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DIVISION OF ENGLISH LANGUAGE TEACHING**

**INVESTIGATING THE EFFICACY OF DIGITAL ESCAPE ROOM
GAMES IN ENHANCING INTERCULTURAL COMPETENCE
AMONG PRE-SERVICE EFL TEACHERS: A QUASI-
EXPERIMENTAL STUDY**

Master's Thesis

NEBİLE USLU KAPLAN

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İNGİLİZCE ÖĞRETMENİ ADAYLARININ KÜLTÜRLERARASI
YETKİNLİĞİN GELİŞTİRİLMESİNDE DİJİTAL KAÇIŞ ODASI
OYUNLARININ ETKİNLİĞİNİN ARAŞTIRILMASI: YARI
DENEYSEL BİR ÇALIŞMA

Hazırlayan
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AMASYA-2024



Dedicated to my beloved daughter

TEZ ONAY SAYFASI

Nebile USLU KAPLAN tarafından hazırlanan “INVESTIGATING THE EFFICACY OF DIGITAL ESCAPE ROOM GAMES IN ENHANCING INTERCULTURAL COMPETENCE AMONG PRE-SERVICE EFL TEACHERS: A QUASI-EXPERIMENTAL STUDY” başlıklı çalışma aşağıdaki jüri tarafından 21/03/2024 tarihinde yapılan savunma sınavı sonucunda oy birliği ile Amasya Üniversitesi Sosyal Bilimleri Enstitüsü Yabancı Diller Eğitimi Ana Bilim Dalında Yüksek Lisans Tezi olarak kabul edilmiştir.

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ETİK BEYAN SAYFASI

Tezimin içerdği yenilik ve sonuçları başka bir yerden almadığımı ve bu tezi Amasya Üniversitesi Sosyal Bilimler Enstitüsünden başka bir bilim kuruluşuna akademik gaye ve unvan almak amacıyla vermediğimi; tez içindeki bütün bilgilerin etik davranış ve akademik kurallar çerçevesinde elde edilerek sunulduğunu, ayrıca tez yazım kurallarına uygun olarak hazırlanan bu çalışmada kullanılan her türlü kaynağa eksiksiz atıf yapıldığını, bu tezde sunduğum çalışmanın özgün olduğunu bildirir, aksinin ortaya çıkması durumunda aleyhime doğabilecek tüm hak kayıplarını kabullendiğimi beyan ederim.

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ABSTRACT

INVESTIGATING THE EFFICACY OF DIGITAL ESCAPE ROOM GAMES IN ENHANCING INTERCULTURAL COMPETENCE AMONG PRE-SERVICE EFL TEACHERS: A QUASI-EXPERIMENTAL STUDY

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The aim of this study was to reveal the effect of digital escape room games in fostering intercultural competence of pre-service EFL teachers. For that purpose, a quasi-experimental research design was adopted. The study was conducted at a state university in Türkiye, and totally 52 4th grade pre-service EFL students attended as participants. An intercultural competence scale was used to collect quantitative data. In addition, participant's views were collected through open-ended questionnaire after the treatment of the games. The analysis of the gathered data revealed that the experimental group's post-scale score was significantly higher than the score of the control group, including the sub-dimensions of the intercultural competence scale. The examination of the qualitative data enlightened that integrating digital escape room games were found to be effective in fostering intercultural competence by the participants in terms of especially learning information about cultures, recognizing other cultures, and improving communication skills. While some participants mentioned that they found these games advantageous because they were enjoyable, motivating, and provided technology integration, teamwork, and innovative learning, some of them stated the disadvantages as technology necessity and connection problems. While most of the participants noted that they were willing to use these games in their future teachings, only one of them stated her unwillingness because she found these games time-consuming. Overall, this study was designed with the overarching purpose of making a substantive contribution to the field with its findings, as well as pedagogical implications and suggestions arouse from the study.

Keywords: digital escape room games, intercultural competence, English language teaching, gamification

ÖZET

İNGİLİZCE ÖĞRETMENİ ADAYLARININ KÜLTÜRLERARASI YETKİNLİĞİN GELİŞTİRİLMESİNDE DİJİTAL KAÇIŞ ODASI OYUNLARININ ETKİNLİĞİNİN ARAŞTIRILMASI: YARI DENEYSEL BİR ÇALIŞMA

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Bu çalışmanın amacı, dijital kaçış oyunlarının, İngiliz dili eğitimi öğretmen adaylarının kültürlerarası yeterliliğini geliştirmedeki etkisini ortaya koymaktır. Bu çalışmada yarı deneysel araştırma deseni benimsenmiştir. Araştırma Türkiye'de bir devlet üniversitesinde gerçekleştirilmiş olup, katılımcıları toplam 52 4. sınıf İngiliz dili eğitimi öğrencileri oluşturmuştur. Araştırmanın nicel verileri kültürlerarası yeterlilik ölçeği ile toplanmıştır. Ayrıca, katılımcıların oyunlarla ilgili düşüncelerini almak için açık uçlu soru formu kullanılmıştır. Toplanan verilerin analizi, kültürlerarası yeterlilik ölçeğinin alt boyutlarıyla beraber deney grubunun son ölçek puanının kontrol grubunun puanından anlamlı derecede yüksek olduğunu ortaya çıkarmıştır. Nitel verilerin sonuçları, dijital kaçış odası oyunlarının, katılımcıların özellikle kültürler hakkında bilgi edinme, diğer kültürleri tanıma ve iletişim becerilerini geliştirme açısından kültürlerarası yeterliliğini geliştirmede etkili olduğunu göstermiştir. Katılımcıların bazıları bu oyunların eğlenceli ve motive edici olması ve teknoloji entegrasyonu, takım çalışması ve yenilikçi öğrenme sağlaması gibi nedenlerle avantajlı bulunduğunu belirtirken, bazıları ise dezavantajlarının teknoloji gerekliliği ve bağlantı sorunları olduğunu belirtmiştir. Katılımcıların çoğu bu oyunları gelecekteki derslerinde kullanmak istediklerini belirtirken, yalnızca bir kişi bu oyunların zaman alıcı olduğunu düşündüğünden dolayı isteksiz olduğunu ifade etmiştir. Genel olarak bu çalışma ile, bulguları ve araştırma sonuçlarından ortaya çıkan pedagojik çıkarımlar ve önerilerle alana katkı sağlaması amaçlanmıştır.

Anahtar Kelimeler: dijital kaçış odası oyunları, kültürlerarası yeterlilik, İngiliz dili eğitimi, oyunlaştırma

PREFACE

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LIST OF ABBREVIATIONS

COIL	Collaborative online international learning
DERGs	Digital escape room games
EERGs	Educational escape room games
EFL	English as a foreign language
ELT	English language teaching
ERs	Escape rooms
ERGs	Escape room games
ESL	English as a second language
GBL	Game based learning
ICS	Intercultural competence scale
M&Ds	Mechanics and dynamics
REG	Real escape game
VR	Virtual reality

CHAPTER I

1. INTRODUCTION

In this part, the background of the study, statement of the problem, research questions, significance of the study and key terms used in the study will be given in detail.

1.1. Background of the Study

The developments in technology in our modern world have created a new environment full of technological devices which are thought to be a part of people's daily lives. These developments have changed the profiles of students, as well. Today's teachers face with students who are called as "Digital Natives" by Prensky (2001). As Prensky (2001) defines, digital natives are those whose brains probably physically different as a result of the amount of digital input they receive when they grow up. He also advises using digital games to have an effective communication with those people. The emergence of this new generation has urged teachers to find new ways to understand and reach these students, one of which is including games into lessons.

Two main terms are generally used for adding games into educational settings. These are gamification and Game Based Learning (GBL). Gamification can be described as the integration of game features and components into non-game environments. It entails using game design rules, methods, and characteristics to enhance the interactivity, fun and immersion of activities by using digital media, applications for mobile devices, internet platforms or even physical classroom exercises. By incorporating game elements like competition, rewards and challenges into learning activities, gamification has the potential to create a more interactive and enjoyable learning environment (Wulantari et al., 2023). GBL, on the other hand, can be defined as the application of serious, web-based instructional games targeting particular learning results (Mao et al., 2022; Nietfeld et al., 2023). These two terms have gained popularity recently as the ways to boost motivation and engagement in a variety of fields, including education (Bakhsh et al., 2022; Merchán Macías, 2017; Nietfeld et al., 2023; Zhang & Hasim, 2023; Wulantari et al., 2023).

Like other areas in education, gamification and GBL are commonly used for language teaching purposes and have produced encouraging results in terms of improving students' learning experiences and fostering language proficiency (Dehganazadeh & Dehganazadeh, 2020; Saud et al., 2022). Many studies conducted to reveal the effectiveness of gamification and

GBL in teaching English language displayed many advantages of using games for educational purposes. These advantages include increasing students' motivation and self-efficacy, enhancing partnership among students, improving problem-solving skills, enhancing students' creativity and promoting skill development in a relaxing and funny environment (Adipat et al., 2021; Banfield & Wilkerson, 2014; Boctor, 2013; Merchán Macías, 2017; Saud et al., 2022; Voloshynov et al., 2020; Wulantari et al., 2023). In addition, by providing immediate evaluation and feedback, they help students acquire language and improve skills of language while supporting educational outcomes (Adipat et al., 2021; Wulantari et al., 2023; Zhang & Hasim, 2023). Except from these benefits, including games and game elements into language lessons can affect the attitudes and emotions of students in a positive way (Zhang & Hasim, 2023). They can also help students feel like they have accomplished something and are making progress, which will help them feel more confident and motivated to keep going with their language learning by increasing their self-efficacy (Banfield & Wilkerson, 2014; Dehganazadeh & Dehganazadeh, 2020). Adding more interactivity to lessons, games can encourage students to be more active and engaged in the lesson (Adipat et al., 2021; Merchán Macías, 2017; Wulantari et al., 2023). This is also effective in creating more enjoyable lessons since the students can be involved in authentic environment and cooperate, collaborate, coordinate, and socially interact with their peers (Adipat et al., 2021; Boctor, 2013; Merchán Macías, 2017; Voloshynov et al., 2020; Wulantari et al., 2023; Zhang & Hasim, 2023). Since the educational games are commonly goal-oriented and team-based activities, they can enhance students' problem-solving skills as well as interpersonal, communication, teamwork, and critical thinking skills. More specifically, games and game elements can help language learners actively participate in both receptive and productive language skills by transforming their previous experiences about language in a safe environment created thanks to games (Mao et al., 2022; Wulantari et al., 2023).

Educators use different games for educational purposes to benefit from the various advantages of gamification and GBL in language classes. One of these creative settings for learning is escape room game. In an escape room game, as suggested by its name, players are given a predetermined amount of time to solve problems, puzzles, riddles and challenges after being imprisoned in either a fictional or actual room and get information or clues and finish a number of duties to escape from the room (Bilbao-Quintana et al., 2021; López, 2019; Merchán Macías, 2017; Nicholson, 2015; Voloshynov et al., 2020). In these thematic and rule-based games, players work as teams to achieve this pre-determined aim (López, 2019; Makri et al.,

2021; Nicholson, 2015).

Since the time when “escape room” term was used in a video game “Origin”, which took the hints and tasks from Agatha Christie’s books, for the first time in 2006 (Voloshynov et al., 2020), these kinds of games have gained popularity and been modified for language learning purposes, as well (López, 2019; Macías-Guillén et al., 2021; Merchán Macías, 2017). Currently, it is regarded as a universal, typical, and much-liked leisure activity that attracts both adults and children, as well as young people (Taraldsen et al., 2022). Escape room games can be played both on computers and in person. Before they were made into live versions, escape games had long been common among computer and video game players (Miller, 2015). The escape room games which are played via computers are called as digital escape room games (DERGs) (Makri et al., 2021). Played on computers or in person, however, the basic goal of using an escape room is to set up a situation where participants must work together to complete various tasks in a set amount of time (Taraldsen et al., 2022). Educational escape room games (EERGs), on the other hand, can be described as the creative learning environment that use the fundamental concept of the escape room game but add the educational component and the interests of the students. It can be constructed at any level or type of education from primary school to post-graduate and other teaching programs (Makri et al., 2021; Merchán Macías, 2017).

What makes escape room games this valuable may be the real-life concept of these innovative games and their ability to raise curiosity among the players (Makri et al., 2021; Merchán Macías, 2017; Voloshynov et al., 2020). This feature of these games is very welcomed by the students since it helps them get away from the monotony of traditional classroom-based language learning. Additionally, it is possible to mention other benefits of escape room games used for educational purposes. First of all, it is a good way for learners to apply what they have learnt theoretically. This may cause active participation of the learners by motivating them with funny and attractive learning environment. Learners may be more enthusiastic and eager for self-regulation of their learning experience (Bellés-Calvera & Martínez-Hernández, 2022; Benavente, 2022; López, 2019; López-Belmonte et al., 2020; Macías-Guillén et al., 2021; Taraldsen et al., 2022). These student-centred games may boost learners’ 21st century skills such as problem-solving, analytical thinking, creativity, social interaction, computer literacy and critical thinking. By emphasizing the team-works, these games help learners enhance their collaboration, communication, and leadership skills, as well (Bellés-Calvera & Martínez-Hernández, 2022; Makri et al., 2021; López-Belmonte et al., 2020; Stollhans, 2020; Taraldsen

et al., 2022). In addition to all of these, such games give the learners the opportunity to engage in problem-based learning activities with less negative learning dynamics (López-Belmonte et al., 2020).

It is possible to mention the advantages of using escape room games in language classes. Escape room games can be used to reinforce learning vocabulary and grammar rules as well as to foster other language abilities (Bellés-Calvera & Martínez-Hernández, 2022; Stollhans, 2020). For instance, in order to advance in the game, students might have to solve puzzles that call for them to correctly use particular vocabulary words or verb tenses. The practice of critical thinking and problem-solving abilities can be enhanced by playing escape games, which provide a novel and entertaining way to do so. Teachers can create a fun, motivating and engaging learning environment that encourages students to participate fully and develop their language skills by incorporating these games into language teaching (Stollhans, 2020). The results of some previously conducted studies show that integrating escape room games into language classes is an efficient way for content consolidation, evaluating oral skill development, improving reading skills, including technology into lesson, enhancing communicative skills, and supporting language acquisition, (Bellés-Calvera & Martínez-Hernández, 2022; Benavente, 2022; Jie et al., 2022; McLaughlin, 2023; Vladimirova Barakova, 2020).

Escape room games can be applied a variety of subjects related to language learning. One of these subjects is intercultural competence development. Even though it is a complicated and varied term that is influenced by the situation and the function of an individual in that context (Sally et al., 2022), intercultural competence can be defined as the ability or capacity to communicate and interact responsibly and effectively with people from diverse cultural backgrounds in order to create meaning (Camerer, 2014; Chang et al., 2022; Deardorff, 2014). Intercultural competence has been more essential than ever in today's modern world for a variety of reasons (Pham & Pham, 2022). First of all, it is crucial for fostering understanding between men and women so that there might be serenity in their minds (Deardorff, 2020). In this regard, having an efficient intercultural competence may help to bridge appreciation among people from different cultures. This mutual understanding may create a basis for democracy, the rule of law and basic human rights among these people (Pham & Pham, 2022).

It is possible to relate intercultural competencies with some fundamental skills. According to Chang et al. (2022), contrasting, discovering, recognizing, observing, analysing and comprehending language and culture, using language to communicate with those from

different walks of life, understanding and interacting and having cultural knowledge are the key terms that interculturally competent people should have. Likewise, Deardorff (2014) emphasizes the role of worldwide citizenship, intelligence of culture and worldwide education as the essential connections of intercultural competence. Pham & Pham (2022), on the other hand, focuses on the fundamental ideas like motivation (affective, emotional), knowledge (cognitive), abilities (behavioural, actional), setting (situation, environment, culture, interaction, function), and results (perceived suitability, perceived effectiveness, satisfaction, comprehension, desire, intimacy, assimilation, task achievement) while defining intercultural competence of individuals.

Globalization is another key term for the raising importance of intercultural competence as it requires people that have the possibility to interact with individuals from various backgrounds or countries that have been significantly impacted by varied values, behaviours, and perspectives (Deardorff, 2014; Pham, & Pham, 2022; Sevime-Sahin, 2020). This is especially true now, when a wide range of people coexist in close quarters, their intimate proximity heightened by social media and technological communication, which is altering the economic and cultural landscapes even in the most isolated regions. The economical aspect of the importance of intercultural competence derives from the pertinent to employability, the growing variety of the globe in which we live and the critical international issues that face us as people today (Deardorff, 2014). For that reason, one of the main goals for university students is to acquire and enhance intercultural competence in this era. To succeed in professional contexts, this competency is thought to be one of the most crucial abilities that 21st century universities aim to prepare incoming students to be global citizens (Sierra-Huedo & Nevado-Llopis, 2022). Because of the fact that schools and universities serve as educational institutions for our society; after graduating, students enter the workforce and pursue a variety of professions where they will frequently come into contact with people from different racial, ethnic, and cultural backgrounds (Sally et al., 2022). Fostering this competence can prepare students to understand how various global issues are interconnected, to take into account various viewpoints and comprehend the interactions of diverse environments, to collaborate and interact more effectively in a globalized world and, in general, to perform as responsible experts in an environment that is constantly evolving (López-Rocha, 2020).

Among the cohort of university students, proficiency in intercultural concepts can be deemed paramount for individuals engaged in foreign language acquisition or aspiring to become language instructors as a fundamental facet of foreign language pedagogy revolves

around the cultivation of intercultural competence (Eide et al., 2023). Foreign language and culture should be presented to pupils in tandem because language is one of the most crucial aspects of culture (Mykytenko et al., 2022) and the development of students' intercultural competency in a society increasingly defined by migration, exile and globalization can be greatly aided by the study of foreign languages (Eide et al., 2023). For successful cross-cultural communication, a high level of intercultural competence is necessary. As a lingua-franca, teaching and learning English has become more popular as a result of English's recent acceptance as the primary intercultural communication language across diverse cultures. Learning English and comprehending its cultural settings help students become more adept at intercultural communication (Sevimel-Sahin, 2020). Consequently, it is imperative for language teachers to acquire the necessary intercultural competence skills before embarking on their teaching careers.

1.2. Statement of the Problem

English language teachers place a high value on intercultural skills. There are various strong reasons why language teachers must develop their intercultural competency. Firstly, as culture and language are inextricably linked, effective language education requires an understanding of the cultural complexity of a language (Mykytenko et al., 2022). Without intercultural competency, educators run the risk of unintentionally reinforcing prejudices or misinterpreting the cultural context of a language spoken, which would result in unproductive instruction. Second, intercultural competency contributes to the development of respectful and inclusive learning environments (Sevimel-Sahin, 2020). Many different student groups, each with its own cultural background and communication style, make up language classrooms. By gently navigating these differences, teachers who are interculturally competent can foster pleasant connections and prevent possible problems (Eide et al., 2023). Additionally, language learners hope to apply their abilities for cross-border interaction and cultural exchange in a world that is becoming more and more globalized (Pham & Pham, 2022). Teachers who are interculturally competent are better able to educate their pupils for interactions in the real world.

Since it makes learning more interesting, engaging, and successful (Boctor, 2013; Saud et al., 2022; Voloshynov et al., 2020), gamification can be an essential tool in the teaching of intercultural competency. Intercultural education can be made more dynamic and inviting for active involvement and exploration by including game components like competition, obstacles,

and rewards (Adipat et al., 2021; Merchán Macías, 2017; Wulantari et al., 2023). Games may give students the chance to put themselves in the shoes of people from many cultures, giving them firsthand knowledge and viewpoints that promote empathy and understanding (Banfield & Wilkerson, 2014; Dehganazadeh & Dehganazadeh, 2020). In a secure and controlled environment, gamified tasks also make it simpler for students to practice intercultural dialogue, negotiation, and dispute resolution. Shortly, gamification might be an invaluable strategy for educators looking to better prepare students for a varied and connected society because it not only increases students' love of learning but also gives them practical intercultural competencies (Mao et al., 2022; Wulantari et al., 2023).

