +1. Moreover, almost all histogram graphs had bell-shaped curves and dots in Q-Q plots were near to straight diagonal lines. Therefore, it was concluded that univariate normality assumption was met. On the other hand, multivariate normality of the group WRS was violated since Mardia's test was significant ($p < .05$). The researcher continued to the analysis since F -test is robust to violation of normality (Ito, 1980).

Table 5.3 Results of Normality Tests and Skewness and Kurtosis Values regarding the Peer Feedback Content in the First Task

Variable	Group	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
		Stat.	df	Sig.	Stat.	df	Sig.	Stat.	S.E.	Stat.	S.E.
Pr_E	W/ORS	.17	26	.06	.95	26	.22	-.53	.46	.34	.89
	WRS	.06	44	.20	.99	44	.89	.04	.36	-.65	.70
Pr_N	W/ORS	.11	26	.20	.95	26	.22	.50	.46	-.11	.89
	WRS	.06	44	.20	.97	44	.34	.20	.36	-.39	.70
Pr_S	W/ORS	.11	26	.20	.94	26	.12	-.14	.46	-.93	.89
	WRS	.13	44	.07	.95	44	.07	-.40	.36	-.53	.70

Note. Pr_E = Proportion of elaborations, Pr_N = Proportion of negative verifications, Pr_S = Proportion of suggestive elaborations.

Second, there was not univariate outlier in any group since z scores were between -3.29 and 3.29 (Tabachnick & Fidell, 2013). However, there was one multivariate

outlier in the group WRS as its Mahalanobis distance score was higher than the critical χ^2 value at $df = 3$ and $p = .001$ ($\chi^2_3 = 16.266$). It was retained as the scores of the participant were legitimate and accurate. Moreover, analysis conducted after deletion of this case made no difference in the significance of the results.

Third, homogeneity of variance assumption was met since Levene's test yielded insignificant results for proportion of elaboration, $F(1, 68) = 2.58, p = .11$; proportion of negative verification, $F(1, 68) = 1.35, p = .25$; and proportion of suggestive elaboration, $F(1, 68) = .75, p = .39$. Homogeneity of covariance matrices was not violated either, Box's $M = 11.01, F(6, 18128.15) = 1.74, p = .11$.

Finally, linear relationships between dependent variables were found in the two groups since bivariate scatter plots were oval-shaped. Table 5.4 tabulates the bivariate correlation coefficients between the variables in each group. Multicollinearity was absent since all bivariate coefficients were less than .90 threshold of multicollinearity (Field, 2009).

Table 5.4 Correlation Coefficients between Three Peer Feedback Content Variables in the First Task

Group	Variable	1	2	3
W/ORS	1. Proportion of elaborations	-		
	2. Proportion of negative verifications	.40*	-	
	3. Proportion of suggestive elaborations	.33	.46*	-
WRS	1. Proportion of elaborations	-		
	2. Proportion of negative verifications	.20	-	
	3. Proportion of suggestive elaborations	.47**	-.07	-

* $p < .05$

** $p < .01$

The Second Task. First, univariate normality was tested. Both Kolmogorov-Smirnov and Shapiro-Wilk tests produced significant non-normal distributions for the group W/ORS' proportion of elaborations. Moreover, Shapiro-Wilk test was

significant for the group WRS' proportion of suggestive elaborations. However, skewness and kurtosis values of both groups were between -2 and +2 for all dependent variables. Moreover, dots in Q-Q plots did not fall away from straight diagonal lines. Therefore, it was assumed that univariate normality assumption was met. In addition, multivariate normality was not violated as Mardia's test results was insignificant for both groups ($p > .05$).

Table 5.5 Results of Normality Tests and Skewness and Kurtosis Values regarding the Peer Feedback Content in the Second Task

Variable	Group	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
		Stat.	df	Sig.	Stat.	df	Sig.	Stat.	S.E.	Stat.	S.E.
PrE	W/ORS	.18	23	.04	.89	23	.01	-.75	.48	-.02	.94
	WRS	.09	33	.20	.98	33	.86	.15	.41	-.49	.80
PrN	W/ORS	.13	23	.20	.95	23	.25	.06	.48	-1.23	.94
	WRS	.13	33	.18	.94	33	.06	.70	.41	-.05	.80
PrS	W/ORS	.14	23	.20	.93	23	.10	.35	.48	-.72	.94
	WRS	.13	33	.15	.92	33	.02	-.03	.41	-1.14	.80

Note. PrE = Proportion of elaborations, PrN = Proportion of negative verifications, PrS = Proportion of suggestive elaborations.

Second, there was not univariate outlier in any group since absolute values of z scores were lower than 3.29. Moreover, both groups did not include any multivariate outlier as all Mahalanobis distance scores were lower than the critical χ^2 value at $df = 3$ and $p = .001$ ($\chi^2_3 = 16.266$).

Third, homogeneity of variance assumption was not violated because Levene's test results were insignificant for proportion of elaborations, $F(1, 54) = .001$, $p = .97$; proportion of negative verifications, $F(1, 54) = 1.76$, $p = .19$; and proportion of suggestive elaborations, $F(1, 54) = .33$, $p = .57$. Homogeneity of covariance matrices was met as well, Box's $M = 9.06$, $F(6, 15204.00) = 1.41$, $p = .21$.

Finally, there were linear relationships between dependent variables in both groups since bivariate scatter plots were oval-shaped. The bivariate correlation coefficients between the variables are presented in Table 5.6 for each group. There was no multicollinearity problem because all bivariate coefficients were less than .90 threshold of multicollinearity (Field, 2009).

Table 5.6 Correlation Coefficients between Three Peer Feedback Content Variables in the Second Task

Group	Variable	1	2	3
W/ORS	1. Proportion of elaborations	-		
	2. Proportion of negative verifications	.33	-	
	3. Proportion of suggestive elaborations	.46*	.49*	-
WRS	1. Proportion of elaborations	-		
	2. Proportion of negative verifications	.26	-	
	3. Proportion of suggestive elaborations	.25	-.07	-

* $p < .05$

Perceived Contributions of the Online FPA Environment

Independent samples *t*-test was selected to examine whether the two groups differed in the scores for perceived contributions of the online FPA environment. Then, normality assumption of the test was checked according to different rules. First, Kolmogorov-Smirnov and Shapiro-Wilk normality tests were applied for each item in the survey and the two groups. All tests resulted in significant values or *p* values less than .05 (Table 5.7), which indicated non-normality. Second, skewness and kurtosis values were reviewed. While skewness and kurtosis values of eight items ranged from -2 to +2, 12 items had skewness and kurtosis greater than +2 or less than -2 in one of the groups. It implied violation of normality assumption for 12 items. Finally, all histogram graphs were almost negatively skewed and there were dots in Q-Q plots that fell away from the straight diagonal line. Consequently, it was concluded that normality assumption of independent measures *t* test was not met for all items. The Mann-Whitney *U* test, its nonparametric alternative, was chosen to

compare the two groups on the perceived contributions of the online FPA environment.

Table 5.7 Results of Normality Tests and Skewness and Kurtosis Values regarding the Perceived Contributions of the Online FPA environment

Item	Group	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
		Stat.	df	Sig.	Stat.	df	Sig.	Stat.	S.E.	Stat.	S.E.
1	W/ORS	.35	20	.00	.74	20	.00	-1.10	.51	3.03	.99
	WRS	.30	36	.00	.74	36	.00	-1.69	.39	5.33	.77
2	W/ORS	.24	20	.00	.77	20	.00	-1.58	.51	3.16	.99
	WRS	.32	36	.00	.75	36	.00	-1.22	.39	1.32	.77
3	W/ORS	.31	20	.00	.75	20	.00	-1.76	.51	4.68	.99
	WRS	.27	36	.00	.76	36	.00	-1.56	.39	4.20	.77
4	W/ORS	.21	20	.02	.82	20	.00	-1.42	.52	2.77	.99
	WRS	.33	36	.00	.74	36	.00	-1.93	.39	5.42	.77
5	W/ORS	.20	20	.03	.86	20	.01	-.87	.51	.47	.99
	WRS	.24	36	.00	.87	36	.00	-.73	.39	-.18	.77
6	W/ORS	.23	20	.01	.83	20	.00	-.84	.51	.25	.99
	WRS	.31	36	.00	.76	36	.00	-1.18	.39	.68	.77
7	W/ORS	.28	20	.00	.77	20	.00	-.55	.51	-.55	.99
	WRS	.26	36	.00	.80	36	.00	-.85	.39	-.40	.77
8	W/ORS	.29	20	.00	.79	20	.00	-1.14	.51	.67	.99
	WRS	.24	36	.00	.84	36	.00	-.45	.39	-1.07	.77
9	W/ORS	.33	20	.00	.64	20	.00	-2.37	.51	6.73	.99
	WRS	.31	36	.00	.67	36	.00	-2.03	.39	3.93	.77
10	W/ORS	.38	20	.00	.68	20	.00	-1.59	.51	1.85	.99
	WRS	.35	36	.00	.51	36	.00	-3.73	.39	17.17	.77
11	W/ORS	.21	20	.02	.84	20	.00	-1.37	.51	2.05	.99
	WRS	.21	36	.00	.83	36	.00	-.82	.39	1.07	.77

Table 5.7 (continued)

12	W/ORS	.28	20	.00	.84	20	.00	-.72	.51	.53	.99
	WRS	.21	36	.00	.82	36	.00	-1.49	.39	3.52	.77
13	W/ORS	.22	20	.01	.87	20	.01	-.86	.51	.65	.99
	WRS	.22	36	.00	.85	36	.00	-.54	.39	-.71	.77
14	W/ORS	.34	20	.00	.82	20	.00	-.88	.51	-.27	.99
	WRS	.27	36	.00	.80	36	.00	-1.50	.39	2.04	.77
15	W/ORS	.32	20	.00	.69	20	.00	-2.43	.51	7.85	.99
	WRS	.29	36	.00	.83	36	.00	-.97	.39	.21	.77
16	W/ORS	.25	20	.00	.85	20	.01	-.96	.51	.28	.99
	WRS	.21	36	.00	.83	36	.00	-1.09	.39	3.32	.77
17	W/ORS	.21	20	.02	.89	20	.02	-.67	.51	.32	.99
	WRS	.26	36	.00	.78	36	.00	-1.42	.39	1.91	.77
18	W/ORS	.23	20	.01	.89	20	.02	-.08	.51	-.47	.99
	WRS	.29	36	.00	.65	36	.00	-2.58	.39	8.13	.77
19	W/ORS	.21	20	.03	.85	20	.01	-.49	.51	-1.00	.99
	WRS	.25	36	.00	.80	36	.00	-.87	.39	.60	.77
20	W/ORS	.22	20	.01	.85	20	.00	-.78	.51	-.46	.99
	WRS	.21	36	.00	.87	36	.00	-.64	.39	-.39	.77

J. Turkish Statements of the English Quotations

Turkish statements of the English quotations are listed here. Bracketed numbers are the identification numbers of the quotations. By following these numbers, corresponding English quotations can be found in text.