An effective and innovative strategy for teaching intercultural competence in English language lessons can be incorporating digital escape room games. These interactive games immerse students in cooperative learning, solving problems and critical thinking while negotiating cross-cultural difficulties (Bellés-Calvera & Martínez-Hernández, 2022; Makri et al., 2021). Students receive real-world training in understanding various views, ways of speaking and cultural norms by working through different kinds of games and performing tasks in the context of various cultures (Voloshynov et al., 2020). Additionally, the teamwork and communication that these activities foster among students aid in the development of critical intercultural competencies (Makri et al., 2021; López-Belmonte et al., 2020; Stollhans, 2020). Additionally, the element of suspense and excitement maintains learners' high levels of engagement and ensures that they are inspired to study and appreciate the differences of diverse cultures (Makri et al., 2021; Merchán Macías, 2017; Voloshynov et al., 2020). Thus, playing digital escape room games may offer a dynamic and efficient way to improve intercultural competency while teaching English.

In addition to all, digital escape room games may be a fascinating method for teaching intercultural competency to English language prospective teachers in Türkiye for a number of other reasons. First of all, Türkiye is a very diversified country (Dimici, 2023), which has a long history of fusing influences from the East and the West. Digital escape room games can aid aspiring English teachers in comprehending and appreciating the complex cultural fabric of Türkiye (Kaçar, 2023), allowing them to interact with pupils from various backgrounds more successfully. Second, because these games are so immersive, applicants can practice overcoming real-world intercultural difficulties they might run against in Turkish classrooms. Digital escape room games may also give applicants a variety of teaching techniques that can adapt to students from different socioeconomic and cultural backgrounds, which is important

because English language teachers in Türkiye frequently work with them. Overall, this strategy gives future teachers transferrable international skills that they can use in a variety of educational contexts around the world in addition to preparing them for the special cultural context of Turkey.

As the given information indicates, gamifying the process of teaching intercultural competence skills through digital escape room games may create an effective and innovative environment for English language teacher candidates in the context of Türkiye. However, it is difficult to find studies conducted to reveal this effectiveness of digital escape room games on the development of intercultural competence of pre-service EFL teachers. Conducting such research may also enlighten the researchers and teacher educators in using gamification in university level. Trying to fill this gap, this research was conducted to show the efficacy of digital escape room games in enhancing intercultural competence of pre-service EFL teachers in Türkiye.

1.3. Significance of the Study

Incorporating cultural factors and linguistic structures into education is extremely important for aspiring English language teachers. It might be difficult to learn this talent through traditional educational approaches, however. This study could provide insight into how escape room games can be used as a fun and effective method to improve the intercultural competence of future English language instructors. Escape room games, as a relatively new method, can help aspiring English Language Teaching (ELT) teachers improve their intercultural skills. As a result, this research may add to the expanding body of knowledge about cutting-edge teacher training techniques. Teacher candidates can use this newly gained tool in their upcoming lessons in this way.

It is possible to see some studies conducted to reveal the effectiveness of escape room games on the education of different fields, such as STEM (Lathwesen & Belova, 2021; Sánchez-Martín et al., 2020), engineering (Monnot et al., 2020), maths (Fuentes-Cabrera et al., 2020; Jiménez et al., 2020; Piñero Charlo, 2020; Stohlmann, 2023), programming (López-Pernas et al., 2019), science (Huang et al., 2020; Vergne et al., 2019), history (Bellés-Calvera & Martínez-Hernández, 2022), language skills (Bellés-Calvera & Martínez-Hernández, 2022; Schenker & Kraemer, 2022; Stollhans, 2020), digital electronics (Ross & Hall, 2021), physiology (Horn, 2023), chemistry (Ang et al., 2020; Avargil, 2022) and computer science (Borrego et al., 2017). Also, there are some other studies on the use of gamification and game-

based methods in ELT teacher training programs. Moreover, there exist some other researchers who conducted varied methods or techniques to improve students' intercultural competence, which include teaching techniques, instructional activities and combined multicultural programs that are based on culture (Zhang & Zhou, 2019). Wang (2020), for instance, tried to see the effectiveness of a content based EFL course on developing intercultural competence on his study. Another study which was hold by Akdere et al. (2021) aimed to examine the efficacy of virtual reality (VR) technology as a cutting-edge learning tool for fostering intercultural competence, covering intercultural understanding, mindsets, and values. Additionally, Hackett et al. (2023) added technology to their methodology and conducted research to reveal the level of efficacy of Collaborative Online International Learning (COIL) on intercultural competence development in higher education students. To develop the participants' intercultural competence, Eide et al. (2023), on the other hand, used literary texts by emphasizing the role of these texts both as a mirror, allowing for the reflection of students 'own life-worlds, as well as a window into the life-worlds of others.

The mentioned studies are closely related to this research topic. However, there seems a significant gap in research specifically examining the role of escape room games in enhancing intercultural competencies of preservice EFL (English as a foreign language) teachers (Gomez, 2020; Koelling & Russo, 2020; Plump & Meisel, 2020; Taraldsen et al., 2020; Veldkamp et al., 2020). This study seeks to close this research gap by assessing the efficacy of using digital escape room games to improve the intercultural abilities of pre-service EFL teachers. Because these immersive and experiential activities have the potential to improve the knowledge and abilities of future educators, it is important to examine if escape room games are effective at teaching intercultural competency to EFL teacher candidates. In addition, the integration of technology-based applications on the studies of pre-service teachers are thought to raise the possibility for these teacher candidates to use them in their future teachings. Therefore, this study could increase the possibility for these pre-service EFL teachers to use digital escape room games in their teachings. This study can also shed light on creative strategies that can enhance the quality of language education and foster intercultural understanding in a variety of classroom settings as part of ELT teacher preparation by examining the effect of escape room games on the development of intercultural competencies. Furthermore, the results of this study can offer invaluable insights for the design of future teacher education programs and professional development opportunities, seeking to incorporate more engaging and successful techniques for teaching educators intercultural competency. Overall, this research has the

potential to enrich the field of ELT by providing new and practical approaches to educating instructors for working in multilingual and multicultural settings.

1.4. The Aim of the Research and Research Questions

The aim of this study is to determine the efficacy of using escape room games to instruct intercultural competency to pre-service EFL teachers. The study also attempts to investigate how to employ digital escape room games to foster intercultural competence effectively. It focuses on how the application of digital escape room games, as it was used during the study, affected the intercultural competence of the participants. Last but not least, it makes an effort to investigate how pre-service EFL teachers perceive the advantages and disadvantages of using digital escape room games. Considering these objectives, this study seeks to provide answers to the following research questions in order to fulfil these aims:

1. How can digital escape room games affect the development of intercultural competency in pre-service EFL teachers?
 - a. Are there any significant differences in the intercultural competence of pre-service EFL teachers between the control group and the experimental group engaged in escape games?
 - b. Are there any significant differences in the sub-dimensions of intercultural competence among pre-service EFL teachers between the control group and the experimental group engaged in escape games?
2. How do pre-service EFL teachers perceive the instructional effectiveness of digital escape room games in enhancing their intercultural competence?
3. What are the perceived advantages and disadvantages of utilizing digital escape games for improving intercultural competence among pre-service EFL teachers?
4. What impact do digital escape room games have on the willingness of pre-service EFL teachers to incorporate them into their future teachings to foster intercultural competence?

CHAPTER II

2. THEORETICAL FRAMEWORK

In this part of the study, conceptual framework of this research will be discussed in detail. The sub-categories of this part include gamification, escape room games, intercultural competence, experiential learning theory and some previously conducted related studies.

2.1. Gamification

Gamification is described as the application of game mechanics like competition, prizes, and quantifying user behaviour to non-game domains, such as work and education (Hamari et al., 2014; Khaldi et al., 2023, Kumar et al., 2013; Luo, 2021; Woodcock & Johnson, 2017). In other words, gamification is the process of redesigning work processes to make them more pleasant and fun rather than converting mundane tasks into games (Wood & Reiners, 2015). The technological, economic, cultural, and social advances that make reality more game-like, either on purpose or as a result of emergent change, are all referred to as "gamification" (Hamari et al., 2023). Since people are naturally drawn to play, games have long been a part of human civilization (Kumar et al., 2013) and gamification, or the application of game-related aspects to contexts outside of games, has attracted a lot of interest (Basten, 2017) as playful activities are viewed as crucial elements of culture and society (Fuchs et al., 2014).

Gamification, as a term emerged in the digital media sector (Fuchs et al., 2014), is a recent technology where clients, students and users are motivated to complete daily chores with the help of rewards and other incentives (Prince, 2013; Woodcock & Johnson, 2017). Gamification appears to be gaining traction in a number of areas, particularly business, management of organizations, training for employees, health, social policy, and education (Caponetto et al., 2014; Wood & Reiners, 2015). It tries to improve technology usage by incorporating video game techniques into non-gaming or work-related contexts (Marache-Francisco & Brangier, 2013; Wood & Reiners, 2015). In other words, it aims to make technology more enticing by encouraging users to participate in desired behaviours and outlining the road to mastery (Kumar et al., 2013).

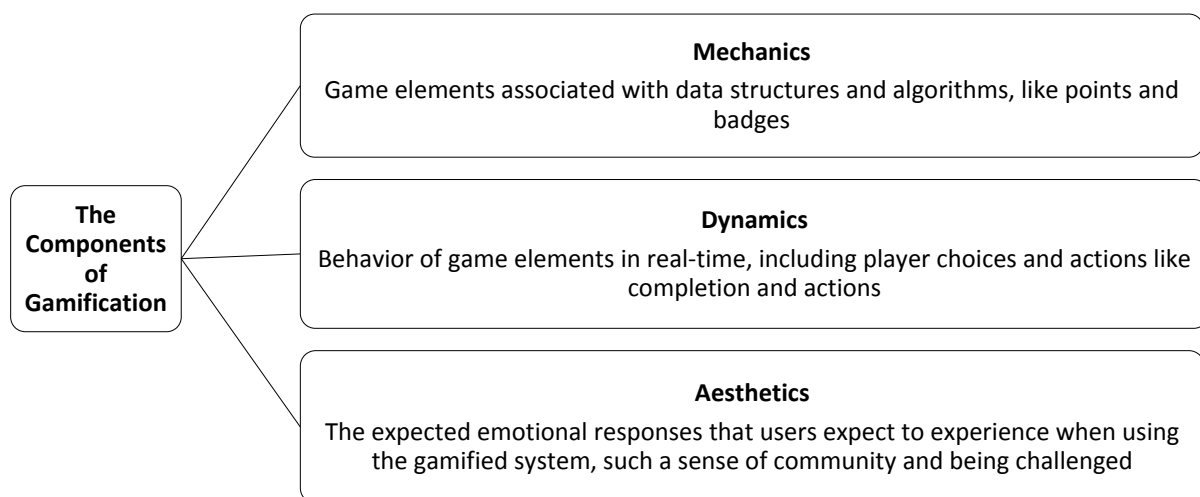
Gamification is used for many reasons and in a range of circumstances. It serves as a motivator (Caponetto et al., 2014; Wood & Reiners, 2015) by attracting individuals at any age (Kapp, 2014). It raises enjoyment and involvement by altering how specific tasks and

procedures are carried out (Caponetto et al., 2014; Wood & Reiners, 2015). It promotes the players' problem-solving abilities to tackle real-world social and political concerns in addition to those found in digital games (Fuchs et al., 2014). Moreover, gamification can also be used to infuse tasks and procedures with enjoyment, play, and enthusiasm (Wood & Reiners, 2015).

2.1.1. The Components of Gamification

In order to benefit from the gamification most effectively, one should consider some necessary points. Like all other techniques, gamification can be used most effectively if these points are well-designing. For example, according to Hunicke et al. (2004), at the designing step, these three components that are given in the Figure 1 should be decided carefully before applying the game elements to ensure that the intended actions and game characteristics are aligned:

Figure 1. The Components of Gamification (adapted from Hunicke et al. 2004)



Hunicke et al. (2004) explain that gamification comprises three key components, which are mechanics, dynamics, and aesthetics, as seen in Figure 1. The term "mechanics" describes the aspects of a game that involve data representation and algorithms, such as points and badges. Dynamics refers to the runtime behaviour of mechanics like completion and choices, which include player decisions and actions. When a player interacts with a gamified system, aesthetics refers to the desirable emotional responses they hope to feel, such as a sense of community and being challenged.

Focusing on the importance of these components, Augustin et al. (2016) refer to these mechanics and dynamics as M&Ds (Mechanics and Dynamics) and define the main clusters of

M&Ds. These clusters consisted of five basic concepts. These are “system design”, “challenges”, “rewards”, “social influences”, and “user specifics” (Augustin et al., 2016, p.4). System design is one of the M&Ds cluster outlining the design and development requirements for gamified applications that aim at encouraging users like feedback methods. Challenges are the clusters which make an effort to inspire people by posing difficulties. All M&Ds that aid in the creation or completion of challenges like the establishment of specified goals are also allocated to this cluster. Rewards are intended to inspire players by giving them awards like badges or point systems for successfully completing particular acts. Social influences aim to leverage social forces and motivations like benevolence, competition, obtaining rank or high ratings to inspire players. User specifics are the clusters which encourage users by having a direct impact on their personality, for instance, by enhancing self-expression.

Wood and Reiners (2015), on the other hand, explain the components of gamification in detail as given in the Figure 2.

Figure 2. Main Components of Gamification (adapted from Wood & Reiners, 2015)

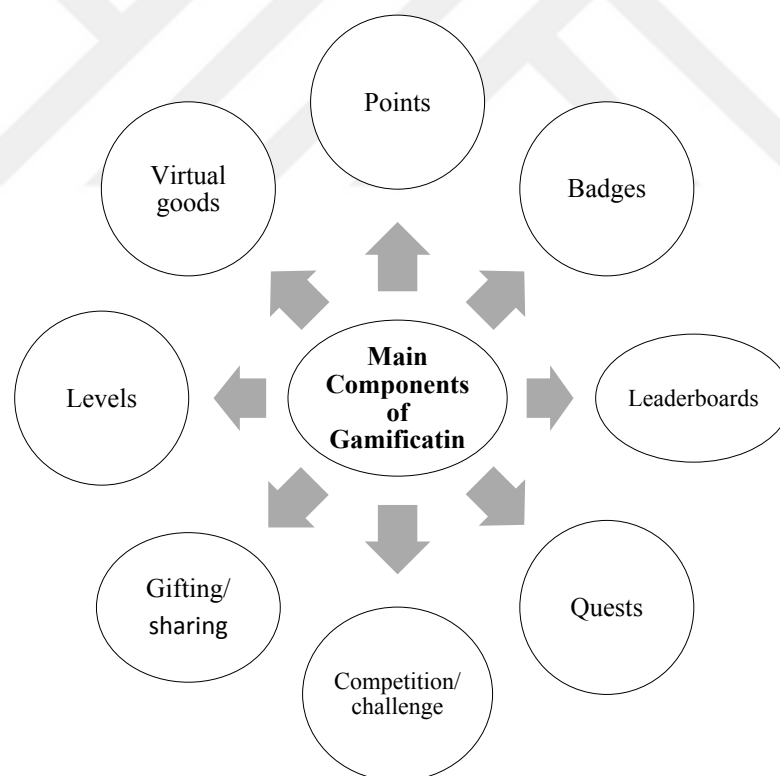
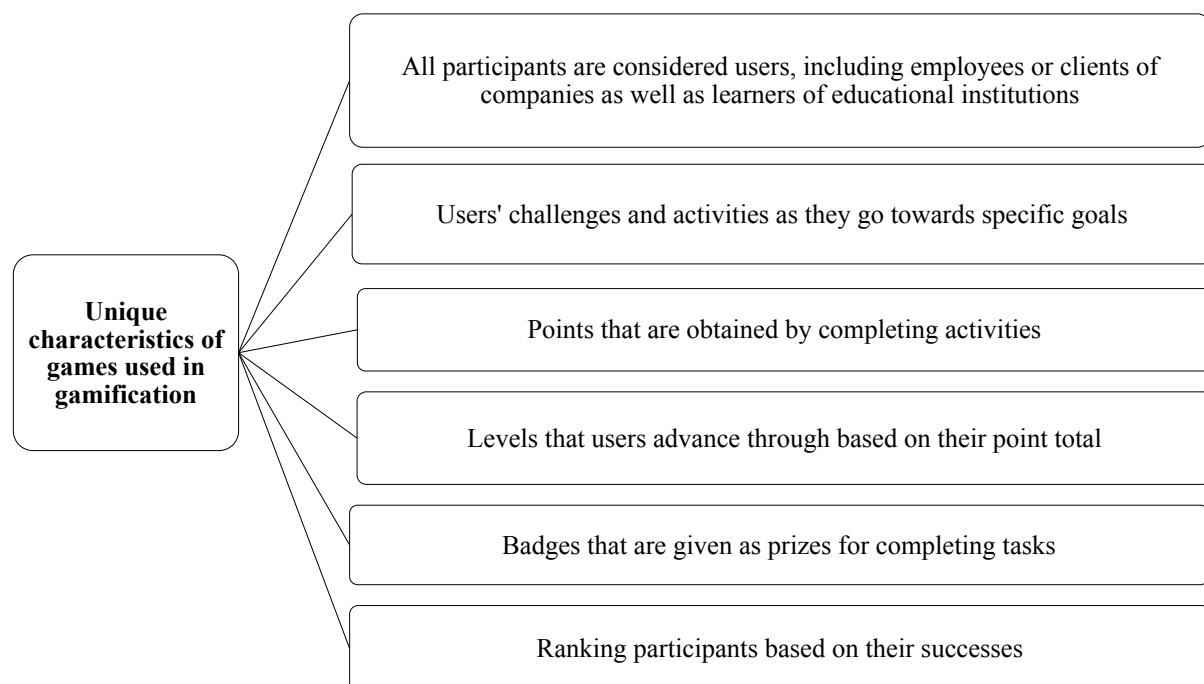


Figure 2 summarizes that the primary features of gamification, as reported by Wood and Reiners (2015), are a range of elements that together improve the gaming experience. Users are given a concrete feeling of their accomplishments through the usage of points, which are used to assess and quantify success. Badges are essential for motivating users to follow their

individual goals by serving as a symbol of achievement and success. Leaderboards encourage fair rivalry among participants by showing user development and relative success. Guests involve users in difficult journeys toward certain goals, assuring preciseness and clarity in their jobs. Figure 2 also highlights the significance of user competition and challenges, the worth of virtual goods as advantages and individuality-enhancing assets, the act of giving and sharing resources to foster fellowship and generosity, and the existence of gradually increasing levels of difficulty to sustain user engagement without overpowering users. These numerous elements work together to create the vibrant and dynamic world of gamification.

Similarly, Kiryakova et al. (2014) list the unique characteristics of games that are integrated in gamification as given in the Figure 3.

Figure 3. Unique Characteristics of Games Integrated in Gamification (adapted from Kiryakova et al., 2014)



As seen in Figure 3, Kiryakova et al. (2014) emphasize the unique qualities of games that are easily incorporated into gamification, highlighting how all users—whether they are customers, employees, or students in the setting of businesses or educational institutions—become active players. These people take part in a variety of chores and challenges aimed at advancing them toward predetermined goals. As users complete these tasks correctly, points are collected and accumulated, creating a visible indicator of their advancement. The accumulation of points allows users to move through several levels, resulting in a dynamic and

interesting experience. Additionally, badges operate as material prizes for doing particular tasks, encouraging participants to work toward ongoing development. Kiryakova et al. (2014) also mention the availability of user rankings, which spotlight and honor people according to their accomplishments and give the gamified experience a competitive edge. Together, these distinctive qualities help to make gamification immersive and inspiring.

2.1.2. Gamification and Game-Based Learning (GBL)

Examining their various traits and goals within the context of education and training is crucial to comprehend the differences between gamification and game-based learning, each of which uses different learning facilitation techniques to meet specific educational requirements and objectives. As Caponetto et al. (2014) emphasize, both "gamification" and "game-based learning" are unique ideas in education. While the latter integrates game-like techniques into educational activities around the world, the former primarily entails the use of games for instructional objectives. These two techniques of teaching are nonetheless distinct even though they can work well together (Caponetto et al., 2014).