- [1] “Açıkçası her yönüyle çok güzel bir şiir olmuş.”
- [2] “Hikâyede bazı yazım yanlışları olmuş.”
- [3] “Başlık bence uyumlu olmuş çünkü yazıda o çağrışıma dikkat çekilmiş ve sonuçta ölümden korkmayarak yaşamak gerektiği mesajını vermişsin.”
- [4] “Birinciden ikinci paragrafa geçtiğinde arada kocaman bir boşluk kalmış. Aradaki geçen zaman zarfını birkaç kelimeyle özetlesen daha güzel olabilirdi.”
- [5] “Bunu hangi bölüme yazacağıma karar veremediğim için buraya yazıyorum.”
- [6] “Ek olarak bir şey daha söylemek istiyorum.”
- [7] “Olay örgüsünün akıcı olduğunu düşünüyorum.”
- [8] “Şiirin anlamı ve hissettirdiği duygular çok güzel.”
- [9] “Çözüm bölümü yeterli değildi.”
- [10] “İmge ve edebi sanatlara rastlamadım.”
- [11] “Hikâyen hakkında konuşacak çok şey var!”
- [12] “Bence kötü değil ama çok da iyi değil.”
- [13] “Metninde noktalama işaretlerine çok az yer vermişsin ve bu durum anlatımda akıcılığı, açıklığı okurken biraz zorlaştırıyor.”
- [14] “Bence yazar bu metinde olay hikâyesinden çok durum hikâyesi yazmış. Genellikle iç konuşmalar ve duygular ön plana çıkıyor. Ben beni meraklandıracak bir olay görmedim.”
- [15] “Diyalog yazarken tırnak işaretini ve uzun çizgiyi birlikte kullanmamalısın.”
- [16] “Bazı cümlelerin çok basit olmuş. Mesela uyudu yerine derin düşüncelere dalarak uyudu desen daha güzel bir anlatım şekli olur. Metninde betimlemelere de yer verirsen daha güzel bir sonuç elde edersin.”
- [17] “Temayı aşk olarak seçtim.”
- [18] “Ölüm konusuyla yüzyıllar süren uykuyu bağdaştırmaya çalıştım.”
- [19] “Hikâyenin bazı bölümlerinde olayın akışının hikâyeden koptuğunu düşündüm.”
- [20] “Başlığın pek uygun ve dikkat çekici olduğunu düşünmüyorum.”
- [21] “Tema bütünlüğünü koruduğumu düşünüyorum.”
- [22] “Anlatım teknik ve özelliklerini iyi kullandığımı düşünüyorum.”
- [23] “Kullandığım imge ve söz sanatlarından emin değilim.”

- [24] “Noktalama işaretleri yerinde ve doğru mu?”
- [25] “Anlatım tekniklerini doğru kullanmış mıyım?”
- [26] “Neriman hakkında yaptığım betimleme o kısım için uygun mu?”
- [27] “Temamın yani ayrılığı lavanta kokusuyla eşleştirmem sence nasıl olmuş?”
- [28] “Sence hangi anlatım özelliklerinin üstüne daha fazla çalışmalıyım?”
- [29] “Eğer beğenmediğin bir kısım varsa bunu nasıl düzeltebilirim?”
- [30] “İlk dizelerle son dizelerin arasında bir ahenk bütünlüğü yok sanırım. Ahengi sağlamak için sence ne yapabilirim?”
- [31] “Yardımcı olursan sevinirim.”
- [32] “Sorum yok.”
- [33] “Genel olarak çok beğendim fakat ilk dörtlüğün son iki dizesindeki bütünlüğü anlayamadım. Rica etsem açıklar mısın?”
- [34] “Bir bina bir sürü kişiyi içinde barındır. Onları ısıtır ama insanlar fark etmez. Binanın en ufak dökülmesinde onu terk ederler ve teşekkür etmeden giderler o kadar yaşanmışlığa rağmen. Bunu anlatmak istedim.”
- [35] “Öncelikle geri bildirimin için teşekkürler.”
- [36] “Öncelikle zamanını ve ilginı ayırdığın için teşekkür ederim.”
- [37] “Ayrıca kibar ve samimi bir dil kullanman da beni çok mutlu etti.”
- [38] “Verdiğin geri bildirim sayesinde yazım yanlışlarım, anlatım bozukluklarım ve noktalama işaretlerimdeki yanlışlarımı gördüm.”
- [39] “Hikâyemi daha iyi yani mantık çerçevesi içinde olması için güzel cümleler önermişsin. Bunun için de teşekkür ederim.”
- [40] “Sadece bir cümle yazıp bırakmasaydın keşke. ... Hikâyem hakkına ne düşündüğünü sadece bir cümle yazarak anlatmışsın.”
- [41] “Geri bildirimini eksik buldum çünkü yazıyı yazdıktan sonra incelerken bir sürü yazım ve noktalama yanlış yaptığımı fark ettim ama sen bunların hiçbirine değinmemişsin.”
- [42] “Ne yapmam gerektiğim hakkında hiçbir şey söylememişsin.”
- [43] “Haklısın, kendimden hiç beklemezdim doğrusu ama 'ebeveyn' kelimesini yanlış kullanmışım. Ve kısa çizgi kullanmamın sebebi hiçbir zaman bitirilmeyecek ve ani bir şekilde yarıda biten bir cümle olmasıydı. Doğrusu '...' idiyse bilmiyordum.”
- [44] “Hedef kitlem çocuklar olduğu için daha basit cümleler seçtim.”
- [45] “Çok fazla açıklayıcı bir biçimde bitirmememin sebebi okuyucunun hikâyeyi kendi kafasında sonlandırmasını, hayal etmesini istememdi. Bir nevi merak unsuru sanırım.”
- [46] “Düzeltilme aşamasında yazdıklarımı uygulayıp düzelteceğim kesinlikle.”