Gamification, which involves incorporating game elements that are typically seen in video games into educational situations to enhance the learning process (Çeker & Özdamlı, 2017; Wood & Reiners, 2015), is used to improve learning by targeting mindsets and actions including teamwork, creativity, and self-directed study across a range of educational levels and topic areas (Caponetto et al., 2014). It involves applying game design ideas to create game-like experiences in non-game environments, with a focus on adding components like points, badges, and levels to boost pupil curiosity, motivation, and engagement (Çeker & Özdamlı, 2017). In other words, gamification is the process of enhancing education and instructional activities such that they are more pleasant and participatory. It aims to foster internal motivation and a feeling of duty to achieve goals by encouraging participants to derive the rules for humorously reaching significant educational goals (Wood & Reiners, 2015).

On the contrary, game-based learning involves playing actual games to teach subjects either in their whole or in modules, with learning taking place as you play (Çeker & Özdamlı, 2017). In game-based learning, learners participate in stand-alone tasks that are created to resemble games, complete with a start and end and a "win state," in order to learn concepts and abilities. This method, which emphasizes resource allocation, decision-making, and trade-offs, is frequently employed in formal education. In contrast, gamification uses a limited set of game principles and presents varied activities with game components like scores, obstacles, and

awards rather than an entire game (Kapp, 2014).

While game-based learning employs games as the main teaching tool, gamification uses game features to motivate pupils. Game-based learning concentrates on presenting instructional information within a game framework, however, gamification can encompass tools like badges, achievements, and leaderboards to increase classroom participation (Çeker & Özdamlı, 2017). Gamification is often presented on digital devices in the form of brief, self-paced segments that let learners engage with the subject matter at their convenience. It is frequently used to reinforce knowledge or processes over time, with a particular emphasis on issues like safety protocols and enrolment (Kapp, 2014).

2.1.3. Gamification in Education

Gamification is a relevant and successful method in a variety of industries, particularly business, worker efficiency, and education, where it acts as a useful teaching and motivational tool (Arnold, 2014). In line with the growing interest in the educational benefits of gamification, this new trend involves the deployment of gamification strategies to enhance instructional techniques in both academic and work-related environments (Caponetto et al., 2014). In educational context, gamification refers to the incorporation of game design concepts and mechanics into learning environments (Banfield & Wilkerson, 2014). It entails utilizing game components like points, badges, leaderboards, and quests to engage and inspire pupils to learn (Karatekin, 2017). Due to its capacity to engage and encourage students, gamification in education has attracted a lot of interest and widespread acceptance within academia (Çeker & Özdamlı, 2017; Kapp, 2014).

The increasing popularity of gamification in education can be attributed to the similarity between gaming and education. As Kiryakova et al. (2014) describe, both gaming and education entail establishing objectives and surmounting obstacles to attain desired results. This translates into achieving learning objectives in the classroom through interesting activities and subject matter. As it affects following reactions and defines the achievement of goals, tracking progress is essential in both gameplay and education. Another reason for this growing popularity may be the desire of educators to have fun with games and game elements and include them into the way they teach (Çeker & Özdamlı, 2017). As a result of their upbringing in the digital era, today's students, who are often referred to as "digital natives", have distinct educational needs and greater demands for education, which presents educators with a challenge. To effectively engage and motivate these kids, gamification is emerging as a viable

instructional method among educators (Kiryakova et al., 2014). This creative strategy is anticipated to keep developing, giving teachers more efficient ways to involve more students in a variety of instructional scenarios (Arnold, 2014).

According to empirical research proving the effectiveness of gamification in boosting the educational experience, integrating games into educational methods has demonstrated that it significantly improves the outcomes of education in many ways. First of all, the engaging, pleasurable and immersive nature of gamification in education can improve the learning process (Luo, 2021; Plump & Meisel, 2020; Qiao et al., 2023). Additionally, it can boost knowledge and retention, inspire cooperation and teamwork, and encourage student engagement and motivation (Costa et al., 2020). In the field of education, game integration, especially in online courses, presents a chance to move from inactive learning to engaged, involving attendance, enhancing students by providing opportunities for critical thinking across various disciplines and real-world applications (Arnold, 2014). It can have a substantial impact on students' dedication and inspiration behaviour, and motivation while not being a direct assessment of knowledge and competence (Kiryakova et al., 2014). When using the right gamification tools and techniques, students can gain from increased involvement and activity when working on challenging assignments (Çeker & Özdamlı, 2017).

Since gamification enables students to try out various strategies and get quick feedback on their performance, it can be very useful when teaching complicated concepts. Furthermore, gamification can aid pupils in acquiring crucial 21st-century skills like analytical thinking, problem-solving, and digital literacy. By enhancing the learning process and making it more interesting, interactive, and successful, gamification in education can enhance student engagement, achievement, and outcomes (Cruaud, 2018; Luo, 2021; Rachels & Rockinson-Szapkiw, 2017). Beyond conventional leisure activities, gamification is acknowledged as a potent tool for boosting commitment, focus, and engagement (Arnold, 2014). Moreover, the introduction of gamification offers educators a viable strategy to attract students who are digital natives and promote a more engaged and inspired learning environment in the constantly changing educational landscape (Kiryakova et al., 2014). It is also poised to play a big role in boosting the overall efficacy of the learning process as blended learning methods, that incorporate diverse learning methodologies, which has become more popular in education (Çeker & Özdamlı, 2017).

The importance of careful and expert design in gamification should be taken into consideration before using game elements in educational contexts. Regarding this topic, Çeker and Özdamlı (2017) express that thorough development and design expertise are required in

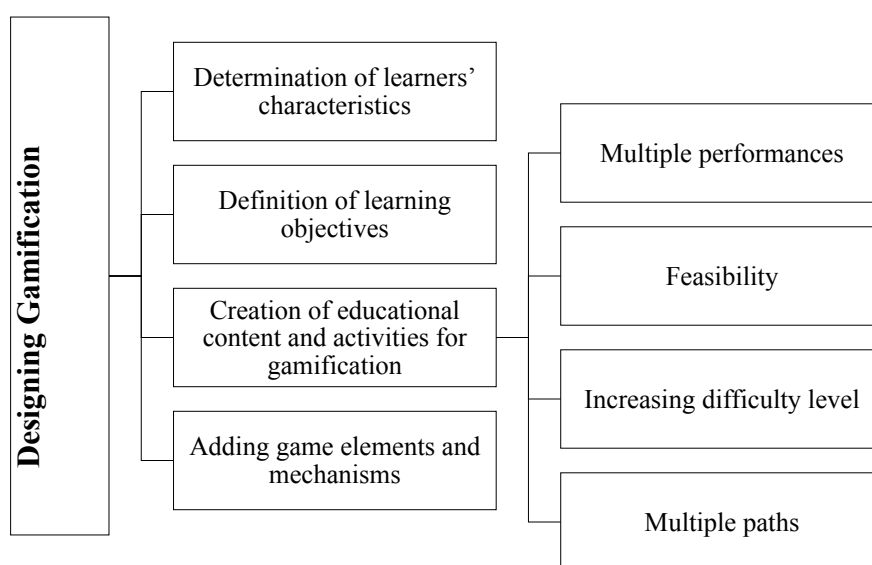
addition to the incorporation of features like badges, rewards, and grading systems. A scientific approach is necessary to make well-informed judgments on the when, where, and how of gamification in education, including a careful examination of the results and potential changes for improved educational outcomes. Kiryakova et al. (2014) also emphasize the priority of replacing a higher priority on the growth of interpersonal skills including teamwork and accountability for learning to happen. Therefore, it is essential to carefully design and implement instructional games in a reasoned manner.

2.1.3.1. Implementing Gamification in Education

Digital learning platforms, simulations, and educational games are just a few of the various ways that gamification in education can be implemented. When it is properly designed, developed, and implemented, gamification can give learning delivery an advantage. The effort shouldn't be centred simply on leaderboards, badges, and points. Gamification activities must be organized as a crucial component of a bigger plan by learning leaders who must also grasp desired learning outcomes (Kapp, 2014).

By pointing to the essence of careful analysis of the current environment and available software resources for the development of an effective strategy to implement gamification in digital environments, Kiryakova et al. (2014) describe the key actions to be taken into consideration while designing gamification as given in Figure 4.

Figure 4. Key Actions of Designing an Effective Gamification in Education (adapted from Kiryakova et al. 2014)



As visualized in the Figure 4, Kiryakova et al. (2014) claim that introducing gamification in education requires a careful analysis of the present environment and available software tools. One of the essential steps in this strategy is to identify the characteristics of the learners, which entails creating student profiles to evaluate the feasibility of novel tools and methods in light of the students' bias for social engagement and competitive learning. The authors also stress the need to have distinct and well-defined learning objectives because they govern the educational activities and material as well as the mechanics that should be used in the games. The instructional activities and information should be dynamic, captivating, and full of multimedia components. In order to assist the development of a variety of skills, these activities should be practicable, enable various performances, rise in complexity, and provide alternative routes. For attaining predefined learning objectives and fostering both individual progress and social engagement within a learning community, incorporating game components and processes, like points, levels, and prizes, is crucial.

To have an effective use of gamification in education, Marache-Francisco and Brangier (2013) explain the process of gamification as given in Figure 5.

Figure 5. An Effective Gamification Process (adapted from Marache-Francisco & Brangier, 2013)

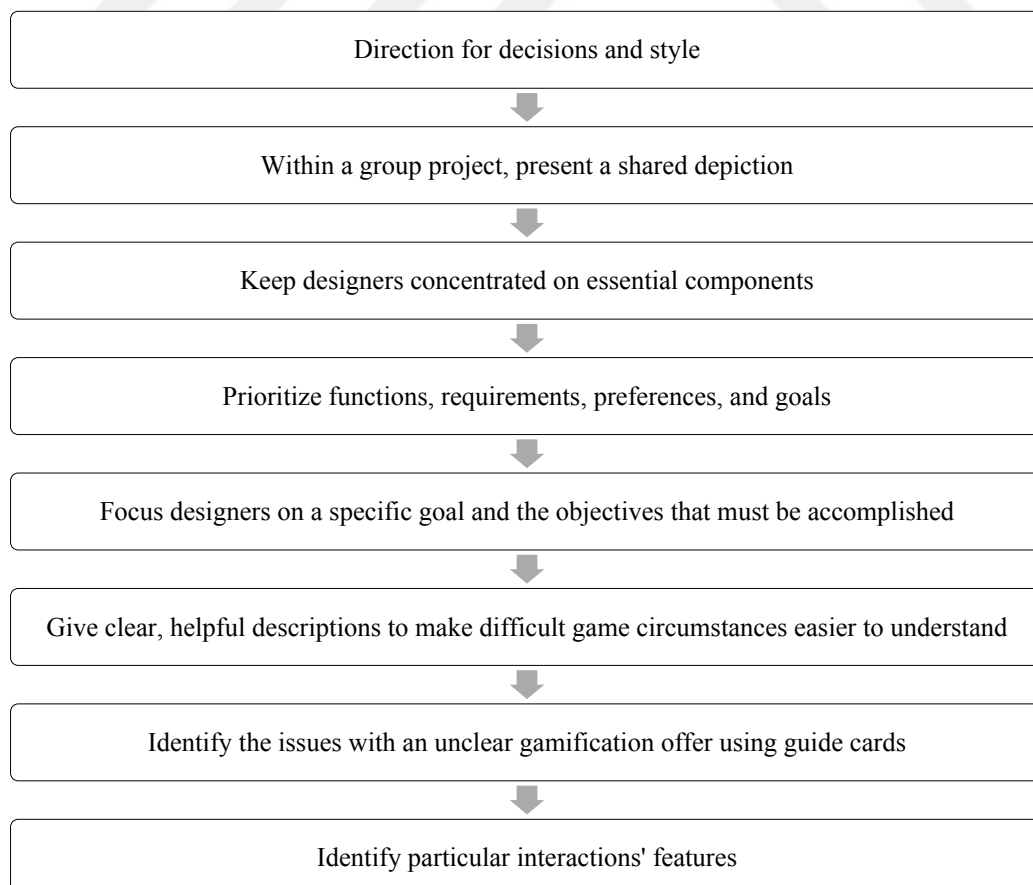


Figure 5 shows the value of a successful gamification process, arguing that it can act as a structure for design and decision-making. It offers a shared representation inside collaborative projects, guaranteeing that all stakeholders agree. This method establishes clear priority for functions, needs, wants, and goals while keeping designers firmly focused on crucial elements. It gives the direction and goals to be achieved a single-minded focus. Through clear and useful descriptions, it also makes complex gaming settings easier to understand and improve comprehension. It helps with problem-solving by identifying problems associated with unclear gamification suggestions by using guidance cards. Additionally, this procedure expertly draws attention to particular aspects of interactions, ensuring an in-depth approach to gamification conception and execution.

Depending on their literature review, which demonstrates that the majority of models use a similar process but differ significantly in the specifics, Morschheuser et al. (2017) describe the process of gamification by creating seven phases of the activities used in gamification approaches in the previous studies as presented in the Figure 6.

Figure 6. The Process of Gamification (adapted from Morschheuser et al., 2017)



As Figure 6 illustrates, Morschheuser et al. (2017) claim that the gamification process consists of seven distinct steps that are ordered in order of progression. The first stage, referred to as "Project preparation" includes all the pre-project tasks necessary to lay a strong basis for gamification implementation. The "Analysis" phase is the next, where tasks are focused on locating the crucial information on users, procedures, and the project itself. During the third step, referred to as "Ideation" participants brainstorm and come up with original ideas for gamification designs. The "Design" phase then entails creating the gamification strategy and creating prototypes to actualize the notion. The "Implementation" stage that follows concentrates on putting the gamification strategy into action. The gamification strategy is evaluated critically and put to the test in the sixth phase, "Evaluation" with the goal of improving its efficacy. Last but not least, the "Monitoring" step entails ongoing control over the gamification strategy even after it has been made public, ensuring that it continues to be in line with the planned aims and objectives.

2.1.4. Gamification in ELT

By utilizing the gamification principles, ELT teachers can change conventional language learning techniques into engaging, immersive activities that catch students' interest, encourage active involvement and enthusiasm, and ultimately result in a deeper level of language ability (Saud et al., 2020; Sezgin & Sezgin, 2019; Veljković Michos, 2017). Gamification in ELT promotes student motivation and participation, resulting in a lively and engaging learning environment. Increased interaction among students, teachers, and course materials can help language learners retain and use their language abilities more effectively. The impact of gamification lies beyond simple enjoyment; it contains the key to releasing language learners' full potential and altering how we approach learning the English language. Additionally, the integration of gamified components into ELT provides a compelling approach to revitalize language learning and boost its efficacy to unprecedented heights in the age of technology, where memory spans are shorter, and interaction is crucial. For this reason, in order to give their pupils a more engaging and participatory learning environment, ELT teachers can incorporate gamification features like quests, leaderboards, and badges (Karatekin, 2017). Furthermore, gamification can promote student cooperation and teamwork while boosting comprehension and retention rates (Demirbilek et al., 2022).

Gamification can be utilized in language classes in many different ways, such as to practice the ability to speak and listen, introduce new vocabulary or reinforce grammar

principles and also for assessment (Karatekin, 2017; Sezgin & Sezgin, 2019; Veljković Michos, 2017). Teachers can promote a happier and more successful language learning environment and help students become more proficient in English by including game-like aspects into ELT programs. Making language learning more approachable and appealing to a larger range of students is one of the key benefits of gamification in language classes (Cruaud, 2018). Teachers can create a more interactive and exciting learning environment that is more suited to the requirements and preferences of 21st-century students by introducing gaming components (Saud et al., 2020). Additionally, gamification can give students instant feedback on their performance, enabling them to spot their weak points and more efficiently work on their language abilities (Sezgin & Sezgin, 2019). Moreover, gamification enables customised learning paths that are tailored to the needs and interests of each student. It is essential to ensure that the gamification elements are carefully planned and synchronized with the learning objectives in order to ensure that they enhance rather than diminish the learning experience (Karatekin, 2017).

2.2. Escape Room Games

Escape rooms (ERs) are real-world team-based games where players must overcome obstacles in order to do a task within a set amount of time (Nicholson, 2018; Veldkamp et al., 2020). In other words, in escape rooms, which are interactive games, players must solve puzzles and find clues to get out of a locked room in a predetermined length of time (Lathwesen & Belova, 2021; Wiemker et al., 2015). As the name of the game implies, its ultimate objective is to escape from a room (Merchán Macías, 2017). These games often have a plot or theme, and to advance through the game, players must cooperate to uncover hidden objects, crack codes, solve puzzles and riddles (Nicholson, 2015; Plump & Meisel, 2020; Schenker & Kraemer, 2022). In such kind of games, players must successfully complete a number of obstacles in order to succeed (Wiemker et al., 2015). To complete the cooperative tasks in these games, participants must leave their screens behind and interact with one another in person (Nicholson, 2018). Players must typically unlock several 4-digit encrypted locks in order to leave the room. To do it, gamers must crack several riddles to learn the code. They have a set amount of time to complete the assignment, typically within a single hour (Vörös & Sárközi, 2017). Like conventional tabletop games, escape rooms allow players to interact with one another because they are interactive real-world experiences (Nicholson, 2018).

Many different definitions of escape room games have some common points that

describe the basic features of these games. For example, while Nicholson (2015) defines them as live-action team-based games, Merchán Macías (2017) calls them as cooperative adventure games. Stollhans (2020) emphasizes its popularity in the form of recreation, and Merchán Macías (2017) underlines its inspiration by a number of genres of games and experiences. If we have a close look at the escape room games, we see that a venue that offers escape rooms frequently has many themed rooms running simultaneously with various teams of gamers and gamemasters. Collaboration, clear communication, and work allocation are necessary for success in escape rooms, in addition to skills like analytical thinking, extreme care to detail, and innovative problem-solving. These activities are all-inclusive, suitable for a range of ages, and devoid of bias against any particular gender. In fact, the most successful teams are ones that include members with a wide range of life experiences, abilities, backgrounds, and education (Nicholson, 2015).

Being also named “Live Escape”, “Puzzle Room”, “Live Action Game” and “Adventure Room/Games” (Wiemker et al., 2015), several organizations from different fields including cooperation training and education have expressed interest in the idea of actual escape rooms thanks to their ability to incorporate adventure and excitement in groups of people working together (Merchán Macías, 2017). An escape is not even required in some genre variations. It might only be concerned with the learning process or the difficulty of solving challenges. However, the term "escape room" is widely used in various fields (Wiemker et al., 2015).

These games have grown in popularity recently (Buchner et al., 2022; Makri et al., 2021; Merchán Macías, 2017; Nicholson, 2018; Veldkamp et al., 2020; Vörös & Sárközi, 2017; Wiemker et al., 2015) and the game's premise has been continuously improved upon over the past ten years, as seen by an increase in puzzle variety, a tighter integration of the plot, conceptually and technically more complicated chamber design, and, more recently, an increase in digitalization. Because of their growing popularity and the requirements of many application sectors, alternative formats have been created in addition to physical escape rooms. These include escape books, breakout boxes or home kits, augmented reality or virtual reality escape rooms, and digital escape games (Lathwesen & Belova, 2021; Nicholson, 2018).

2.2.1. The Process of Escape Room Games

As interactive team-based games, escape room games have common steps like many other games. Nicholson (2015) explains the process of escape room games in a very detailed

way. As he suggests, the players' escape room experience begins when they meet their gamemaster, who gives them the game's rules and provides them a briefing on what will happen over the next hour. If there is a piece of background information, the participants might watch a movie or be given a chapter to read. The door is shut, secured, and the countdown clock starts. Players scout out the space cautiously at first, but increasingly aggressively as time goes on, searching everywhere for clues. Usually, there are numbers, symbols, or pictures on the walls, but there is no obvious explanation for their purpose.

Teams locate and classify similar things while shouting out their findings via this collaborative process. Whether they have instructions or not depends on the specific puzzles they run into. When a puzzle is successfully solved, other things happen, such a code being revealed, another puzzle being unlocked, a door opening to a new room, or perhaps even a deceptive clue. Participants keep working together and sharing details about their findings, and if they run into problems, they can ask for tips to help them move further. The problems get more difficult as time goes on, frequently leading to a final challenge that gives the team the key to the exit and allows them to escape. The gamemaster leads the players through a briefing process after the game, answering queries and explaining any unclear details. The team then quickly prepares the space for the following batch of participants (Nicholson, 2015).

Lathwesen and Belova (2021) summarize the mechanism of escape room games. They state that players in escape room games often attempt to leave one or more rooms while also performing missions, such as solving crimes or discovering lost treasures as part of a narrative. Before the game starts, the game master goes over the rules, safety precautions, and objectives with the players. If there is a backstory, it is revealed, frequently by reading a diary passage. Players have a set amount of time after the door locks and the timer begins to use discovered items and clues to complete puzzles. The game master keeps watch and offers help as necessary. When the timer expires or the team reaches the goal, the game is over.

2.2.2. History of Escape Room Games

Escape room games first appeared in Japan in 2007 and have spread rapidly, mainly since 2012 (Makri et al., 2021; Vidergor, 2021; Vörös & Sárközi, 2017). The first recorded activity labelled as room escaping was “the Real Escape Game” (REG) launched in 2007 in Japan (Merchán Macías, 2017). It was played by teams of 5–6 players in a single room. The company, SCRAP, has continued to operate escape rooms over the years but has also established a reputation for organizing Real Escape Game Events, which are played by

hundreds or thousands of people in a vast area. From that point on, escape rooms have gained a significant reputation, rapidly increasing in popularity and expanding swiftly, first in Asia, then in Europe (with Hungary serving as a prominent centre), and finally in Australia, Canada, and the United States in years 2012 and 2013 (Merchán Macías, 2017; Nicholson, 2015).

Originally, they were a mash-up of several activities with shared components, including role-playing games, interactive theatre, haunted houses, treasure hunts, adventure games, and video games (Nicholson, 2015; Vidergor, 2021). The initial wave of escape rooms concentrated on challenging logic problems, but today's escape rooms have developed into fully immersive settings with outstanding props and effects (Wiemker et al., 2015). The mission's original goal was to "escape" from a room. Today's assignments can involve everything from cracking a safe to solving a murder case. However, the name "escape room" is the one that refers to these games the most (Veldkamp et al., 2020).

2.2.3. Basic Elements of Escape Room Games

To give players immersive and interesting experiences, escape rooms use a number of key components. These essential components include puzzles, the puzzle path, hints, debriefing, game organization, team size, playtime, themes, and the concept of flow.

2.2.3.1. Puzzles

The complex and complicated puzzles that fascinate and engage players are the core element of escape room games (Merchán Macías, 2017). In escape rooms, in fact, every activity is referred to as a puzzle, and they all follow the same formula: "a challenge, a solution, and a reward" (Wiemker et al., 2015). The typical puzzles involve deciphering letters, locating information in texts, reading texts in mirrors, disclosing invisible messages with UV light, looking for objects in strange places, putting components together, or opening magnetic locks (Vörös & Sárközi, 2017) however these numerous patterns and designs are dependent upon the creator (Wiemker et al., 2015).

To keep the players interested, puzzles used in escape room games must work together harmoniously while posing a wide range of problems. The puzzle layouts are made to foster full involvement from everyone on the team because escape rooms depend on collaboration. These puzzles should also effortlessly fit into the overall theme of the space and be solved using only the information found there (Wiemker et al., 2015).

Three main categories of puzzles are used in escape room games, which are mental,

physical, and meta puzzles. The most common kind of puzzles, mental puzzles test players' cognitive thinking and logical reasoning. These puzzles require for the gathering, analyzing, and connecting of diverse cues, necessitating the use of reasoning abilities including deductive reasoning, association, and decoding. In summary, mental challenges encourage players to approach problems thoughtfully and logically, emphasizing their importance to the escape room adventure. Physical puzzles, on the other hand, include manipulating real things in the room and are frequently combined with mental ones. These puzzles can involve moving things or walking through a laser grid or crossing a maze. While they take up time and provide players a mental vacation, they also present difficulties that draw in players who enjoy physical contact over mental gymnastics (Lathwesen & Belova, 2021; Veldkamp et al., 2020; Wiemker et al., 2015). The answer of these puzzles is frequently concealed within the puzzle itself. The reward could be brand-new objects, clues, or new puzzle pieces, which produce the final puzzle, meta puzzle. Meta puzzles serve as the ultimate challenge within an escape room, often acting as the final puzzle. They require players to derive the solution from the results of previous puzzles. For instance, players might collect jigsaw puzzle pieces throughout the room, and only when all other puzzles are solved do they have the complete set of pieces. Assembling this jigsaw puzzle serves as the meta puzzle, guiding the way to escape (Veldkamp et al., 2020; Wiemker et al., 2015).

2.2.3.2. Puzzle Path

The puzzles can be arranged in different ways. The participants can work on several problems at once in an open format. The previous puzzles must all be answered before the final one. The puzzles are presented in a sequential order; resolving one unlocks the next, and so on until the meta-puzzle may be resolved. The path-based structure is made up of several paths that lead to puzzles. Combining several of the fundamental forms results in a multifaceted, hybrid structure. Players need to use their search, inquiry, association, memorizing, logic, literacy, math, and recognition of pattern skills to solve the puzzles (Nicholson, 2015; Veldkamp et al., 2020; Wiemker et al., 2015).

According to Wiemker et al. (2015), there are three main methods for creating a puzzle path for participants: the linear path, in which puzzles must be solved in a specific order and may cause bottlenecks; the open path, where puzzles can be solved in any order and are better suited for large groups; and the multi-linear path, which combines connecting linear paths or various ending points and may be made instantly accessible or unlocked over the course of the

game.

2.2.3.3. Hints

For players to have a fun and engaging experience, hints are essential in escape room games. They help out when necessary, boosting overall happiness and keeping players from getting frustrated, which ultimately helps the game succeed and keep players engaged. Veldkamp et al. (2020) describe the rules on using hints in escape room games. Teams are only given a certain amount, additional hints cost time, the first one is free, and players may only get hints by passing time-consuming knowledge tests. Hints can be given verbally or through pre-made hint cards; the latter method, which is based on educational theories, aims to preserve player participation and feelings of ownership. While the clear and quick feedback provided by locks in escape rooms is appealing to educators, others point out the difficulty of losing direct instructor feedback because of time limits that prohibit stopping for conversations during the game.

In escape rooms, hints are frequently given to assist trapped gamers and can be passed in a variety of ways, including verbally, in person, or even by giving along hints on paper using a pen. The way that hints are given out differs amongst escape room establishments, which affects how challenging the room is. Common hint processes include giving a predetermined number of hints upon demand, granting unlimited hints, awarding hints earned by means of solving problems, selling extra hints, offering hints as a time or rating penalty, supplying guided activities with hints available upon request, offering guided games without hints upon request, and, rarely, introducing no hints with the option of honouring players who accomplish the room without hints, frequently with prizes or the rankings recognition (Wiemker et al., 2015).

2.2.3.4. Debriefing

In escape room games, debriefing is essential because it gives players a chance to think back on their experiences, share methods, and gain insight from their mistakes. This improves the activity's educational and team-building components. It ensures a more fulfilling and memorable escape room experience by enabling players to obtain insightful knowledge on their problem-solving abilities and teamwork. As Veldkamp et al. (2020) reflect in their study, once the game ends, the gamemaster's role is to debrief. In recreational ERs, a debriefing is frequently included (Nicholson, 2015). The length of debriefing may vary from five minutes

to two hours, which illustrates how significant debriefing is.

2.2.3.5. Play Time

Escape room games often have a set time restriction, which gives players a sense of urgency. Pointing to the importance of conducting playtests to choose a suitable and realistic playtime for efficient ER design, Veldkamp et al. (2020) emphasize that the average playtime is between 20 and 120 minutes, with the majority of games running around 60 minutes. To complete the riddles within the allocated time, all players must actively participate, which promotes social dependency. The goal in educational environments is to guarantee that the greatest number of students meet their objectives within the allotted time while reducing frustration, rates of dropout, or trial-and-error behaviour.

2.2.3.6. Game Organisation

In general, organisation of the games in escape room games has three main options. The first one includes situations in which two teams play escape room games in different rooms at the same time while the second one focuses on investigating a scenario in which two teams work separately in the same space. Then, gamemasters introduce the game to whole participants, encouraging team competition while on occasion mandating cooperation during particular phases (Veldkamp et al., 2020).

2.2.3.7. Size of the Teams

According to the review study of Veldkamp et al. (2020), the standard team size in school escape rooms is 3 to 6, partly to prevent "free-riding" and increase student interest and participation. It was discovered that four people kept everyone actively involved in the group process. Larger teams need more time to complete the game and might have trouble escaping on time because of poorer organization and communication. Teams of up to four or five players are advised for escape rooms that use individual grading (Veldkamp et al., 2020).

2.2.3.8. Themes

To produce an appealing and realistic experience, keeping a constant theme is crucial in almost all escape rooms, as stated by Wiemker et al. (2015). This requires making sure that all of the puzzles, chores, and items are directly related to the story and deliver a unified message. Players won't connect with the puzzles as successfully if they lack context and do not

flow naturally with the topic. To sustain immersion and player involvement, escape rooms must have a unifying theme that ties together all game components, including puzzles and props. A lack of context and disconnected puzzles might detract from the overall experience.

2.2.3.9. Flow

In order for players to fully engage and concentrate on the job at hand while playing a game, a state of mind known as "flow" must be achieved. Integrating awareness and activity, losing the sense of time and self-awareness and experiencing intrinsic benefits are all essential components of flow. By keeping a balanced difficulty level and striving to engage players in the game, designers can ensure that players are neither overly frustrated nor overly bored (Wiemker et al., 2015).

2.2.4. Advantages of Escape Room Games

Due to the numerous advantages, they offer players, escape room games have become extremely popular. First of all, it is a beneficial way to encourage teamwork, problem-solving, and critical thinking abilities (Fotaris & Mastoras, 2019; Hermanns et al., 2017; Montoro, 2020; Nicholson, 2015; Veldkamp et al., 2020; Wiemker et. Al., 2015). In order to solve the puzzles and leave the room within the allocated time, participants must properly communicate with one another and cooperate together so that they can improve their communication, cooperation and teamwork skills (Chou et al., 2020; Ross et al., 2021; Veldkamp et al., 2020; Vidergor, 2021). It is also a great way to increase student motivation (Bartlett & Anderson, 2019; Chou et al., 2020; Fuentes-Cabrera et al., 2020; Karageorgiou et al., 2019; Macías-Guillén et al., 2021; Moura & Santos, 2019; Schenker, & Kraemer, 2022; Taraldsen et al., 2020; Veldkamp et al., 2020; Vidergor, 2021; Voloshynov et al., 2020).

These games can be employed in a range of situations, including educational institutions or business team-building activities since they inspire individuals to think imaginatively and improve their problem-solving skills (Fotaris & Mastoras, 2019) because of the fact that escape room players need to spend time on the challenges utilizing various knowledge manners to solve the puzzles and finally win (Wiemker et. Al., 2015). As a kind of beneficial educational activity (Hermanns et al., 2017), escape room games are an effective way for improving transferable skills, such as teamwork, management of time, abilities related to communication, technological knowledge, investigative and analytical abilities (Stollhans, 2020), as well. Hence, defined as an essential component of the next generation of gaming

(Wiemker et al., 2015), escape room games foster the 21st century skills (Taraldsen et al., 2020).

Escape room games incorporate time-limited real-world situations from the outside or actual workplaces into the learning environment (Veldkamp et al., 2020). In this way, they offer an engaging activity for learners of different backgrounds (Hermanns et al., 2017; Veldkamp et al., 2020) by raising a sense of playfulness (Vidergor, 2021). They also challenge participants to think creatively, in an unconventional way, and through a new angle (Wiemker et al., 2015). In addition to fostering students' safe exploration of various problem-solving approaches and allowing them to infuse their creativity into the learning process, the usage of escape room games sparks a genuine interest through the creation of appealing and comprehensible results, all the while encouraging students to consider their potential impact on the world, as well (Clarke et al., 2017).

Owing to the fact that they are relevant and problem-centred activities (Veldkamp et al., 2020), escape room games are convenient in gamifying different concepts (Lathwesen & Belova, 2021). It is an advancement in gaming as a whole and an inevitable development in the culture about game design (Wiemker et al., 2015) because by raising the intrinsic motivation of the players (Vidergor, 2021), escape room games allow them to refresh and put their knowledge to use (Hermanns et al., 2017; Veldkamp et al., 2020).

In addition to all aforementioned benefits, the growing interest in escape room games (Taraldsen et al., 2020) have other causes, as well. It helps finding topics in a contextualised way (Stollhans, 2020) to make the learning more meaningful. As well as promoting learning (Veldkamp et al., 2020), escape room games provide favourable circumstances like applying course materials and conjure up real-world scenarios that are closely relevant to line of work (Taraldsen et al., 2020). Thanks to their enjoying and funny characteristics, escape room game players enjoy the competitive and yet collaborative nature of the games (Stollhans, 2020; Taraldsen et al., 2020). Last but not the least, as Nicholson (2018) emphasizes, escape room games have the potential to surpass the advantages of conventional classroom activities by directly involving players in the narrative, producing memorable learning experiences, fostering intrinsic motivation to acquire knowledge, and encouraging learners to link what they learn to their lives.

2.2.5. Escape Room Games in Education

In addition to their huge appeal in the entertainment business, escape room games are becoming more and more popular as classroom environments in primary, secondary, higher,

and vocational education (Veldkamp et al., 2020) and encouraging educators all around the world to include them into their teaching methods (Veldkamp et al., 2020) since they use technology and offer virtual reality situations, as well (Makri et al., 2021). Enthused teachers are at the forefront of the bottom-up adoption of educational escape room games (Veldkamp et al., 2020) because escape games encourage the development of useful abilities, the idea of real-life escape rooms is currently becoming more and more popular and has even spread to other fields like cooperative training and education (Merchán Macías, 2017).

The idea of innovation has drawn a lot of attention in the world of education in recent years. The educational innovation is always changing, but most scholars concur that in order to create learning environments that are effective, teachers must actively seek out and encourage innovative practices in the classroom. This highlights how crucial it is for educators to be open to investigating and trying out novel methods of instruction and learning (Merchán Macías, 2017). At the period of early adaptation of these kind of games into educational environments, such educators created the rooms by drawing inspiration from escape room video games and/or their personal visits to recreational escape rooms. The escape rooms in education are a distinct and growing phenomenon that is happening bottom-up (Veldkamp et al., 2020).

The escape room games that are used educational purposes are defined as educational escape room games. The definition of an educational escape room is a creative learning environment that can be created in any educational setting, including primary or secondary schools, youth centers, colleges, and other learning-related establishments. It incorporates the educational component and the students' interests while utilizing the fundamental elements of an escape game (Merchán Macías, 2017).

Educational escape room games offer a distinctive, collaborative, and comprehensive learning experience that differs from traditional classroom activities, making them a fun and interesting method to practice skills or acquire new ideas (Fotaris & Mastoras, 2019; Manzano-León et al., 2021; Plump & Meisel, 2020). According to Healy (2019), educational escape rooms are different from other games in that they provide players with time-limited problem-solving activities that need them to use a variety of riddles and obstacles as well as suspense and rewards. Their main goals are the development of skills, the reinforcement of previously learned material, and a joyful learning of new subjects. Unlike traditional homework assignments, educational escape room puzzles don't give pupils a specific task to complete; instead, they let them figure it out from the material they are given (Lathwesen, & Belova, 2021). Students describe educational escape room games as entertaining, challenging,

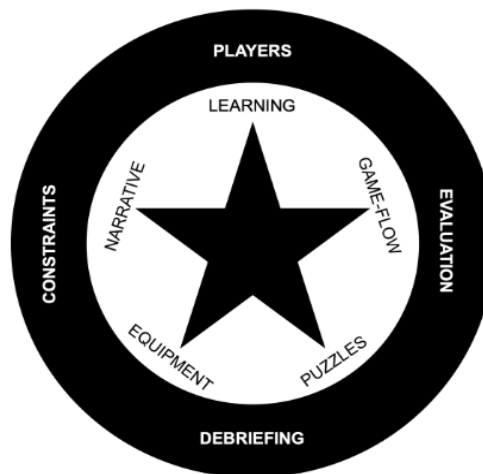
motivating, informative and worthwhile learning exercise because they see it as an effective break from regular classroom learning (Eukel et al., 2017; Schenker & Kraemer, 2022).

Teachers are essential to the learning process in educational escape room games, particularly in cooperative learning environments. They are in charge of the opening, playing, and finishing stages of the game. Using a variety of resources, such as emails, movies, audio cassettes, or information papers, teachers acquaint players with the game's rules, the values of teamwork, and sometimes, the goals of learning, during the introduction. Teachers and staff play various roles during gameplay, such as monitoring, leading, offering clues, and debriefing, depending on the study. These responsibilities include maintaining team progress balance, safety, and regulation compliance. Interestingly, teachers are compared to game masters in their guiding role; they intervene only when needed to promote teamwork, provide instructions, check responses, and guarantee that every team has an equal and fair learning experience (Veldkamp et al., 2020).

2.2.5.1. Educational Escape Room Game Design

The design of puzzles in educational escape rooms plays a crucial role in producing captivating and productive learning experiences that let learners utilize their analytical and problem-solving abilities (Merchán Macías 2017). Fotaris and Mastoras (2019) explain the features of educational escape room games. As stated by them, educational escape room games can be played in physical, digital, or mixed forms. They can be implemented in classrooms or labs within average of 30-60 min. and in general, teams in these games consist of 5-10 students. Veldkamp et al. (2020) underline the importance of debriefing in educational escape rooms as it is used as a way of feedback after the game. Morrell and Eukel (2020), on the other hand, propose a cycle design approach that consists of developing, piloting, evaluating, redesigning, re-evaluating, and repeating in order to support deep learning and favorable student impressions during the learning and evaluation process. In addition, Botturi and Babazadeh (2020) created the star model for educational escape room games which is given in Figure 7.

Figure 7. The Star Model (Botturi and Babazadeh, 2020, p.45)



2.2.5.2. The Benefits of Integrating Escape Room Games in Education

Escape room games used in learning environments have many benefits for both the educators and learners. As Merchán Macías (2017) suggests, new studies demonstrate the link between creative learning settings and learners' enhanced skill development. These cutting-edge environments can enhance students' academic, social, and personal success while also promoting their general development. A fictional story that frames the knowledge and abilities needed is one of the many benefits of educational escape room games. It gives students a feeling of control and agency over their education (Veldkamp et al., 2020). Additionally, these rooms foster social interaction, self-awareness, and a respect of other viewpoints (Lathwesen, & Belova, 2021). According to Wiemker et al. (2015), escape rooms aid the development of critical thinking, creative problem solving, and teamwork abilities. An escape room is suitable for the classroom because it may be themed with nearly any subject. Using escape rooms can be advantageous for teachers of all skill levels, from elementary school to graduate school.