- [47] “Ayrıca metine, karakterlerin düşüncelerini eklemem gerektiği konusunda ise, bunu deneyeceğim.”
- [48] “Farklı bir hikâye aklıma gelmediği için aklımdan geçenleri yazmıştım. Büyük ihtimalle değiştiremem çünkü örnek bir öykü, masal yoktur.”
- [49] “Ölçüt 1’deki yapmış olduğun yorumda ayrı yazılması gereken bir kelimeyi bitişik yazdığımdan bahsetmişsin. Lütfen hangisi olduğunu belirtir misin?”
- [50] “Yazıyı birkaç kere daha okudum fakat şiirsel edayı anlayamadım. Bunu biraz daha açabilir misin?”
- [51] “Gereken hüznü verilememiş yazmışsın. Ne yapmamı önerirsin?”
- [52] “Geri bildirimimi dikkate alıp cevap verdiğin için teşekkürler.”
- [53] “Hiç önemli değil. Ben yazdığın hikâye için ve emeğin için teşekkür ederim.”
- [54] “Herkes kahvaltıya inerler diye neden yazmadın o zaman? Kelimede çoğul eki olmadığı için göze ve kulağa gerçekten çok batıyor.”
- [55] “Ben hikâyeyi çok beğendim. Düşünce tarzın da çok güzel. Sadece hikâyeyi çok beğenince bir anda bitmesine üzüldüm. Devamı olsa keşke dedim.”
- [56] “Tabii ki kendi kararın sonuçta ama incelenince sonuçlar bunlar çıkıyor.”
- [57] “Ölçüt 1’de bahsettiğim kelime sondan 3. paragrafta sonlara doğru olan "her zaman" kelimesi.”
- [58] “Örnek olarak "Ebrar hızlı ol çok merak ediyorum" cümlesi "Ebrar hızlı ol çok merak ediyorum." olarak olmalıydı. Tırnak işaretinden önce nokta olması gerektiğini kastetmiştim.”
- [59] “Siz şey demiştiniz. Daha açık ve net geri bildirim vermemiz gerektiğini. Bana o konuda bir kolaylık sağladı. Demeseydiniz biraz baştan savma yazabilirdim. İçerik olarak fazla yazdım. Hikâyede özellikle.”
- [60] “Hem neyi değerlendireceğimizi hem de üslup olarak neyi yapacağımızı gördük. Yani çok kötü olmuş bu şiir. Şöyle kötü olmuş. Keşke yazmasaydın demek yerine yazını şu şekilde düzeltebilirsin, şunları yaparak yazını güzelleştirebilirsin. Bir de onun hevesini kırmadan. Yazın güzel olmuş ama şunları yaparak kendini daha da geliştirebilirsin. Bana bunları kattı şahsen.”
- [61] “[Yazma sürecine hazırlanma adımı] siz şey sormuştunuz. Kafiye kullanacak mısınız? Kafiye kullanacaksanız ne kullanacaksınız? Sonra ölçüt kısmına [geri bildirim verme aşamasına] geldiğimizde neye göre değerlendireceğimiz açısından orası [yazma sürecine hazırlanma soruları] bize yardımcı oluyor. Çünkü arkadaşım demiş ki kafiye kullandım ama şiirde kafiye yok. Ya da kafiye kullanmadım demiş ama şiirde kafiye var. Bu yüzden bize çok yardımcı oluyor ilk başta zorlarsa da.”
- [62] “[Anonimlik olmasaydı] mesela o zaman kişiye göre bir davranış olurdu. Yakın bir arkadaşına yazsaydı ve görseydi hiçbir hatası yok deyip aslında hatası olan yeri bile söylemeden geçip giderdi. O kısımda bence anonim olması bayağı yararlı oldu.”