Because they combine formal and informal learning, educational escape rooms provide a flexible learning environment that can be tailored to a range of subject areas and academic levels (Lathwesen & Belova, 2021). The development of critical thinking, creativity, and teamwork are all greatly aided by escape rooms. These interesting exercises can be modified for use at many educational levels, ranging from elementary school to graduate school. Even bettering their grasp of the design process and delivering instructive messages, students can create their own escape room challenges (Wiemker et al., 2015). In addition, these games offer clear feedback, incentives, and ever-more complex elements like challenges or levels, all of which help to promote learning. Furthermore, these games encourage collaboration and

interactive learning, where students cooperate to achieve a shared learning goal, developing cooperation and shared educational experiences (Veldkamp et al., 2020)

Educational escape rooms have a lot of promise in schools, supporting multidisciplinary education and accommodating different learning styles, even with the necessary adjustments. They boost student motivation and engagement by supporting student-centred learning and autonomous problem-solving. They also foster communication, teamwork, creativity, and critical thinking (Lathwesen & Belova, 2021). Vörös and Sárközi (2017) emphasize that the benefits of educational escape room games include presenting authentic learning activities, igniting students' curiosity, getting them into a "flow" state, and involving them in active learning. Students, especially those who previously had trouble with comparable topics, strongly value this type of activity and consider it beneficial for learning new subjects. They boost learners' practical learning style and learning utilizing this method, concentrating on material pertinent to solving puzzles.

Teachers see greater student participation and intrinsic desire for learning when they implement educational escape rooms in the classroom as a means of fostering active learning settings. ERs are helpful for reaching learning objectives, enhancing communication, and fostering teamwork, according to both instructors and students. These engaging games encourage active learning and offer a fun substitute for traditional teaching strategies. Students may collaborate and solve problems with the help of tools like Breakout EDU, which helps them develop important skills for today's job market. Escape games are a promising addition to a variety of learning environments, even though their application in education is still developing. Escape games are gamified and were first created for science centres. They encourage critical thinking, gaming mechanics, and aesthetics in learners. Their potential as cutting-edge teaching tools can be expanded by tailoring them for use in educational settings (Nicholson, 2018; Veldkamp et al., 2020; Vörös & Sárközi, 2017).

2.2.5.3. Implementing Educational Escape Room Games

Escape rooms have been used extensively in education for a variety of goals, including student recruitment, acquainting students with university services, improving earthquake readiness, and even acting as research settings for studies on searching for information behaviour, learning processes, student collaboration, and leadership abilities (Veldkamp et al., 2020). In the concept of education, escape room games can be implemented on-site, transforming the classroom into an escape room where students are given a story to solve in

groups within a set amount of time. Students are put to the test since they have to find codes and open boxes in order to resolve the case. Another difficult scenario arises when an online escape room game is made available to students, requiring them to work together to figure out a case that pertains to a subject they have learned in lesson (Vidergor, 2021).

Higher education institutions, like universities, can employ the already-existing escape rooms to teach more advanced and sophisticated material. There are a variety of pedagogic approaches that may be used to debrief the experience, such as experiential learning and making a direct connection between the puzzle mechanics and the subject matter being taught. Wiemker et al., 2015 These subject-specific educational escape rooms are designed to develop both general and domain-specific knowledge and abilities. They usually entail collaborative, hands-on activities that emphasize problem-solving in a condensed amount of time and experience learning. A number of escape room features make them especially appealing to educators, who utilize them to create real-life educational opportunities that promote meaningful activities and allow for failure in the classroom (Veldkamp et al., 2020).

Instructors, designers, and participants can engage in Socratic dialogues and instructional conversations during the post-game debrief. It is also feasible to incorporate escape room activities into museum spaces, provided that the right grade level is taken into account, that the educational and gaming aspects are balanced, and that the puzzle difficulty and instructional material may be changed to better meet the needs of the target audience (Wiemker et al., 2015).

2.2.5.4. The Challenges of Educational Escape Room Games

The creation of an educational escape room presents a number of difficulties, including limited time, money, and space in the school. Teachers should take into account the design phase, testing the game and puzzles, and the post-game debriefing phase while planning to use educational escape room games in their lessons (Botturi & Babazadeh, 2020; Vörös, & Sárközi, 2017). The limited number of participants that can play in a single session of an on-site activity, the need to multiply materials to fit the number of players, the need for at least one guide who is knowledgeable about the game to monitor the game, and the careful integration of the learning context into the various puzzles are additional difficulties or constraints that Guigon et al. (2018) mention. In addition, when integrating these rooms in schools, it is necessary to make modifications to group size and space conditions while keeping cost-effectiveness and spatial reversible change in mind (Lathwesen & Belova, 2021), which may mean extra work

and effort for teachers.

2.2.6. Escape Room Games in ELT

As they offer an immersive and dynamic learning experience that can support language acquisition and skill development, escape room games might be a useful tool for English language teaching (ELT) (Costa, 2020; Schenker & Kraemer, 2022). Escape room games can be used by ELT instructors to teach a variety of language skills, including vocabulary, grammar, reading comprehension, and critical thinking in a less stressful environment. The teamwork, communication, and problem-solving abilities that are necessary for successful language learning can also be fostered by playing these games with pupils (Schenker & Kraemer, 2022).

As they give students the chance to practice their language abilities in a real-world setting, escape room games can be particularly useful in teaching English as a foreign language. Students can get a chance to practice language abilities related to requesting meals, requesting for instructions, or making hotel reservations, for instance, by playing an escape room game with a travel or tourism theme. Additionally, escape room games can be customized to fit a range of language competency stages, from basic to advanced, and may be employed to instruct in a number of language skills and subjects (Costa, 2020; Schenker & Kraemer, 2022). Escape room games can, in general, be an entertaining and interesting tool to support language instruction and development of skills and learner autonomy in ELT classrooms (Costa, 2020; Fotaris & Mastoras, 2019; Schenker & Kraemer, 2022).

2.3. Intercultural Competence

As the main part of intercultural competence, competencies are defined as knowledge, skills, abilities, and behaviours that support the performance of individuals and organizations (Tudoran & Deaconu, 2023). In this vein, according to the definition of UNESCO, intercultural competence refers to “having adequate relevant knowledge about particular cultures, as well as general knowledge about the sorts of issues arising when members of different cultures interact, holding receptive attitudes that encourage establishing and maintaining contact with diverse others, as well as having the skills required to draw upon both knowledge and attitudes when interacting with others from different cultures” (Unesco, 2013, p.16).

It is possible to find other definitions of intercultural competence, which is sometimes used synonymously with other terms such as multicultural competence, intercultural

communication competence, cross-cultural skills, global citizenship, and cultural intelligence (Zhang & Zhou, 2019), in the related literature. For example, Intercultural competence, according to Barrett (2011), is a collection of values, attitudes, abilities, and knowledge required to respect and understand individuals from diverse cultural backgrounds and be able to interact effectively with them. Holubnycha et al. (2021), on the other hand, describe intercultural competence as the capacity to interact with people from diverse cultural backgrounds. Its distinguishing traits include self-awareness, motivation, and the ability to tolerate uncertainty. Another definition of intercultural competence is “the skills, attitudes, and behaviours needed to improve interactions across difference, whether within a society (differences due to age, gender, religion, socio-economic status, political affiliation, ethnicity, and so on) or across borders (Deardoff, 2020, p.5).

Li (2020) shortens the definition and describes intercultural competence as the capacity to reason and behave correctly in cross-cultural contexts. According to Fantini (2007), a complex of abilities needed to perform effectively and appropriately when interacting with others who are linguistically and culturally different from oneself form intercultural competence. A multifaceted, varied construct that is required for appropriate and productive interaction with individuals from different cultural backgrounds is another definition of intercultural competence (Schauer, 2020). Matei (2022) sees intercultural competency, in its various forms, as a fundamental skill for students participating in an international mobility internship.

Pham and Pham (2022) emphasize that the ability to negotiate cross-cultural circumstances successfully and appropriately is widely accepted to constitute intercultural competence, despite the variety of definitions. Tudoran and Deaconu (2023) describe intercultural competence as a broad term that encompasses a range of interrelated abilities and mindsets that allow people to communicate and work together with others from other cultural backgrounds. For them, it includes information, abilities, and attitudes with a focus on tolerance, compassion, flexibility, and appreciation for cultural diversity.

Emphasizing the importance of intercultural competence on effective cross-cultural communication and an open, compassionate worldview, Eğinli (2011) defines it as an ability to sympathize with people from different cultures, comprehend their behaviour without passing judgment, steer clear of ethnocentrism, and accept people for who they are, differences and similarities included. Eriksen (2018) focuses on the capacity to build mutual understanding and engage with people from diverse social identities as multifaceted, multiethnic human beings while defining intercultural competence. Understanding and appreciating those who are

different from oneself, exhibiting tolerance, forming positive relationships, and being aware of one's own culture and many identities are all examples of intercultural competency. Pham and Pham (2022) reflect that intercultural competence places a strong emphasis on accepting cultural diversity as long as they don't conflict with democracy, basic human rights, or the rule of law. Remarkably, intercultural competence encourages understanding about other cultures and comprehending their various customs and beliefs rather than requiring people to renounce their cultural ties. Shadiev et al. (2023), on the other hand, describes it as an individual's ability to think, act, and communicate appropriately across cultural boundaries when working with persons from different cultural backgrounds.

As can be understood from the definitions above, it is difficult to define intercultural competence in a way that is widely accepted because it overlaps with many associated ideas in different fields and there is a lack of specificity in the definition of it (Deardorff, 2006; Tudoran & Deaconu, 2023). However, those various definitions may also create evidence that intercultural competence is an important topic that is being discussed more and more in our modern and globalized world (Genkova & Schreiber, 2023; Matei, 2022).

Concluding all these definitions, it is possible to characterize and frame interculturally competent people. According to a synthesis of various views on intercultural competence, interculturally competent people are those who are able to adjust their native cultural practices to fit various intercultural situations and new intercultural settings. To accomplish successful cross-cultural conversations, persons who are interculturally competent typically employ their knowledge and abilities in real-world communication situations (Chen, 2023). Empathy, respect, curiosity about different cultures, adaptability, tolerance, flexibility, responsibility, social skills, and a good self-image are among the character attributes one should cultivate to become interculturally competent. Being open-minded and respectful are fundamental qualities, and one should be knowledgeable about both one's own culture and the social groupings and cultures of other nations. Proficiency in skills such as interpretation and rapport-building, identifying similarities and distinctions, and cultural awareness, as well as the willingness to modify attitudes and actions, are all necessary (Eriksen, 2018). People who possess intercultural competency are flexible—that is, they can modify their viewpoint and conduct to suit the situation, the environment, and the time they find themselves in; they comprehend the contexts in which other people live; they can interact and think clearly with people whose language, thought processes, and manner of thinking diverge from their own; and they are ready and able to collaborate with others to find solutions to shared issues (Cushner & Chang, 2015). Being open-minded and respectful are fundamental qualities, and one should

be knowledgeable about both one's own culture and the social groupings and cultures of other nations. Proficiency in skills such as interpretation and rapport-building, identifying similarities and distinctions, and cultural awareness, as well as the willingness to modify attitudes and actions, are all necessary (Eriksen, 2018).

Because of the fact that intercultural competence is a multifaceted notion that includes characteristics, dispositions, aptitudes, history, drive, and education and permits productive communication with individuals from various cultural backgrounds (Schelfhout, & Derous, 2023), people with intercultural competence can flourish in a variety of cultural settings and possess cultural sensitivity, resistance to stereotypes, open-mindedness, and the capacity to adjust behaviour for successful interactions with others from various backgrounds (Cushner & Chang, 2015).

Eriksen (2018) emphasizes three main features of interculturally competent people. These include effective, cognitive, and behavioural components. Positive self-perception, tolerance, and easy-going social interactions are all associated with affective elements. Self-awareness and cultural awareness are part of the cognitive component. The behavioural component encompasses social skills and adaptability. Empathy, respect, curiosity about different cultures, adaptability, tolerance, flexibility, responsibility, social skills, and a good self-image are among the character attributes one should cultivate to become interculturally competent.

Further, personality is important in this concept, and cultural competencies have a significant impact on self-efficacy beliefs about intercultural competence of people who are interculturally competent (Schelfhout & Derous, 2023). It entails learning about oneself and other people's cultures, gaining knowledge specific to one's own culture, and comprehending the dynamics of cross-cultural interactions. In the affective realm, it entails cultivating emotional tolerance for cross-cultural relationships as well as curiosity, openness, and a sincere interest in others. It encompasses relationship-building, empathy, communication skills, and cross-cultural learning in the behavioural domain. People with intercultural competence are better able to function in a variety of cultural environments (Cushner & Chang, 2015).

2.3.1. Main Components of Intercultural Competence

Genkova and Schreiber (2023) describe intercultural competence as a culture-generic ability required for interactions between persons from diverse cultural groups. They also emphasize that it is frequently linked to intercultural intelligence, which is essential for

effective cross-cultural communication and adaptation. Hence, intercultural intelligence is an important component of intercultural competence (Li, 2020). Barrett (2011) indicates that exposure to varied contexts, intercultural education, and experiences can all improve intercultural competence. Additionally, a person's level of intercultural competence can be influenced by variables such as gender, age, ethnicity, and personality characteristics. Moreover, greater intercultural competency may also be linked to foreign language skills.

According to Zhang and Zhou (2019), intercultural sensitivity (the ability to recognize and value cultural differences), intercultural awareness (knowing the cultural influences on behaviour), and intercultural adroitness (the ability to engage effectively across cultural boundaries) are the three main components of intercultural competency. By playing a crucial role in fostering international communication, advancing cultural literacy, and comprehending cultures in all their creative diversity, intercultural competencies encompass a range of abilities, such as cultural knowledge, interpretive and relational skills, exploration and interaction skills, open-minded and curious attitudes, and critical cultural awareness (Unesco, 2013).

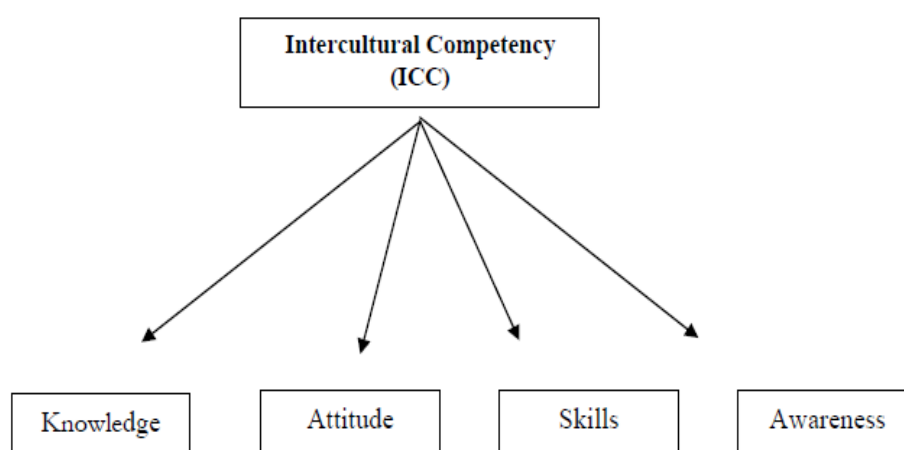
There are three approaches to achieve intercultural competence: social, interpersonal, and basic competence. Effectively adjusting to a new environment is a fundamental competency. Comprehending the feelings of others, adopting social roles, exhibiting cognitive complexity, and regulating relationships are all components of intercultural competence (Eğimli, 2011). Another important aspect of intercultural skills is intercultural communicative competence, which enables social actors, particularly in cross-cultural encounters, to produce meaningful words and behaviours that are comprehended in context by other participants (Unesco, 2013). Based on personal experience, Holubnycha et al. (2021) surmise that proficiency in a second language, fundamental cultural understanding, and specific soft skills may constitute the cornerstones of intercultural competence. A number of facilitators are taken into consideration in order to improve intercultural competence. These are exposure to authentic cross-cultural communication; comparison and evaluation of various behaviours and values; elucidation of variations in practices, values, and beliefs; contemplation on the development of cultural awareness; and collaborative participation in intercultural interactions (Pham & Pham, 2022). Furthermore, avoiding stereotypes, which form predetermined notions in mind, makes developing intercultural competency extremely difficult. Acknowledging the fact that one's viewpoint is not shared by everyone and obtaining firsthand experiences are vital in this context (Key, 2023).

Eriksen (2018) categorizes the three pillars of intercultural competency as knowledge,

attitudes, and behaviours. Fantini (2007) concludes from the definitions that intercultural competence implicitly covers the following elements: a variety of traits; three domains or areas (i.e., connection, interaction, and collaboration); four aspects (i.e., knowledge, attitude, skills, and awareness); proficiency in the host language; and developmental stages. Shadiev et al. (2023), on the other hand, stress that This competency depends on intercultural sensitivity and knowledge, both of which are essential for productive cross-cultural communication. Intercultural sensitivity is the capacity to acquire an emotional awareness and respect of distinctions between cultures, enabling appropriate and successful intercultural communication. Intercultural knowledge is the comprehension of cultural information gained through relationships with people from diverse backgrounds. Intercultural knowledge and intercultural sensitivity are two closely related concepts; learners get cultural knowledge first, then acquire the sensitivity to successfully respond to cultural differences. Chen (2023) reports that intercultural competence involves flexibility in the behavioural, emotional, and cognitive domains and its primary component includes abilities like adaptability and thinking critically. Holubnycha et al. (2021) suggest that improving cultural and linguistic competences is essential for the increase in intercultural competence.

All aforementioned elements are essential parts of intercultural competence. However, many scholars have identified four main components of intercultural competence (Barrett, 2011; Matei, 2022; Pham & Pham, 2022). Fantini (2007, p.18) illustrates these components as given in Figure 8.

Figure 8. Intercultural Competency



As can be concluded from Figure 8, Fantini (2007) reflects that intercultural competence includes knowledge, attitude, skills, and awareness. Some scholars, however,

replace awareness with behavior or actions (Barrett, 2011; Matei, 2022; Pham & Pham, 2022).

2.3.1.1. Knowledge

Knowledge, which includes a variety of essential elements, is one of the fundamental components of intercultural competence. The foundation is cultural consciousness, which promotes an appreciation of other cultural backgrounds. Effective cross-cultural communication is facilitated by communicative awareness, particularly regarding language and communication norms. Understanding and appreciating cultural uniqueness is facilitated by specific cultural knowledge, which includes beliefs, practices, and cultural artifacts. A more comprehensive framework for comprehending cross-cultural social and interpersonal interactions is provided by general cultural knowledge. Understanding the nuances of many cultures—their beliefs, customs, and products—and seeing how they influence people's worldviews and interpersonal interactions are all part of this knowledge. It also entails taking into account how knowledge is socially constructed and how it affects cross-cultural dynamics (Barrett, 2011; Pham & Pham, 2022).

2.3.1.2. Attitudes

Attitudes are a key component of intercultural competence and cover a number of important areas. This entails treating people of different cultural backgrounds with respect and encouraging a sincere curiosity about other societies. It also entails treating people from diverse backgrounds with respect and empathy and maintaining an inclusive and open mentality toward learning about their cultures. Furthermore, respect for cultural diversity and the capacity to set aside judgment are essential components of intercultural competence, as is the ability to adjust to ambiguity. According to Byram's theory of intercultural competence, these attitudes are crucial because they show a person's readiness to interact with people from different cultural backgrounds, communicate fairly and respectfully, and take into account many facets of their own culture (Barrett, 2011; Pham & Pham, 2022).

2.3.1.3. Skills

An essential component of intercultural competence is skills, and they include a broad variety of necessary talents for successful cross-cultural communication. These abilities, which involve using cultural knowledge in everyday interactions, can be separated into two categories: exploration and interaction skills. Skills related to interpretation and relation

include the capacity to listen and speak clearly in a variety of cultural settings, resolve cross-cultural conflicts, and learn about other cultures. In addition, they include interpretation skills like empathy, multiperspectivity, and critical assessment of cultural practices, opinions, and goods, including those from one's own culture. These abilities are essential for fostering cross-cultural understanding and closing cultural divides (Barrett, 2011; Pham & Pham, 2022).

2.3.1.4. Behaviors

Behaviors, which include a range of acts and conduct essential for successful cross-cultural encounters, are one of the core elements of intercultural competence. This means acting and speaking in a way that is suitable and productive while interacting with people from different cultures. The key to this is versatility to interaction and cultural practices, which enable people to modify their behavior to fit various expectations and settings. A mindset focused on taking action and prioritizing social action to further the common good—which includes minimizing bias, prejudice, and cultural conflicts—is another aspect of the behaviors. People actively contribute to the development of intercultural competence by actively looking for opportunities to interact and work together with people from different cultural backgrounds, accomplishing communication objectives, and facing beliefs and behaviors that violate human rights (Barrett, 2011; Pham & Pham, 2022).