- [63] “Bence geri bildirim vermede en güzel şey daha önce de söylemiştik ya istediğimiz şeyleri belirtebiliyorduk. Burası yanlış mı, burası yanlış mı diye? Ona odaklanmak çok güzel olmuş bence. Çünkü geri bildirim verdiğimiz kişi mesela yazım ve noktalamada hatam var mı diye sormuş. Odaklanırken önce yazım ve noktalamaya bakıyoruz, sonra imlasına, temasına bakıyordum. Daha kolay oluyordum.”
- [64] “Bir de direk geri bildirim verme için bir sayfa vermemişsiniz. Böyle başlık başlık altında incelendiği için bir şekilde incelemeye itiyor. Sadece şu güzel olmuş bırakmak yerine hepsine tek tek yazıyoruz.”
- [65] “Onlar bizim de günlük hayatımızda, dediğim Edebiyat dersimizde, kullanmamız gereken şeylerdi. O yüzden onları öğrenmek hem site açısından daha kolaylık sağladı hem de günlük yaşantımızda bir şeyler yazarken. Onlara daha çok dikkat etmeye başladım. Yazıyı yazarken birazcık daha yardımcı oldu.”
- [66] “Ben önce kâğıda yazıyorum çünkü direk bilgisayarda yazamıyorum. ... Sonra kâğıtta yazamadığımı düşündüm. Karaladım falan olmuyor. Yazma sürecine ilk girdiğimde tema falan çıktı. Hiçbir şey yok aklımda. Hikâyeme daha nasıl başlayacağımı bile bilmiyordum. Sonra geri çıktım uygulamadan. Hatta o gün komplo girmedim. Birkaç gün geçti. Zaten süre de azalıyordu. Girdim aniden bir tema yazdım. Sonra hikâye gayet güzel devam etti o temaya göre.”
- [67] “Direk girseydim emimin ki ilkten yalpalayacaktım ama orada anlattığınız için girip, yazıp, rahatça yapabildim.”
- [68] “Sorular iyi çünkü aldığın geri bildirimler üzerinde düşünmeni sağlıyor, çünkü okuyup geçmiyorsun. Gerçekten burada ne demek istemiş, gerçekten yararlı olduğunu düşünüyor muyum gibi. ... Ben yararlı olduğunu düşünüyorum soruların.”
- [69] “Bence yazarak daha iyi öğrendik çünkü bir şeyi uyguladıkça daha iyi zihnimize yerleşiyor ve daha kolay yapmaya başlıyoruz. Mesela hikâye ve şiir hakkındaki bilgiler daha iyi aklımızda kalıyor. Bence öğrenmeyi kolaylaştırıyor.”
- [70] “Ödeve girdiğim zaman direk bir tanım veriyordu. Hikâyenin ne olduğuyla ilgili bir tanım veriyordu. İncelediğimde kısa, özet halinde hem de kısa ve öz bir şekilde anlatmıştı ve benim hoşuma gitmişti. Çünkü en azından bir ön bilgimiz oluyor. Derste ne kadar görsek de orada bir kalıcı oluyor.”
- [71] “Arkadaşlarımın fikirleri daha çok geliştirdi aslında. Bir baktım. Çok fazla eksik vardı benim yazılarımda. Onları daha toparladım.”
- [72] “Ben geri bildirimler sayesinde çok ufak bir yerde düzeltme yapmışımdır. Ama genel de şöyle oluyor. Yazıyorum sonra keşke oraya şöyle yazsaydım dediğim kısımlar olmuştu. Onları değiştirdim. ... Bir süre geçtikten sonra ikinci kez yazıya göz atmak, değiştirmemi sağladı.”
- [73] “Geri bildirimimi neye göre vereceğimi ya da hangi açıdan bir hikâyeyi değerlendirebileceğimi de öğrenmiş oldum. Çok küçük bir iki yönden değerlendirirken, artık o genişledi.”
- [74] “İki tane geri bildirim verdim ve cidden hakkını verdiğini düşünüyorum. Yazımı yazmam bir saatimi sürdü. İkisine geri bildirim vermek üç saatimi aldı.

Övmüyorum. Ciddi ciddi doğruyu söylüyorum. Ve hepsine paragraf paragraf çıkartmıştım. Ama geri bildirim vermek bir süre sonra cidden insanların eleştiri yaparken dikkatle düşünmesini sağlıyor. Hani şöyle söyleyeyim. Ben arkadaşımı eleştiriyorum ama bir yandan ona bir öneri de veriyorum. Hani şunu yaparsan daha iyi olur. Bunu yapamamışsın ama şunu yaparsan daha iyi olur gibisinden bir öneri verdik aslında. Bu şekilde verirken daha eleştirel düşünmemizi sağlıyor.”

[75] “Ben hiçbir şiiri ben öyle incelememiştim. Uyak nerede, asonans, aliterasyon... Ahenk unsurları ne? Edebi sanatlar... Kullanmadığımı düşünüyordum ama kullanmışım bir yerde. Onu bile inceleme yaparken fark ettim.”

[76] “Bence en sonda da değerlendiriyoruz ya nasıl yazdığımı fark etmemi sağladı benim açıkçası.”

[77] “Kendi hatalarımızı da gördük mesela başka birisinin yazdığı hikâyede veya şiirde. Orada bizde birçok şey öğrendik. Anlatım bozukluğu veya anlatım teknikleri... Kendi hatalarımızı da gördük.”

[78] “Kendi gözümüzden bakınca göremiyoruz yaptığımız hataları. Ama başkasının gözünden daha iyi görebiliyoruz.”

[79] “Bence burada sonuç çıkarma hem başka insanların senin hakkında ne düşündüğüyle, yani dıştan bir gözlemlerle, hem kendi belirlediğin hedeflerle, kendi yaptığın şeylerle içten bir gözlemlerle bakabilmek çok iyi olmuş. Hem bir hedefe ulaşırken ne kadar başarılı bir şekilde oraya ulaştığını görebiliyorsun. Hem başka insanların bu başarının hakkında neler düşündüğünü öğrenebiliyorsun. Bu yüzden gayet yararlı ve geniş bir sonuç alabiliyoruz belki. Bence iyiydi bayağı.”

[80] “Şimdi yazma sürecine hazırlanmayı ben de yapıyorum ama yazmayı şurada yapıyorum diye kesin bir şey söyleyemem. Çünkü ben otobüste giderken bir şey yazıyorum. Ne bileyim arkadaşlarımla kâğıt oynuyorum, pişti oynuyorum. O sırada da aklıma bir şeyler geliyor. Orada da yazıyorum.”

[81] “Derste falan işledik ama orada ahenk unsurları neydi falan diye durdum orada açıkçası. Arada defter falan kurcaladım. Ondan sonra [şiirimi] geçtim.”

[82] “Bence tarafsız [anonim] olması iyi çünkü aynı yazıyı sınıf ortamında okusak belki imm, bunu mu yazmış diyecek olanlar vardı.”

[83] “İki geri bildirimimde de okunduğunu düşünmemiştim. Çünkü çok kötüydü. Ben onu okuduğumda çok kötü oldum. ... Kimin geri bildirim yaptığı bence belli olmasın. Yoksa kavgaya çıkar.”

[84] “İlk başta gözümü korkutsa da bu yazma gibisinden sonrasında video sayesinde biraz daha içim ısındı diyebilirim. Daha kolay ve eğlenceli olacağını düşündüm. İlk başta... Hoca bahsetmişti. ... Doğrusunu söylemek gerekirse gözüm gerçekten korkmuştu. Zor olacak gibisinden. Sizin sunumunuz, videonuz derken biraz daha rahatladım. ... Hem yazma hem de geri bildirim verme aşamasında bir rahatlama oldu çünkü yazmada resmi bir şey yazacağımızı düşünmüştüm. Ama kendimiz yazacağımızı öğrendiğim zaman daha rahatladım. Ve geri bildirim zor olur diye

düşünmüştüm. Böyle ciddi ciddi bir şekilde yazarız diye düşünmüştüm. Ama daha rahat oldu. Arkadaş ortamında daha güzel oldu bence.”

- [85] “Bence geri bildirim verme ve almanın anonim olması çok güzeldi. Çünkü karşıdaki kişiye ne hissettiğini söylemek kolay bir şey değil çoğu zaman. Senin yazdığın yazı da ne hissettiğin ve ne düşündüğüyle ilgili oluyor. Karşıdaki kişinin seni yadırgamayacağını ya da yargılamayacağını bilerek yazman güzeldi.”
- [86] “Bir samimiyet de katıyor bence. Bir açıklama yerine samimi şekilde... Kibar bir şekilde soruyoruz ve cevap verirken de ister istemez nazik bir şekilde kişiyi kırmayacak bir şekilde veriyoruz. Bu yazımızı hem nasıl değerlendireceğimizi öğretiyor bize hem de samimiyet katıyor.”
- [87] “Hikâyede aldığım geri bildirimler gerçekten çok güzeldi. Bir yerde noktalama ve yazım hatası olmuş. Cümleyi almış, koymuş oraya [geri bildirim formuna]. Bu cümlede hatan var diye. Onların geri bildirimleri çok faydalı olmuştu.”
- [88] “Öncelikle aldığım geri bildirimlerden söz edeyim. Sitenin en büyük faydalarından biri bu. Mesela bir arkadaşına sorsaydım. Şiirimi gösterseydim ona arkadaşım olduğu için belki ne kadar objektif bir yorum yapabilecekti? Ama o siteye yazdığımız zaman objektif bir yorum alıyorsunuz.”
- [89] “Aldığım geri bildirimler, hatırladığım kadarıyla, bir geri bildirimim baya uzundu. Baya ayrıntılı yazmıştı. Ondan çok etkilenmiştim açıkçası yani. Çünkü gerçekten hikâyeme bu kadar ayrıntılı incelemesi, özen göstermesi açıkçası beni çok mutlu etmişti.”
- [90] “Düşünmek zorunda kalıyorsun. ... Sonuçta ben bunu okumayacağım, okumam dediğin şiiri de oturup düşünüyorsun bir kere. Bir de arkadaşımın söylediği gibi herkesin yazma türü farklı. Ben mesela serbest ve uzun şiir yazıyorum. Mesela sınıfta birçok kişi de dinlemez yani. Hitap etmiyorum. ... O yüzden herkesin dinlediğini düşünmüyorum. Ama burada dinlemek zorundalar. Yapmak zorundalar.”
- [91] “Ama böyle bir soru şeklinde sorulursa ister istemez cevap vermek zorunda oluyorsunuz.”
- [92] “Ben kimin yazdığını merak ettim. Okuduğum bir yazı güzeldi. Çok hoşuma gitti. Onu kimin yazdığını çok merak ediyorum.”
- [93] “Daha çok yazı yazmayı istemeye başladım. Geri bildirim açısından gelen eleştiriler iyiye tabii ki daha çok yazı paylaşma istediği geldi bana.”
- [94] “Bir kere yazımızı topluma açıyoruz. Topluma açılacak bir yazı yazıp ondan sonra insanların yorum yapmasını ve bize yardımcı olmalarını istemek bence güzel bir şey. Biraz da iş birliğine de giriyor güzel bir yazı çıkartmak için.”
- [95] “Benim hikâye geri bildirimlerimde aldığım üç bildirim de hepsi yanlış verilmişti. Ben onu düzeltmek zorunda kalmıştım. Ya hikâyeyi yanlış anladı, ya anlattığım şeyi, ya da kendisi yanlış biliyordu. Bunu düzelttim mesaj bölümünü kullanarak.”