2.3.2. The Importance of Intercultural Competence

Intercultural competence is more important than ever in our globally interconnected world where different cultures meet and interact. Recognizing and accepting the concepts of intercultural competence becomes not only a desirable skill, but also a necessary one as we move around the complex terrain of our multicultural societies. Nesterova et al. (2022) state that intercultural competency is essential for handling intercultural issues in today's environment of globalization and growing migration, especially in host communities. This proficiency is critical in fields like business, healthcare, and education where tolerance and knowledge of other cultures are vital. It is crucial for both individuals and society as a result of the acceleration of cultural change and the rise in cross-cultural contact brought about by globalization (Unesco, 2013).

One of the key terms playing an essential role in the importance of intercultural competence is globalisation, as mentioned by many scholars in their studies (Bektas-Cetinkaya, 2014; Deardorff, 2014; Eğinli, 2011; Genkova & Schreiber, 2023; Kravchenko, 2021; Liu et

al., 2023; Matei, 2022; Mehdaoui, 2023; Nesterova et al., 2022; Pham & Pham, 2022; Schauer, 2020; Unesco, 2013; Zhang & Zhou, 2019). As explained by Deardorff (2014), the emphasis on intercultural competency is motivated by the globalization motion, which is becoming more relevant at many educational institutions due to economic and societal causes. Recent advancements in politics, the environment, and globalization have all contributed to a rise in interest in intercultural competency (Schauer, 2020). Intercultural competence is crucial in today's interlinked and culturally varied world, including diversity management and cross-cultural management. (Çiftçi & Savaş, 2017; Tudoran & Deaconu, 2023). In a world that is becoming more and more globalized, where people are expected to interact with individuals from other cultural groups or nations that have been profoundly influenced by other values, customs, and viewpoints, intercultural competency has become increasingly crucial (Pham & Pham, 2022).

According to Eğinli (2011), gaining intercultural competence is essential for tackling global issues and encouraging cooperation between individuals from different backgrounds. It involves more than just learning new things. Because of the increased worldwide interactions in the 21st century, understanding diverse cultures is essential to becoming a global citizen. It is imperative to develop intercultural competency since it entails understanding and adjusting to the cultural expectations of the host culture. This competency is essential for people and businesses who operate globally since it includes emotional, cognitive, and rational skills that promote effective cross-cultural communication and collaboration.

The necessity for all members of the global community to develop their intercultural competencies grows as the world gets smaller and more linked (Unesco, 2013). Because of the issues we face on a worldwide scale and the increasing variety of our planet, it is especially pertinent to employability. The concepts of global citizenship, cultural intelligence, and global learning all refer to the abilities, dispositions, and knowledge required to engage with individuals from different origins in productive ways (Deardorff, 2014). Communicating with people from varied cultural backgrounds in an appropriate and effective manner is a must for successful intercultural teamwork. Moreover, students are expected to be prepared for global employment, and numerous students' study abroad, gaining daily exposure to the benefits and drawbacks of many cultures (Genkova & Schreiber, 2023; Zhang & Zhou, 2019). Likewise, Pham and Pham (2022) stress the essence of intercultural competence and state that this competence is a consequence of globalization and technology developments in the twenty-first century.

Unesco (2013) reports that cultural diversity is a priceless resource that makes it

necessary to have attitudes, actions, knowledge, skills, and talents in order to navigate a diverse and linked world. Intercultural competencies help prevent prejudices and essentialist viewpoints on culture, foster peace, and improve communication between individuals from different cultural backgrounds. Human rights, which encompass civil, political, economic, social, and cultural rights as well as values like universality and non-discrimination, are strongly tied to this growth. On the contrary, lack of intercultural competency, as stated by Eğinli (2011), can result in issues including linguistic hurdles, social marginalization, loneliness, strain in family ties, and difficulties adjusting to new positions at work. Increased stress, lowered self-esteem, difficulty concentrating, difficulty sleeping, and identity crises can all be caused by these problems.

Additionally, proficiency in intercultural competence is essential for fostering variety, overcoming divides, diffuse tensions, and establishing harmonious cohabitation. These competencies allow people and groups to interact with cultural "others" without becoming trapped or ghettoized and to find new and interesting perspectives (Unesco, 2013). Developing intercultural competency entails appreciating the appropriate communication codes for every culture, building meaningful connections, comprehending various communication idioms, and cultural adaptation. It makes it possible for messages to be sent and received efficiently based on appropriate cultural communication codes (Eğinli, 2011).

2.3.3. Intercultural Competence in Education

The necessity of intercultural competence has a place on many fields, including education (Dervin, 2010). As the rapport of Unesco (2013) indicates, schools have a vital role in fostering intercultural competencies, particularly for the younger cohort of global citizens who possess exceptional prospects for engaging in cross-cultural dialogues. Pham and Pham (2022) support that idea by stating that intercultural competence can be developed through education and experience.

Intercultural education is essential for those studying or working abroad, as well as businesses operating globally, to prevent these unfavorable results, enhance communication, and lessen cultural confusion (Eğinli, 2011). That's why a major focus of education today is assisting students in developing their intercultural competency. In today's culturally varied workplace, this entails acquiring the skills necessary for efficient cross-cultural communication, which employers highly value. A crucial component of both social and professional life, intercultural competence is now a necessary employability skill for creating

a successful, globally aware workforce that can work well in a variety of teams (Mehdaoui, 2023). Hence, the attitudes, skills, and knowledge that promote intercultural competence in the everyday practice of teaching and learning must be developed with urgency if future generations are to be prepared to participate in an ever more complicated and globalized society (Schauer, 2020).

Students who choose to study overseas must possess intercultural competency in today's globalized environment, where institutions are facilitating an increasing number of international exchanges (Matei, 2022). Informal, non-formal, and formal education are all viable avenues for developing intercultural competence (Pham & Pham, 2022). The conceptual elements of intercultural competence that have been examined highlight the significance of this competency and the need for university-level instruction in it. This ought to attract the attention of those involved in higher education in providing learners with comprehensive instruction in intercultural competence and giving it particular weight (Matei, 2022). Even if students have their own cultural preferences and connections, exposure to cultural variety in universities can provide them with enough intercultural competence to adapt to international contexts (Pham & Pham, 2022). Universities emphasize the growth of transdisciplinary skills as well as to professional capabilities, with the goal of preparing learners for long-term growth. Intercultural competency is particularly crucial in contexts like international mobility because it helps students get beyond cultural barriers, understand the culture of the place they are going, combat racism and prejudice, and foster productive communication (Matei, 2022).

Teaching intercultural competency entails guiding students through a self-directed process as they acquire intercultural competencies and a global attitude (Eriksen, 2018). It also involves promoting tolerance for different cultures, knowing one's own culture, and lifelong learning. The objective is to transfer knowledge for fruitful cross-cultural partnerships, particularly in the area of intercultural communication. Values, abilities, and information acquired from a variety of sources—including social interactions—are all included in learning (Unesco, 2013). Deardorff (2014) proposes that developing intercultural competence requires breaking down the complex and multidimensional learning aim into concrete, quantifiable learning objectives pertaining to knowledge, attitudes, and abilities. Second, it's critical to understand that developing intercultural competence is a continuous process that lasts a lifetime, and that complete competence is not the goal. Thirdly, while proficiency in a language is necessary, it is insufficient to indicate intercultural competency on its own. Fourth, it is important to purposefully incorporate intercultural competency into the curriculum and encourage it through hands-on learning opportunities like study abroad and volunteer work.

Finally, in order to effectively integrate intercultural competence into their courses and mentor students in its growth, faculty members from many disciplines need to have a deeper understanding of it. According to Zhang and Zhou (2019), in order to improve intercultural competence, four different forms of pedagogical interventions are necessary. These are integrated intercultural programs, classroom activities, teaching methodologies, and resources based on cultural differences.

2.3.4. Intercultural Competence in ELT

Intercultural competence is the ability to interact with individuals from diverse cultures and languages. Intercultural communication is the word for interactions between people from different countries who speak different languages and cultures (Mehdaoui, 2023). In today's world, intercultural competence—which is developed by including intercultural elements into language instruction—is essential, particularly for those working in fields that need cross-cultural communication, such as journalism, translation, consulting, and language teaching (Çiftçi & Savaş, 2017; Dervin, 2010; Hu & Hemchua, 2023). Foreign language instruction has changed to place an emphasis on intercultural communication in light of our globalized environment, which is marked by easy access to many cultures via travel and social media. This change is a reflection of the value placed on developing intercultural competency and understanding, which are critical 21st-century skills (Kravchenko, 2021).

Teachers of foreign languages are essential in this situation. They are in charge of directing the study of other languages and cultures, assisting students in assuming an unbiased viewpoint, and cultivating a grounded and realistic comprehension of the cultural group under study to prevent stereotypes (Key, 2023). Improving EFL teachers' academic literacy—which includes digital literacy, writing assessment literacy, and multicultural teaching competence—is essential in the current heterogeneous educational environment. This places a strong emphasis on integrating intercultural skills into the teaching of foreign languages. It requires educators to go beyond merely imparting facts and put more emphasis on fostering in their pupils the knowledge, attitudes, and vital understanding of the culture of the target language. Language teachers' new responsibility is to assist pupils in making cross-cultural comparisons of values, attitudes, and abilities (Hu & Hemchua, 2023). Teachers must assist pupils in understanding foreign cultures by facilitating intercultural mediation as part of this process. In order to accomplish this successfully, educators need to be aware of the stages involved in gaining intercultural competence, including recognizing stereotypes, acting in a nonjudgmental

manner, and engaging in successful cross-cultural communication (Key, 2023).

According to Liu et al. (2023), intercultural competence in language education refers to more than just language proficiency. It's crucial for interacting with people from different backgrounds and navigating cultural differences. Awareness cultural quirks is a requirement of it, and educators are essential in promoting this awareness. Fundamentally, IC is a pillar of language acquisition that promotes peaceful international relations. Bektas-Cetinkaya (2014) emphasizes that teaching language skills and efficient communication is a critical function for teachers, especially language teachers, who emphasize the value of intercultural training. International and national standards acknowledge this significance. Mehdaoui (2023) adds that international learning is prioritized in language classrooms due to the recognition of the importance of international competence for employability and global understanding. As (Eriksen, 2018) stresses, Teaching English entails more than just language acquisition; it also gets pupils ready for cross-cultural communication. It takes understanding different cultures and cultivating an open and accepting mindset to get along with, work with, and live with individuals from different backgrounds. To improve their students' intercultural competency, teachers should look into alternate methods of introducing different cultures to their students in the classroom, as sending them to English-speaking nations can be expensive and resource intensive.

Intercultural competency is as important as linguistic proficiency in foreign language instruction. It's about maintaining one's cultural identity while comprehending and adjusting to various cultures. Teachers have a responsibility to assist pupils in objective analysis and to help dismantle cultural structures. Developing intercultural awareness, accepting differences without passing judgment, and adapting to various situations are all components of intercultural competence (Key, 2023). By comprehending cultural notions and realizing how they impact communication, educators can cultivate intercultural competency. To encourage reflection and improve future English language instructors' critical cultural awareness, conversation workshops can include concepts such as culture, values, beliefs, conventions, and ethnocentrism. This method contributes to effective international English communications by assisting teachers in realizing how their attitudes, values, conventions, and stereotypes affect communication (Bektas-Cetinkaya, 2014).

2.4. Experiential Learning Theory

David Kolb, a psychologist, developed the experiential learning theory in 1984, which provides a theoretical framework for understanding how people gain knowledge, abilities, and attitudes through experience (Kolb, 1984). It was based on the principles set forth by pioneers of educational theory John Dewey, Kurt Lewin, and Jean Piaget and has been defined as an educational philosophy grounded on a theory of sociocultural interactions and experiences (Arseven, 2018; Banfield & Wilkerson, 2014; Bohon, et al., 2017; Feng et al., 2021; Kong, 2021; Moseley et al., 2020; Radović et al., 2021). The value of active participation, reflection, enhanced learning through time and very effective results in the learning process is emphasized by experiential learning theory (Banfield & Wilkerson, 2014; Heinrich & Green 2020). It implies that learning is most effective when people have the chance to put what they have learned into practice and when they have the time to think about and make sense of their experiences (Kohonen, 2007; Radović et al., 2021), and the most meaningful educational experiences needed the learner to become personally connected and invested, are the foundation of experiential learning theory (Wood et al, 2021). In short, the significance of experience and its function in the learning process are emphasized by experiential learning theory. According to this idea, learning occurs in an upward motion or circle (Sauder et al., 2022).

Experiential learning theory presents a dynamic, comprehensive model of development and learning from experience. It highlights how action/reflection and experience/abstraction interact during the learning cycle. With research demonstrating its cross-cultural relevance, experiential learning theory sees learning as a comprehensive process that works not solely in formal education but additionally in a variety of living circumstances, from people themselves to society at large (Passarelli & Kolb, 2011). Such a theory is unique in that it emphasizes the importance of experience in learning, setting it apart from behavioural theories that ignore subjective experience and cognitive theories that place more emphasis on cognition than emotions (Kolb et al., 2014b). According to the theory, a person's personality type, education, occupation, and culture are just a few of the variables that could affect their unique learning preferences (Kolb & Kolb, 2005). It combines social psychology, cognitive-developmental genetic epistemology, and pragmatic philosophy to offer a distinctive viewpoint on learning and development (Kolb et al., 2014b).

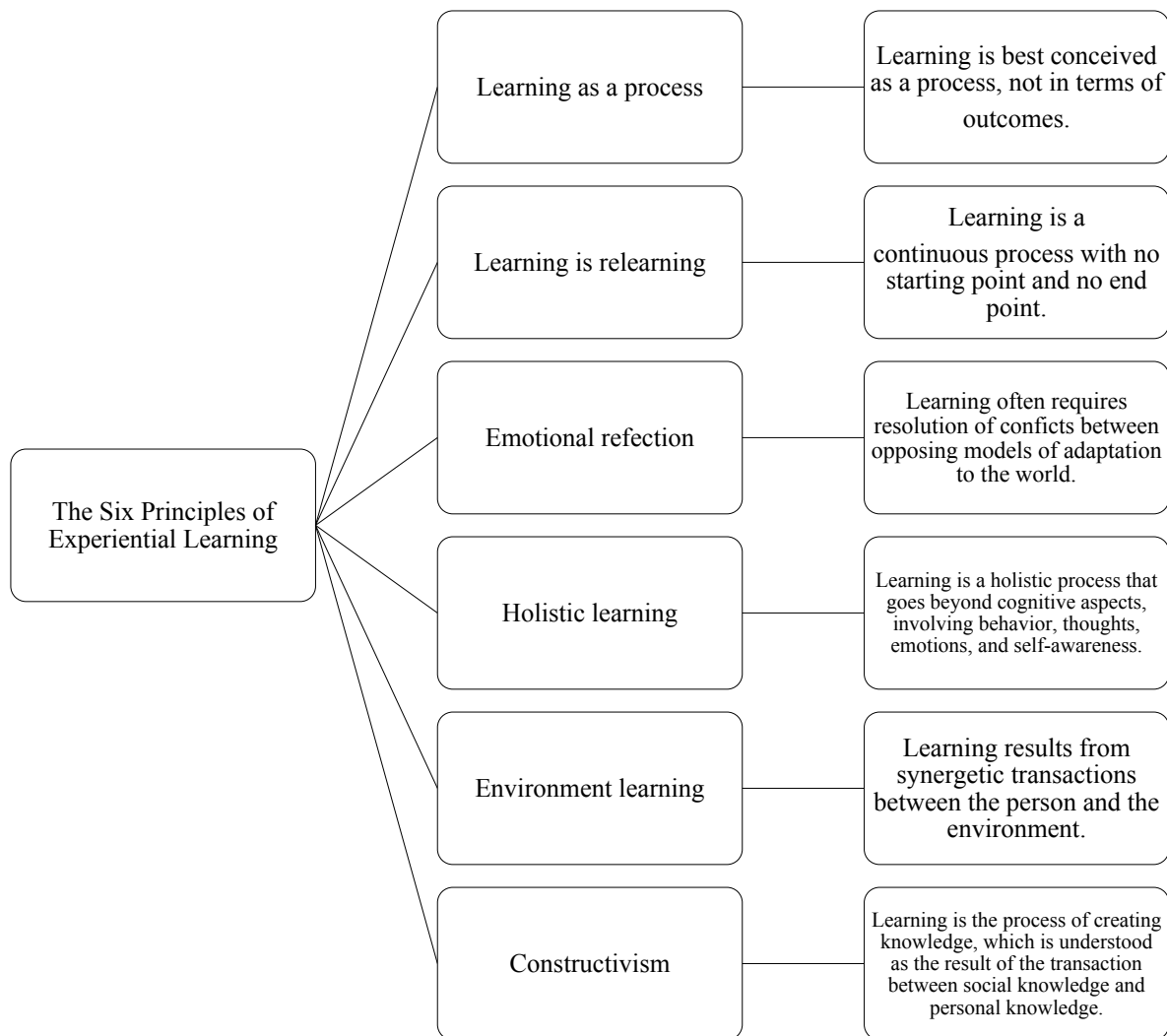
Experiential learning theory assumes that learning is a comprehensive process that includes perception, thinking, feeling, and conduct in addition to knowing (Gencel & Akbulut

(2023). It is fluid and integrative, comprising continuous conversations and experiences, as opposed to a strict, automated method (Caner Yüksel & Dinç Uyaroğlu, 2021) and a comprehensive approach to education that prioritizes the learning process over predetermined results (Gencel et al., 2021).

Arseven (2018) points to the fact that Kolb's (1984) theory of experiential learning sets itself apart from behavioural and cognitive theories by offering a distinctive viewpoint on the process of learning. This theory is distinguished by its emphasis on experience, perception, consciousness, and behaviour in the course of learning. Experiential learning theory stresses the value of subjective experiences and draws attention to how knowledge is created through meaningful connections made between learning, the outside world, and many facets of daily life. This method contrasts with cognitive theories, which stress the acquisition and recall of information through symbols, and behavioural theories, which downplay consciousness.

According to the experiential learning theory, learning is the process by which experiences are converted into knowledge. Everybody naturally interacts with other people and their circumstances to create concrete experiences (Gencel et al., 2021). Much research conducted on experiential learning theory has shown that experiential learning pedagogy improves learning results (Feng et al., 2021). To achieve this goal, the foundation of experiential learning theory is comprised of six core ideas. These core elements are presented in Figure 9.

Figure 9. The Six Principles of Experiential Learning (adapted from Chan, 2022, p. 20-21)



As Figure 9 visualizes, experiential learning theory is grounded on six main principles. Firstly, it considers learning to be a continuous process instead of a final result. Second, it emphasizes that learning is fundamentally a process of relearning that involves analysing and fusing new information with preexisting ideas. Third, it emphasizes the importance of dialectical processes and conflicts in fostering learning. Fourthly, it views learning as a whole process that includes all aspects of perception, thinking, feeling, and behaviour. Fifth, based on human traits and the learning context, experiential learning theory emphasizes the significance of interactions between people and their surroundings. Lastly, instead of adhering to the conventional "transmission" paradigm, this theory supports a constructivist philosophy of learning in which knowledge is generated together through social interactions (Arseven, 2018; Chan, 2022; Gencel et al., 2021; Kolb, 1984; Passarelli & Kolb, 2011).