- [96] “Bir yerde takılmış. Hani yazım kurallarına takılmış. Hatasını bilmiyor ve bizden istiyor. Görmemizi istiyor. Bunu sorarak hem biz ona yardımcı oluyoruz hem de hatalarını görmüş oluyor. Onun da bir eksikliği varsa öğrenmiş oluyor.”
- [97] “Biri geri bildirimde eksikleri söylemiş ama soruyorum, bunu böyle yapsam olur mu diye. Mesaja cevap vermiyorlar.”
- [98] “Bir arkadaşımız var. ‘Benim yazım güzel. Ben bunu düzeltmeyeceğim. Yazımın güzel olduğunu düşünüyorum. O yüzden bunu düzeltmeyeceğim. Sen kendi yanlışlarını düzelt.’ Ciddiyim, böyle bir şeydi. ‘Kendi hataların var. Bence kendi hatalarını bir gözden geçir.’ Döndüm baktım. Kitabı açıyorum. Ahenk unsurları yok yani. Hiçbir şekilde yok. ... Amca atar yapmış mesajlarında. Sinir oldum.”
- [99] “Siz yazıyordunuz ya geldik, artık aşama [geri bildirim verme aşaması] başladı. Sınıftakiler soruyordu. Kim bana yazdı. Şu kimin.”
- [100] “Karşıdakinin sormadığı halde düşünceni söylemek de biraz saçma olurdu. Gerçekten geri bildirim istedikleri, eksik olduklarını düşündükleri bir konuda bir şeyler yazmak iyi olmuş. ... Daha çok tabii soru sorduklarına yönelirim ama göze batan bir hata varsa tabii ki de bunu paylaşıyorum. Ama kendimi zorlamam.”
- [101] “Aslında o sorular da tabii ki de o konuyu ana hatlarıyla soruyor. Ama yine de o kısım fazla mıydı diye düşünüyorum. Genel olarak orada bir özen gösterilmedi.”
- [102] “Ben sitede şey yaparken zorlanmıştım. Böyle çok uzun bir şey yazıldığı zaman bir sürü geri bildirim yapabiliyoruz. Biz de çok uzun şeyler yazabiliyoruz ama bana gelen birkaç satırlık bir şey var. Yazacak hiçbir şey bulamamıştım. Orada [geri bildirim verme sayfasında] istediği çok fazla şey vardı. Şu açıdan değerlendirin, bu açıdan değerlendirin Belki o noktada iyileştirilebilir.”
- [103] “Hikâyede biraz daha yazım ve noktalama, kurgu daha geniş. Şiirde o biraz daha dar. Mesela biri iki kıta bir şiir yazmış. O yüzden şiirde çok fazla bulamıyorsun.”
- [104] “Ben şiirin kişiye özgü olduğunu düşünüyorum. Şiir bireyseldir, kişiye aittir. Öyle olduğu için pek yorumlamak istemedim. ... Hikâye daha kolaydı çünkü hikâyede düğümü olmamış, çok kafa karıştırıcı yazıp geçebiliyorsun. Ama şiirde kafa karıştırıcı olmuş diyemezsin çünkü neye göre, kime göre diyecekler.”
- [105] “Hikâyede ben onu her cümlesine göre değerlendirmeliyim. Nerede yazım yanlış var, nerede kelime yanlış var veya nerede nokta yanlış var, nasıl cümlesini tamamlaması gerek. Cümle cümle değerlendirmem gerektiği için hikâye bana göre daha zordu ama şiir daha kolaydı. Çünkü ahenk unsurları, redif ve uyak cümlelerin sonunda olduğu için okuduktan sonra bakıyorsun ve nerede olduğu direkt gözüküyor. O yüzden daha kolaydı.”
- [106] “İyi şiiri yorumlamak daha zor aslında. Olumsuz bir geri bildirim gönderemiyorsun ama yazman gerektiğini de düşünüyorsun. Sonra saçma şeyler yazmaya başlıyorsun.”
- [107] “Ama şiirde en azından iki üç kıta yazsa inceleyebiliyorsun ama hikâye daha uzun. Bazı arkadaşlarımız sayfalarca yazdılar. Onlara geri bildirim vermek daha zordu.”

- [108] “Hikâyede bence bir konu belli olduğu için ve açık açık yazıldığı için daha rahat anlaşılabilir ve geri bildirimin daha kolay verilebildiğini düşünüyorum. Ama şiirde şairin ve yazarın yaptığı imgeyi, söz sanatlarına karşı ne demek istediğini anlayamadığımız için biraz daha geri bildirim vermesi zordu bence. Mesela hikâyeye geri bildirim vermek için iki kere okudum ama şiiri dört kere falan okumuşumdur.”
- [109] “Bize verilen bazı geri bildirimler kısa olduğu için biz bu geri bildirimden ne çıkarabiliriz ki diyorduk. Hani kendime ne çıkarabilirim? Bence bir kelime sınır koyulabilir, şu kadar kelime sayısı arası. En azından insanlar kısa yazmayacağı için biz de bir şeyler çıkarabiliriz.”
- [110] “Geri bildirim verirken elimden geldiği kadar özen göstermeye çalıştım. ... Ama kendi geri bildirimlerim... Tek cümleyle şurayı düzeltebilirsin. Tamam, düzeltebilirim ama demek ki ben onu fark etmemişim. O yüzden bana bir örnek sun. Ona göre düzelteyim. O yüzden ben geri bildirimleri çok yararlı bulamadım.”
- [111] “İlk hikâyede de çok güzel bir şekilde geri bildirimimi vermiştim. Çok özenerek vermiştim en azından. Bana gelen dört başlıktı sanırım. Dördü de bir cümlelikti. Başlığı koymuştu güzel. Başlığı koymuştu güzel. Hikâyede Okey. Şiire geldik. Şiirde de aynı şekilde. Çok uzun ve özenerek yazdım. Sonra geri bildirim geldi, aynı şekilde. Başlığı yazmış, uyumlu olmuş. Güzel olmuş. Sadece bir noktalamada hata bulmuşlar. Yoksa gerisi hep uyumlu, güzel.”
- [112] “Ben çok heyecanlanmıştım. Arkadaşlarımdan düşüncelerini öğreneceğim için kendi yazım hakkındaki. Ama bir arkadaşım bana yazmamıştı. Hayal kırıklığı yaşadım. Çok heyecanlanmıştım çünkü.”
- [113] “Önerilerim çok eksikti. Eleştiri dediğin bunun yanlış ya da doğru olduğunu söylersin. Yanına ekstradan önermeni koyarsın. O şekilde eleştiri istiyordunuz bizden. ... Bana geri bildirim veren kişi bana bunları yapmamıştı. O yüzden yazımı hiç değişiklik yapmadan kaydettim.”
- [114] “Ben şiirde çok düzeltememişim. Şiirde genel bir sıkıntı vardı. Pek şiir gibi olmamıştı. Yapabileceğim bir şey yoktu. Düzeltemek için en baştan yazmam gerekiyordu. Çünkü genel olarak bir sıkıntı vardı.”
- [115] “Bir de hocam mesajlaşmada diyelim ki arkadaşım bana bir mesaj attı. Hocam bir bildiri falan gelmediği için, nadiren girdiğimiz için her an bir gireyim, bakayım demiyor hiçbir öğrenci. O yüzden görmüyor. O yüzden bir bildirim verme olayı olabilir.”
- [116] “Ben mesajlaşma kutusunu bulurken zorlandım. Hatta bulamadım. Yani bildirim gelince açabildim sadece. O daha açık bir yere koyulabilir belki.”
- [117] “İkisiyle de mesajlaşırken klavyeden dolayı birkaç kelimedede hata yapmışım. Mesajı geri çekemedim. Mesajı tekrardan yazamadığım için orada bir zorluk çekmişim.”
- [118] “Ben geri bildirim verirken sistematik bir hataya uğradım. Geri bildirimlerimi yazmıştım, yollamıştım. Sonra onların hepsi silinmişti ve yazdığım başka bir yerde

olmadığı için.... Çok özenerek, uzun uzun yazmıştım. Sonra tekrar yazmam gerekti.”

[119] “Arkadaşımızın bir hatasını söylerken ilk önce hatasının nerede olduğunu söylememiz gerekiyor. Onun için de hatası olduğu cümleyi kopyalamamız lazım. Kopyalama yerine acaba hatası olduğu yeri işaretle gibi bir yer olsa. Bastığımız zaman da bana geri bildirim gelse. Şu kısım hatalı dese. Ben direk o hatalı kısma bassam bana direk metindeki yeri işaretli bir şekilde gelse ve bana böyle böyle olmalı dediği yerde de o kısmı gözüксе bence daha iyi olabilir.”

[120] “Geri bildirim verirken o konu hakkındaki bilgimiz önemli aslında. Çünkü atıyorum şiir konusunda pek... Ben mesela pek iyi şiir yazamıyorum. En azından ben öyle düşünüyorum. Hikâyede daha iyiyim ve uzman olduğum konuda hikâyede daha eleştirel bakabiliyorum. Daha iyi yorum yapabiliyorum. Ama şiirde bu böyle değil. Bunda ustalığımıza da bakıyor diye düşünüyorum.”

[121] “Hikâye beni daha zorladı. Belki benim şiir yazmayı daha çok sevdiğimden dolayıdır. Şiir yazmak bana daha eğlenceli ve hoş geldi. O yüzden zorlamış olabilir hikâye.”

[122] “Geri bildirim verme konusunda bence kısıtlanmışız. Hani yazım düzeltme, noktalama değil de mesela konuyu nasıl açabiliriz. Karakter sayısını çoğaltalım mı azaltalım mı? ... Ama mesela onu belirtebileceğimiz bir yer yok.”

[123] “Biz hazırlık aşamasında konumuzu yazıyoruz. Bu geri bildirim veren arkadaş için de görülebilir aslında çünkü ilk başta okuduğunuz zaman şiir ya da hikâyede konuyu kavrayamadığı için yanlış geri bildirim verebiliyor. Bizim konumuz [geri bildirim verme sayfasında] üstte yazabilir. Verdiğimiz bilgiler, hikâyeye geri bildirim verme açısından yararlı olabilecek bilgiler yazabilir yazının üstünde.”

CURRICULUM VITAE

PERSONAL INFORMATION

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EDUCATION

Degree	Institution	Year of Graduation
MS	Hacettepe University Computer Education & Instructional Technology	2015
BS	Middle East Technical University Computer Education & Instructional Technology (Minor in Psychology)	2013
High School	Anatolian Vocational High School Trabzon	2008

WORK EXPERIENCE

Year	Place	Enrollment
2020-	Trabzon University	Instructor
2016- 2020	Middle East Technical University	Research Assistant
2014-2015	Hacettepe University	Research Assistant
2013-2014	Niğde Ömer Halisdemir University	Research Assistant

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS

- Alemdag, E.,** Cevikbas, S. G., & Baran, E. (2020). The design, implementation and evaluation of a professional development programme to support teachers' technology integration in a public education centre. *Studies in Continuing Education*, 42(2), 2013-239. doi: 10.1080/0158037X.2019.1566119.
- Alemdag, E.,** & Cagiltay, K. (2018). A systematic review of eye tracking research on multimedia learning. *Computers & Education*, 125, 413-428. doi: 10.1016/j.compedu.2018.06.023
- Alemdag, E.,** & Erdem, M. (2017). Designing an e-mentoring program for novice teachers in Turkey and investigating online interactions and program outcomes. *Mentoring & Tutoring: Partnership in Learning*, 25(2), 123-150. doi: 10.1080/13611267.2017.1327394
- Menzi-Çetin, N., **Alemdağ, E.,** Tüzün, M., & Yıldız, M. (2017). Evaluation of a university website's usability for visually-impaired students. *Universal Access in the Information Society*, 16(1), 151-160. doi: 10.1007/s10209-015-0430-3
- Alemdağ, E.,** & Özdemir Şimşek, P. (2017). Pre-Service teachers' evaluation of their mentor teachers, school experiences, and theory–practice relationship. *International Journal Progressive Education*, 13(2), 165-179.
- Gündüz, A. Y., **Alemdağ, E.,** Yaşar, S., & Erdem, M. (2016). Design of a problem-based online learning environment and evaluation of its effectiveness. *The Turkish Online Journal of Educational Technology*, 15(3), 49-58.