The principle of experiential learning has been used in a range of educational contexts,

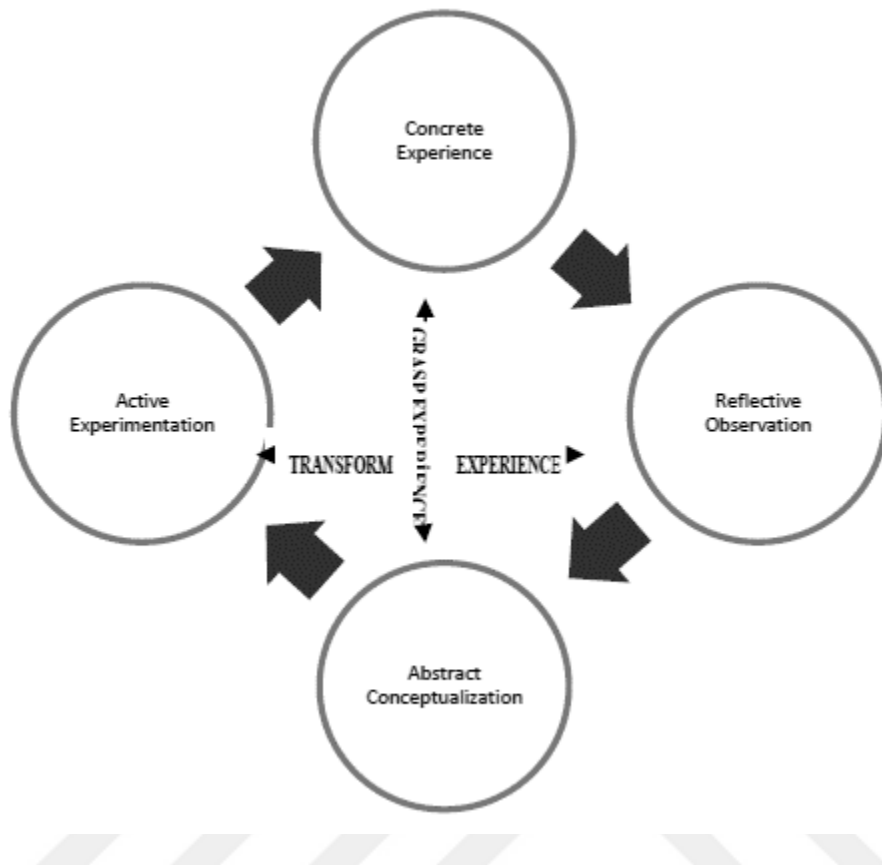
including higher education, leadership development, and vocational training (Banfield & Wilkerson, 2014; Heinrich & Green 2020; Radović et al., 2021). The idea has also been applied to help the creation of assessment instruments that track learning outcomes and to guide the creation of experiential learning activities and programs. According to the principles of experiential learning theory, since active experiences result in longer-lasting knowledge retention, experiences must not only be understood but also made meaningful and relevant for students in order to improve learning (Baker et al, 2012).

Teachers play a crucial role in experiential learning, encouraging students to deviate from traditional teaching methods and pursue self-directed inquiry out of intrinsic drive. Instead of imparting knowledge through lectures, these teachers use a non-directive facilitator teaching style to provide a safe atmosphere where students can autonomously gain insights from their experiences. The educator role profiles, which are based on the preferences of the educators, identify the changing roles of teachers as students move through the learning cycle and embrace the concepts of experiential learning theory. The educators are categorized as coaches, experts, facilitators, and evaluators. This framework can be used as a guide by people in a variety of teaching jobs and life phases, not just in traditional classroom settings. The four stages of experiential learning are supported in the growth of students' learning capacities by these educator role profiles, which combine teaching role preferences, attitudes toward education and learning, learning objectives, philosophy of instruction, and instructional methodologies (Gencel et al., 2021; Gencel & Akbulut, 2023; Kolb et al., 2014a).

2.4.1. Experiential Learning Theory and Learning Cycle

Experiential learning theory consists of a four-step process. In the first stage, learners gain knowledge by actively participating in new experiences in a direct and impartial manner. In the second stage, they reflect and analyse the experience data from different angles. In the third stage, learners create generalizations to incorporate their observations into sound theories or practices in an abstract conceptualization stage. In the fourth stage, known as active experimentation, such generalizations are applied as guidelines in managing new and complex situations (Arseven, 2018). These four steps are named as experiential learning cycle and conceptualized by Kolb and Kolb (2009b, p. 298-299) as given in Figure 10.

Figure 10. Experiential Learning Cycle (Kolb & Kolb, 2009b, p.299)



As Figure 10 illustrates, two dialectically connected modes of transforming experience—Reflective Observation (RO) and Active Experimentation (AE)—and two dialectically associated modes of grasping experience—Concrete Experience (CE) and Abstract Conceptualization (AC)—are depicted in the experiential learning theory model (Kolb & Kolb, 2009a). In other words, four unique forms of experiential learning were identified by Kolb: Concrete experience is when a situation or activity is actively experienced; reflective observation is when an experience is consciously thought through; abstract conceptualization is when new ideas and concepts are generated; and active experimentation is when new behaviours and activities are put to the test. Each enables students to gain abilities by doing rather than just learning (Arseven, 2018; Caner Yüksel & Dinç Uyaroğlu, 2021; Chan, 2022; Feng et al., 2021; Gencel & Akbulut, 2023; Gordon, 2022; Kolb & Kolb, 2009a; Lacanienta, 2022; Leong & Lim, 2021; Smith & Rayfield, 2019). For an effective experiential learning to take place, all these four phases must be accomplished (Baker et al, 2012) and the cycle of experiential learning then recommences as people acquire fresh, tangible experiences. Through the encouragement of deeper learning, it has been discovered that participating in the four stages of experiential learning increases motivation among learners and sustained retention of

knowledge (Wood, 2021). Kolb's methodology places a strong emphasis on the value of past knowledge and using fresh experiences to test beliefs. To overcome creative conflict among different learning modes and improve the learning process, these four characteristics should be included in optimal learning circumstances (Chan, 2022) and the process keeps going in a circle where new experiences are gained and they influence subsequent learning (Baker et al., 2002; Kolb, 1984).

2.5. Related Studies on Escape Room Games and Intercultural Competence in Education

The main subjects of this study, namely escape room games and the concept of intercultural competence, have been at the centre of several recent academic studies. Some of these studies are presented in this part, especially the ones that deal with educational settings.

2.5.1. Escape Room Games in Education

In the context of education, escape room games have been the subject of numerous studies. These studies were conducted in a variety of settings and concentrated on various facets of escape room games.

The aim of many studies was to reveal the efficacy of escape room games in fostering content knowledge (Adams et al., 2018; Borrego et al., 2017; Brown et al., 2019; Cotner et al., 2018; Craig et al., 2019; Eukel et al., 2017; Ferreiro González et al., 2019; Gordon, 2017; Guigon et al., 2018; Hermanns et al., 2018; Ho, 2018; Nelson et al., 2017; Peleg et al., 2019; Tükle, 2020), developing related skills (Arnal et al., 2019; Boysen Osborn et al., 2018; Cain, 2019; Carrión et al., 2018; Clarke et al., 2017; Dietrich, 2018; Eukel et al., 2017; Giang et al., 2018; Healy, 2019; Ho, 2018; Kinio et al., 2019; Monaghan & Nicholson, 2017; Mosley et al., 2018), increasing communication abilities (Clarke et al., 2017; Craig et al., 2019; Dietrich, 2018; Friedrich et al., 2019; Healy, 2019; Vörös & Sárközi, 2017; Wu et al., 2018), progressing in teamwork (Clauson et al., 2019; Friedrich et al., 2019; Gómez-Urquiza et al., 2019; López, 2019; Morrell & Ball, 2019; Seto, 2018; Styling et al., 2018; Vergne et al., 2019; Watermeier & Salzameda, 2019; Wu et al., 2018), introducing new subject (Giang et al., 2018; Gordon, 2017; Healy, 2019; Mills & King, 2019; Mosley et al., 2018; Vörös & Sárközi, 2017), and assessing (Alamanis et al., 2023; Cash et al., 2023; Clauson et al., 2019; Franco & DeLuca, 2019; Gómez-Urquiza et al., 2019; Järveläinen & Paavilainen-Mäntymäki, 2019; Licchelli & Barnett, 2023; López, 2019; Vergne et al., 2019; Watermeier & Salzameda, 2019). Some other

studies were conducted to review previous studies on the use of escape room games in educational purposes (Taraldsen et al., 2022).

A variety of studies were conducted in different fields of education such as STEM (Arnal et al., 2019; Borrego et al., 2017; Dietrich, 2018; Ferreiro-González et al., 2019; Giang et al., 2018; Glavaš & Stašcik, 2017; Guigon et al., 2018; Healy, 2019; Karageorgiou et al., 2019; López, 2019; Peleg et al., 2019; Vergne et al., 2019; Vörös & Sárközi, 2017;), medical (Adams et al., 2018; Boysen Osborn et al., 2018; Brown et al., 2019; Cain, 2019; Carrión et al., 2018; Cotner et al., 2018; Eukel et al., 2017; Eukel et al., 2020; Friedrich et al., 2019; Gómez- Urquiza et al., 2019; Gordon, 2017; Hermanns et al., 2017; Kinio et al., 2019; Monaghan & Nicholson, 2017; Mosley et al., 2018; Nelson et al., 2017; Seto, 2018; Styling et al., 2018; Trendowski, 2022), maths (Andrews & Bagdasar, 2023; Doleshal, 2023; Fuentes-Cabrera et al., 2020; Jiménez et al., 2020; Moura & Santos, 2020; Saleh Alabdulaziz, 2023; Tükle, 2020), computer science (Borrego et al., 2016), science (Clapson et al., 2019; Giammatteo & Wrigley, 2023; Huang et al., 2020; Lien et al., 2019).

In addition to other fields, it is possible to see some other research focusing on language education. For example, Bellés-Calvera and Martínez-Hernández, (2022) conducted a study aiming to investigate how virtual escape rooms can increase the motivation of history students in Content and Language Integrated Learning (CLIL) environments. In this study, twenty-nine first-year undergraduate students from a Spanish institution taking a Classical History module took part in a virtual escape room game and completed a survey at the end. The results of this study showed that students who participate in escape rooms may become highly motivated and experience less pressure to communicate in the target language. Thus, the use of escape rooms in e-learning settings can be beneficial in developing students' communication, teamwork, and critical thinking abilities.

The article of Cruz (2019) primarily targets to demonstrate the value of the Escape Room games within the study of foreign languages methodology through a few examples. Using the provided cases, the article concludes that integrating escape rooms into language classes give pupils the chance to exchange ideas, comprehend and assess diverse viewpoints, cooperate proficiently, exhibit accountability, and make concessions to accomplish group objectives. Engaging in escape rooms helps students become more motivated by encouraging self-direction and introspection, giving them the ability to independently manage their time and goals, and fostering polite cooperation in multicultural teams.

Aiming to determine which games could be used in classrooms and other educational environments to help students enhance their communication skills, Llumiquinga (2022)

conducted a mixed-method study with a control and experimental group, as well as using qualitative and quantitative data, observation, and a survey to better understand the needs of students and their perspectives of using games to improve their language abilities and demonstrate how crucial it is to appropriately connect and match language-related themes with particular games. The main conclusions of this study underscore how eager kids were to learn via play and stress the value of varied learning settings that permit a break from conventional teaching techniques. Even though younger students can find conventional games appealing, technology integration and internet access prove to be effective tools for student engagement and motivation. According to the study's findings, changing the way that students are taught encourages a high level of dedication, and that students' curiosity is crucial for developing healthy relationships and communication skills.

Another study by Moreno-Reyes et al. (2022) aimed at improving English language acquisition at an early age through an engaging and educational 360-degree virtual tour by using escape room design as a video game-based learning method. Shortly, the findings of the study revealed gamification's potential in education, motivating students to actively participate in their learning and addressing challenges posed by traditional, passive methods and global situations.

The study of Moura and Santos (2020) intended to investigate and apply the usage of Escape Room technique in a gamified educational setting. The goal of this study was to improve student involvement, teamwork, and critical thinking abilities. The participants of the study solved puzzles together, cracked codes, and finished a variety of tasks within the allotted time. In order to get input on the students' experiences, opinions, and the efficacy of the Escape Room technique, a questionnaire was given out. The results indicated that using the Escape Room approach had a beneficial effect on student engagement, encouraging fun, collaboration, and higher enthusiasm for learning.

The effectiveness of gamification in the instruction and evaluation of Business English vocabulary was confirmed by the study of Mudure-Iacob (2021). By utilizing gamified quizzes and digital escape room situations, escape games demonstrated creativity, sustainability, and motivation, turning evaluation into a helpful instrument for self-directed learning. According to the findings, teachers were essential in bridging the gap between language and digital abilities by promoting active student engagement.

In her thesis, Kara (2021) investigated how sixth-grade students' academic performance and motivation were affected by instructional digital escape games during the COVID-19 epidemic. Twenty-five students participated in the online study, with the experimental group

using eight distinct escape games and the control group using online workbooks and interactive exams. The experimental group had a considerable gain in linguistic achievement, but there was no significant difference between the two groups' academic achievement and motivation, according to quantitative analysis. Qualitative findings indicated that instructional digital escape games had a beneficial impact on motivation and academic success.

With their study, Schenker and Kraemer (2022) focused on investigating the cultural subject of German communities worldwide by using escape room games. Each game consisted of five tasks, and each one called for cooperation, communication in German, the target language, and cultural competency. Students that participated in the digital escape room gave overwhelmingly good feedback, describing it as an interesting, difficult, and inspiring activity. They reported being more involved in the process of learning a language and value the chance to utilize the intended language in a less demanding setting. Additionally, the results of the study showed that digital escape rooms are useful for promoting group learning experiences and disrupting the usual pattern of traditional classroom instruction.

In order to evaluate the educational potential of escape games in language classrooms, Stollhans (2020) used gamification, pervasive learning, and "serious games" as the main areas of attention for his study. The use of escape games within these frameworks was examined, and the growth of transferrable abilities including problem-solving, teamwork, time management, communication, and technology skills was covered in the study. Feedback from students showed a very favourable reaction; they enjoyed the activity and thought it was a great way to teach grammar in a contextualized way. The research also identified areas that needed to be improved, such as promoting greater usage of the target language and adding more digital resources. Overall, the findings highlighted the beneficial student experiences and skill development that escape games might have on language learning.

Urbieto and Peñalver (2019) conducted a study using an escape room as a novel teaching tool in an English classroom as part of a Translation Degree program. The objective was to evaluate the beneficial effects of the gamified practice on students' motivation and language proficiency growth. The findings of the study showed that students had positive attitudes and reported that learning was more effective than it had been using traditional techniques.

2.5.2. Intercultural Competence in Education

A review in the related literature reveals that there are a number of studies conducted in relation with intercultural competence. While some of these studies focus on developing (Dunworth et al., 2021; Ferreira-Lopes et al., 2021; Hackett et al., 2023; Hofmeyr, 2023; Krotik & Morhun, 2021; Lynn & Strair, 2022; Ngai et al., 2020; Peifer et al., 2023; Sales et al., 2023; Sercu, 2023; Sierra-Huedo & Nevado-Llopis, 2022; Tajeddin et al., 2022; Tarchi & Surian, 2021; Wang, 2023), some others try to assess intercultural competence (Iseminger et al., 2020; Pham & Pham, 2022; Solhaug & Kristensen, 2020; Zhang & Zhou, 2023; Zheng et al., 2022;).

There exists a variety in the level of education in the scope of the research on intercultural competence. For example, some studies were conducted at primary to high school level (Krotik & Morhun, 2021; Solhaug & Kristensen, 2020). Some other studies were conducted at higher education level (Barnatt et al., 2020; Dunworth et al., 2021; Ferreira-Lopes et al., 2021; Hackett et al., 2023; Halpern et al., 2022; Herrera Granda et al., 2023; Higgins & Siritaratn, 2022; Hofmeyr, 2023; Krotik & Morhun, 2021; Ngai et al., 2020; Peifer et al., 2023; Pham & Pham, 2022; Sercu, 2023; Sierra-Huedo & Nevado-Llopis, 2022; Tarchi & Surian, 2021; Timoštšuk et al., 2022; Wang, 2023; Wei et al., 2021; Zheng et al., 2022). Several of them, on the other hand, were conducted at graduate or post-graduate level (Alvarado-Caushi et al., 2022; Kim et al., 2023; Lev Ari & Husisi-Sabek, 2020).

The studies conducted on intercultural competence included diversity in the field of education, as well. A part of these studies was related to other fields (Crawford, 2020; Emmanuel, 2003; Galamba, 2021; Linneweber-Lammerskitten, 2012; Westerlund et al., 2022), however, a majority of the studies were conducted regarding language learning or teaching. For example, Dunworth et al. (2021) investigates the effects of language and pedagogical methods on the development of intercultural competence in their study. This research examined how language choices, register, and style affect the perception of intercultural competence via individual, focus group, and stimulated recall interviews. The results highlight the critical role that language plays in either fostering or impeding intercultural competence, showing a gap between theoretical viewpoints and participants' traditional conceptions of interculturality. The study emphasizes the significance of giving priority to language that promotes understanding between parties and pushes for striking a balance and removing barriers. The findings also show the importance of language awareness and possible implementation tactics, and they have significance for higher education institutions looking to build an internationalized and interculturally sensitive atmosphere.

The study of Eide et al. (2023) emphasizes how important it is to integrate the development of intercultural competence into the teaching of foreign languages, particularly by employing transnational viewpoints and literary texts about exile and migration. Three of these texts were case studies, with a focus on how they might improve students' intercultural understanding. Nonetheless, teachers' contextualization and modification of classroom activities were critical to the success of these books. The conclusion of the study promotes the use of texts with migration themes to develop intercultural competency and establish a cooperative "third space" in classrooms with a varied student body. It emphasizes how crucial teacher preparation is to improve the intercultural competency of educators for successful implementation.

The purpose of Liao and Li (2023)'s study was to examine and compare the intercultural educational strategies employed by Chinese college English instructors teaching non-English majors. Due to the dearth of clear guidelines on teaching intercultural competency, the study used a sequential exploratory mixed research approach that included document analysis and in-person interviews. Through the identification of three-dimensional meta-themes, individual instructors' teaching styles and pedagogical approaches were categorized. Feedback from students gave insights on difficulties and learning opportunities.

In her study, Murray (2022) aimed to examine the use of intercultural competency ideas in teaching about Indigenous peoples in English as a foreign language (EFL) classroom. The study offers useful strategies for educators, highlighting communicative ability and intercultural understanding as essential abilities in multicultural communities. When educating about Indigenous people, recommendations include addressing power imbalances, avoiding misconceptions, and utilizing real resources. To help students in EFL classes build intercultural understanding, the article offers suggestions for developing lesson plans as well as activities and discussion topics based on the author's teaching materials.

Scallly et al. (2022) looks at the relationship between intercultural competence and language learning, analysing how well language programs promote intercultural competency and the interaction between linguistic proficiency and cultural awareness in their study. It is emphasized how important schools and universities are as training grounds for people entering a variety of cultural and linguistic contexts. Their paper focuses on the intricacy of intercultural competency, the need for ongoing conversation on these subjects, and the various meanings that are influenced by context. It acknowledges that language plays a crucial part in the development of international relationships, even though some definitions purposefully omit details about language. It is emphasized how crucial it is to distinguish between similar

concepts, recognize pertinent language abilities, and promote interculturalism in contexts when language is not a barrier.

Wang (2023) conducted a study to use an intercultural approach to incorporate cultural subjects from Vietnam and Indonesia into Taiwanese university English as a foreign language (EFL) course. The findings showed a considerable increase in the intercultural ability of the students, and many of them acknowledged that the course had a beneficial effect on their learning of English as well as their intercultural comprehension.



CHAPTER III

3. METHODOLOGY

In this chapter of the study, in-depth details on the research design, setting, participants, data collection tools, pilot study and data analysis process are provided.

3.1. Research Design

Aiming to explore the effect of digital escape room games on improving intercultural competence of pre-service EFL teachers, this study was conducted at a state university in Türkiye through quasi-experimental research design. Experimental research is generally entitled as the most powerful research method because it is seen as the best tools for establishing a relation of cause and effect between the variables (Fraenkel & Wallen, 1993). An experimental study gives the researcher the possibility to isolate the matter under study and concentrate on it by controlling the surrounding world (Walliman, 2006). A causal relationship between independent and dependent variables is investigated using experimental research methodologies. In simple terms, the dependent variable is anticipated to change or vary in some way as a result of the independent variable in experimental research designs (Rogers & Revesz, 2019).

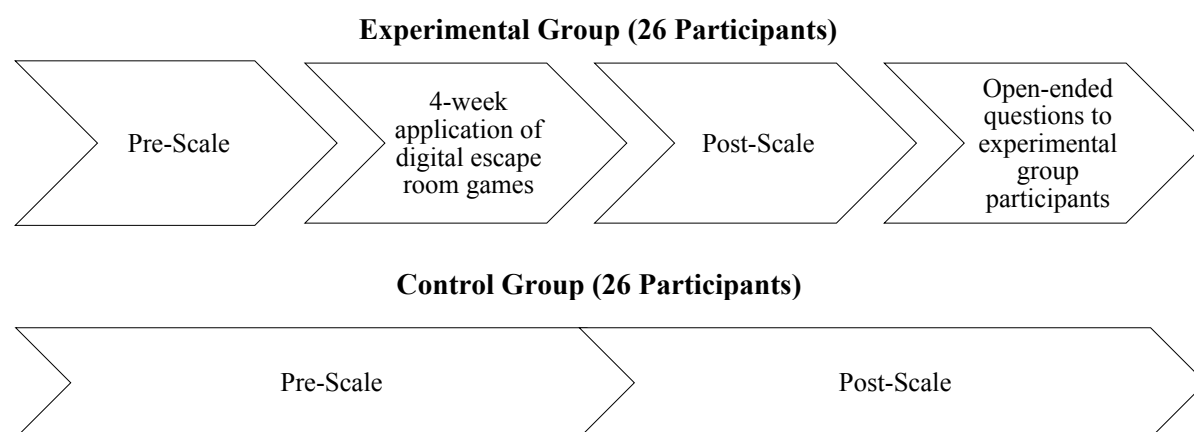
There exist numerous techniques to carry out experimental research methodology. This study uses one of them which is quasi-experimental research design. The difference between a quasi-experimental study and an experimental study lies in that, contrary to experimental design, the participants are not chosen at random in quasi-experimental research. Assignment to conditions (treatment versus no treatment or comparison) is accomplished through administrator selection, self-selection, or both processes (White & Sabarwal, 2014). As a result, more "as-if" random tests and trials that happen spontaneously in the real world are being used to create causal proof in quasi-experimental studies (Gopalan et al., 2020). In terms of baseline characteristics, quasi-experimental designs choose a control group that is as comparable and feasible as the experiment group. The control group depicts the results that would have occurred if the program or policy had not been put into place. Therefore, any difference in results between the treatment and comparison groups can be attributed to the program or policy (White & Sabarwal, 2014).

In accordance with the nature of the research design, convenience sampling method, which is a kind of non-probability sampling technique, was used while choosing the

participants and both a control and an experimental group were used to conduct this study. While using convenience sampling method, the researcher uses sampling in which the participants are chosen by the researcher, are referred to the researcher or self-select to participate in a study rather than providing for each member of a target population to participate in a study (Stratton, 2021). Also, quasi-experimental studies employ pre-existing groups rather than randomly allocating people to experimental and control groups. As long as the investigations are planned with the original group differences in mind and address them, it is an accepted method for research (Dörnyei, 2007).

Before applying the digital escape room games, a pre-test was administrated to both experimental and control groups. The students took the post-test to assess their current situation following the 4-week treatment, and then open-ended questions were filled by the experimental group participants. Beginning on October 18 in 2023, the experimental study ran until November 8th, when the final class was held. Both experimental and control groups took the pre-test on October 16th at the same time. After four weeks application of the games, the post-test was administered to both the experimental and control groups on November 10th. The open-ended questions were handed out to the participants after the administration of post-test. Figure 11 displays a summary of the research design.

Figure 11. Research Design



3.2. Research Context

This study was conducted in the department of English Language Teaching a state university in Türkiye. The researchers selected this university for practicality reasons. This university provides bachelor's degree after a four-year full studying. The main objective of the department is to train successful English teachers who will work in primary schools, high

schools, and related departments of universities. The program also aims to make students learn how to use the necessary equipment in establishing intercultural communication, perceiving, and interpreting different cultures. To achieve this goal, the department presents students courses. Thus, the reason to apply the games on 4th grade students was that the students already had this subject on their lessons, and they were to get these necessary abilities to complete their degree. In addition, the students already had World Languages and Culture and Material Development and Technology courses. Therefore, they had general knowledge about both intercultural competence and technology use in language teaching.

The study was conducted in the natural environment to confront students. The students got their pre and post-scales in their classrooms. The games were played at the university's language lab. Open-ended questions were handed out to the students after the final treatment of the games in language lab.

3.3. Participants

The participants were chosen using convenience sampling method, which is a non-probability sampling technique in which participants are personally chosen by the researcher from nearby an area depending on the participants' motivation (Andrade, 2021; Stratton, 2021). The participants of this study consisted of 52 volunteer pre-service EFL teachers who were at the 4th grade at 2023-2024 academic year at a state university in Türkiye. The reason to include these participants was that they actively participated in courses which included intercultural competence topic. Additionally, the participants of scale were pupils from the class that the researcher instructed. Throughout the application of the games, this structure allowed for constant communication between the participants and the teacher-researcher. Moreover, in this way, for task-related advice, the participants might correspond with the teacher-researcher by email as well as in-person. The teacher-researcher remained impartial even though she was also the instructor, making sure not to affect participants' opinions about the assignments or the project as a whole.

Before starting to the study, all the experiment group students included in this research were informed about the study and digital escape room games. Their participant approval forms were taken from them to show their voluntariness to be a part of this study. At all times of the study, there was a close relationship between the participants and the researcher. For assistance with the issues related to the study, the participants had access to the researcher both in-person and via email.

Even though convenience sampling method was used in the current research, the potential risks were considered, and some precautions were taken by the researcher to avoid these risks. First of all, because convenience sampling method avoids generalizing from the sample group to the entire population by only reflecting a subset of the population like other non-probability sampling techniques (Koerber & McMichael, 2008; Valerio et al., 2016), no generalizations about the entire population are made in the current study. Second, the participants of both control and experimental groups were chosen solely on the basis of accessibility for the researcher. There was no other criterion in selection procedure. This was an attempt to prevent biased selection of the participants, which can be a risk of using convenience sampling method (Taherdoost, 2016). Another issue to avoid the risks of using convenience sampling method was about creating control and experimental groups. It was decided not to let the students choose which group they would be in (control or experimental group), as suggested by Etikan et al., (2016), in order to manage the early group differences. Instead, the researcher made these decisions themselves. As a final precaution, the researcher took the features of the participants into consideration while creating the control and experimental groups. The students were all at the 4th grade students at the ELT department of the same university. This indicates that there was not a huge difference among the participants in terms of education they had because they encountered a common framework of education that all the students in the school were required to follow. Also, the number of the students of each group, their ages and genders were tried to be equal to prevent any risks that might arouse because of these differences.

The participants of this study were grouped as control and experiment group members because of the selected research design, which was quasi-experimental research design. The demographical information of the participants was gathered via the pre-test which was prepared using Google Forms by the researchers. Table 1 gives detailed information about the demographical characteristics of the scale participants.

Table 1. Demographical Characteristics of the Participants

ITEMS	CONTROL GROUP (<i>n</i> = 26)		EXPERIMENTAL GROUP (<i>n</i> = 26)	
	<i>n</i>	%	<i>n</i>	%
Age				
20-22	15	58	19	73
23-25	7	27	7	27
27-36	4	15		
Gender				

Female	18	69	16	61
Male	8	31	10	38
Graduated high school				
Regular high school	2	8		
Anatolian high school	17	65	21	81
Anatolian teacher training high school	3	11		
Technical/Vocational high school	1	4	2	8
Private high school	2	8	3	11
Other	1	4		

Table 1 shows that 26 students made up the control group in this study, 18 of whom were female and 8 were male. Similarly, 26 students made up the experimental group, 16 of whom were female and 10 were male. The participants ranged in age from 20 to 36. Both control and experimental group participants completed their high school degree at an Anatolian high school mostly. To sum up, the demographic information of the participants indicates that the control and experimental groups were comparable to one another in almost all of the features listed.

Because this study focused on playing digital escape room games, participants' use of computer and internet sources were questioned as demographical information. Table 2 gives detailed information about the use of computer and internet sources of the participants.

Table 2. Participants' Use of Computer and Internet Resources

ITEM	CONTROL GROUP (<i>n</i> = 26)		EXPERIMENTAL GROUP (<i>n</i> = 26)	
	<i>n</i>	%	<i>n</i>	%
Possession of a personal computer				
Yes	23	88	26	100
No	3	11		
Methods of accessing internet (Multiple replies)				
Personal computer	21	81	24	92
Personal mobile phone	25	96	26	100
Computers at school	2	8		
Friend's computer	4	15	1	4
Internet caf�es	3	11	1	4
Other			1	4
Reasons for using the internet (Multiple replies)				
Communication	24	92	25	96
Entertainment	22	85	25	96
Improving English	21	81	23	88

Learning new things	23	88	23	88
Doing schoolwork	24	92	24	92
Other	4	15	2	8
Percentage of the internet visits to English websites				
Less than 30%	5	19	3	11
30% to 60%	11	42	11	42
More than 60%	10	38	12	46

As Table 2 represents, most of the participants have their personal computer. Both control and experimental group students use their personal computers and mobile phones to access internet. They use internet for communication, entertainment, improving their level of English, learning new things, doing schoolwork and for other purposes. Both control and experimental group participants visit English websites more than 60%.

Two main subjects of this study were escape room games and intercultural competence. Hence, participants' familiarity with these subjects were questioned before conducting the study. The data about participants' familiarity with escape room games were given in Table 3.

Table 3. Participants' Familiarity with Escape Room Games

ITEM	CONTROL GROUP (<i>n</i> = 26)		EXPERIMENTAL GROUP (<i>n</i> = 26)	
	<i>n</i>	%	<i>n</i>	%
Engaging in digital games				
Never	4	15	3	11
Rarely	14	54	10	38
Daily	3	11	9	35
Weekly	4	15	4	15
Monthly	1	4		
Being familiar with the concept of escape room games				
Not at all	15	58	4	15
Heard of, not tried	7	27	12	46
Some knowledge, not experienced	3	11	5	19
Played and enjoyed	1	4	5	19
The frequency of playing escape room games				
Never	23	88	19	73
Rarely	3	11	6	23
Monthly			1	4

As can be seen in Table 3, most of the control and experimental group students engage in digital games rarely. While most of the control group participants stated that they have never

heard about escape room games before, a majority of experimental group participants stated that they have heard about it but not tried before. Both most of the control and experimental group participants expressed that they have never played escape room games before.

In addition to escape room games, the participants' familiarity with the concept of intercultural competence was questioned, as well. Table 4 represents the data about the participants' familiarity with intercultural competence.

Table 4. Participants' Familiarity with Intercultural Competence

ITEM	CONTROL GROUP (<i>n</i> = 26)		EXPERIMENTAL GROUP (<i>n</i> = 26)	
	<i>n</i>	%	<i>n</i>	%
Being familiar with the concept of intercultural competence				
I don't know it.	1	4		
I've heard of it, but I'm not sure.	9	35	6	23
I know a bit about it.	7	27	7	27
I'm somewhat familiar with it.	5	19	13	50
I'm very familiar with it.	4	15		
Reasons for valuing intercultural competence (multiple replies)				
To build better relationships with people from different backgrounds.	21	81	26	100
To enhance communication in multicultural environments.	25	96	24	92
To promote diversity and inclusion.	15	58	11	42
To succeed in a globalized world.	14	54	17	65
The frequency of engaging in intercultural interaction				
Never	1	4	2	8
Rarely	8	31	8	31
Sometimes	6	23	9	35
Often	8	31	5	19
Always	3	11	2	8
Participating in intercultural course or training				
No	12	46	18	69
Yes, but only a few	13	50	5	19
Yes, extensively	1	4	3	11

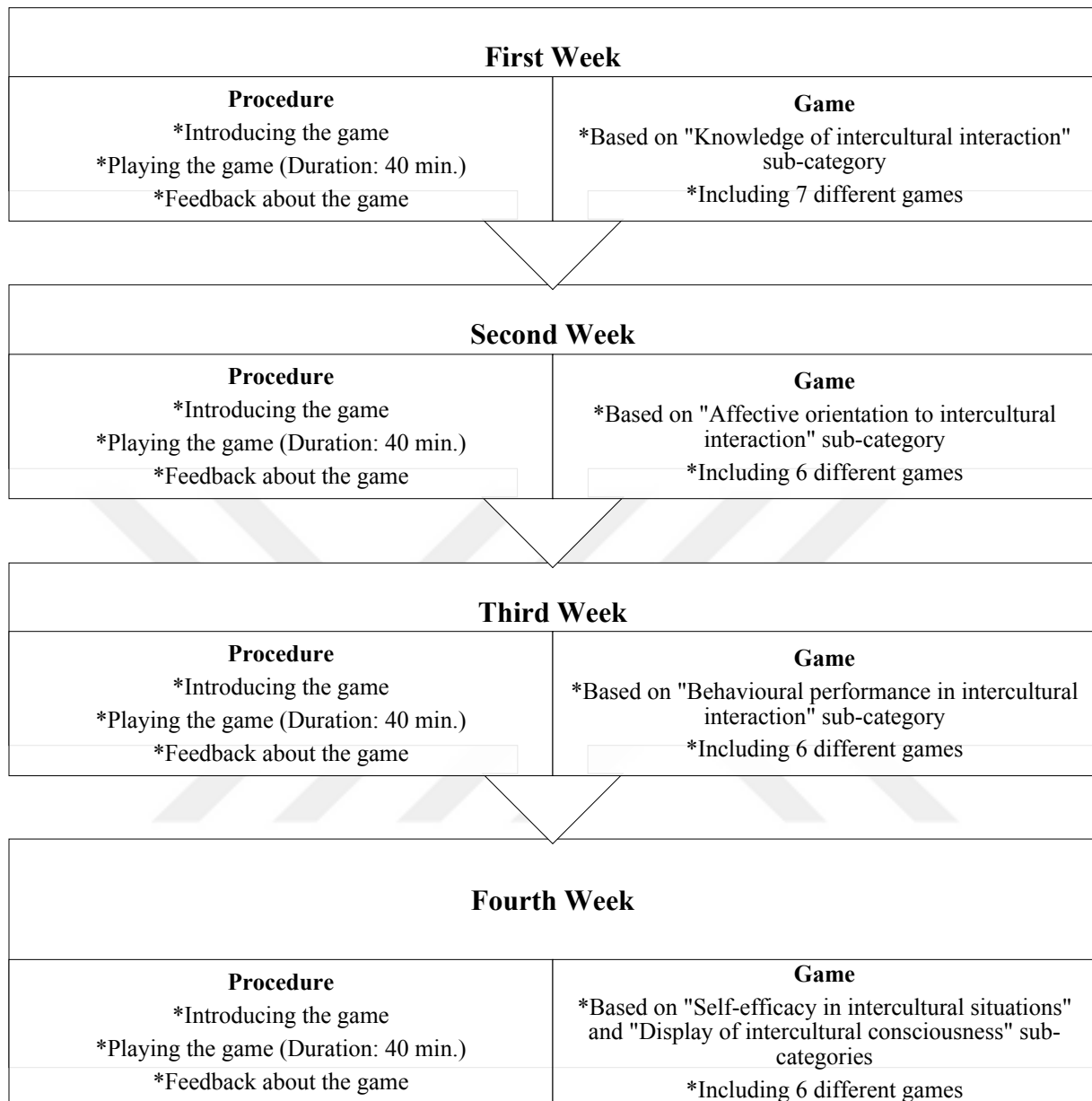
Table 4 represents that most of the control group participants clarified that they heard about intercultural competence before, but they are not sure what it is. On the other hand, most of the experimental group participants emphasized that they were somewhat familiar with intercultural competence. Both control and experimental group participants stated that they

value intercultural competence to build better relationships with people from different backgrounds, to enhance communication in multicultural environments, to promote diversity and inclusion, and to succeed in a globalized world. Most of the control group participants stated that they engage in intercultural interaction rarely or often. However, most of the experimental group participants declared that they sometimes engage in intercultural interaction. Likewise, both control and experimental group participants stated that they haven't participated in intercultural course or training before.

3.4. The Experimental Treatment

An experimental treatment was implemented in this study to investigate the effect of digital escape room games in developing intercultural competence of pre-service EFL teachers. The experimental group played digital escape room games for totally four-weeks treatment. The control group continued receiving ordinary school instruction without receiving any extra treatment, while the experimental group received the treatment alongside to their regular training in their lessons. The steps taken in the treatment each week are shown in Figure 12.

Figure 12. The Experimental Treatment Process



Each week of the application, experimental group students played a different digital escape room game designed based on the sub-categories of the intercultural competence scale. First week, the game was prepared with a basis of “Knowledge of intercultural interaction” sub-category. The category had nine items totally, hence, the first digital escape room game had seven different games including the objectives of these nine items. For the games not to last too long, two of the games consisted of two items. Others focused on one item for each game. The second week, “Affective orientation to intercultural interaction” sub-category items were designed as six different games. This sub-category had six items and each of them were used as the basis of each game for the second week. “Behavioural performance in intercultural

interaction” sub-category items were used to prepare the game for the third week. This category included seven items and for time concerns, two of these seven items were used for one game. In this way, third week game included six games totally. For the last week, “Self-efficacy in intercultural situations” and “Display of intercultural consciousness” sub-categories created a basis for the games. Because of the fact that these two sub-categories included a limited number of items, they were decided to be used together. Including the eight items of these two sub-categories, the game for the last week consisted of six different games.

Experimental group students played these games each week. The duration of the games was 40 minutes. Students were to complete their games in this pre-determined time. Each week, before starting to play the games, the researchers gave information about the games. First week, they were introduced about the escape room games, because most of the participants were unfamiliar with this kind of a game. Also, the games included a section as the presentation of the game. The preface of the games included the game story and informed the students about what to do to escape from the game. Figure 13 presents a photo of the participants while playing the games.

Figure 13. Snapshots of Participants during the Digital Escape Room Game Interventions



The students needed to play each game on the game design. After completing the games, they got their numbers for the final code. The collected numbers made up the final code and students wrote these final codes and got out of the game successfully. To make the games more enjoyable and challenging, the students were informed that the first code-crackers would be the winner of the game. After completing each game each week, the researchers got students' feedback for the game they played. In this way, the researchers made some changes on the game to be played next week.

3.4.1. The Digital Escape Room Games Used During the Experimental Treatment

The digital escape room games used during the experimental treatment were designed by the researchers. Before the treatment of the games, they were sent to three academicians in ELT field to get their expert opinions. According to their views, the necessary alterations were made, and the games were redesigned. Because one of them stated that the introductions to the games were too long, they were shortened. Also, the games were changed to be more challenging as a result of the expert opinions. After that, the plotting of the games was conducted with five pre-service EFL teachers who were not included in the game. They stated that the background image of the games ought to be related to the research topic. Thus, a photo of an airport was added instead of unrelated room photos. In addition, the pilot study participants expressed that some of the games were too complicated; that's why these games were simplified by the researcher. After completing these remediations, the games were ready to use.

For four-week treatment, four different games were created based on the items and sub-categories of the intercultural competence scale. While designing the games, two different websites were used. These were "LearningApps.org" and "Thinglink.com". Some basic and brief information about these websites is presented below.

3.4.1.1. LearningApps.org

As stated on the website, LearningApps.org provides brief interactive multimedia exercises to enhance the learning and teaching processes. The exercises are incredibly simple to develop and use on the internet. There are other templates (tests with multiple choice questions, assignment exercises, etc.) accessible. The exercises don't constitute full courses by themselves. They are not appropriate for elucidating difficult concepts; instead, they are meant to be used for skill practice and development (such as in the teaching of foreign languages)

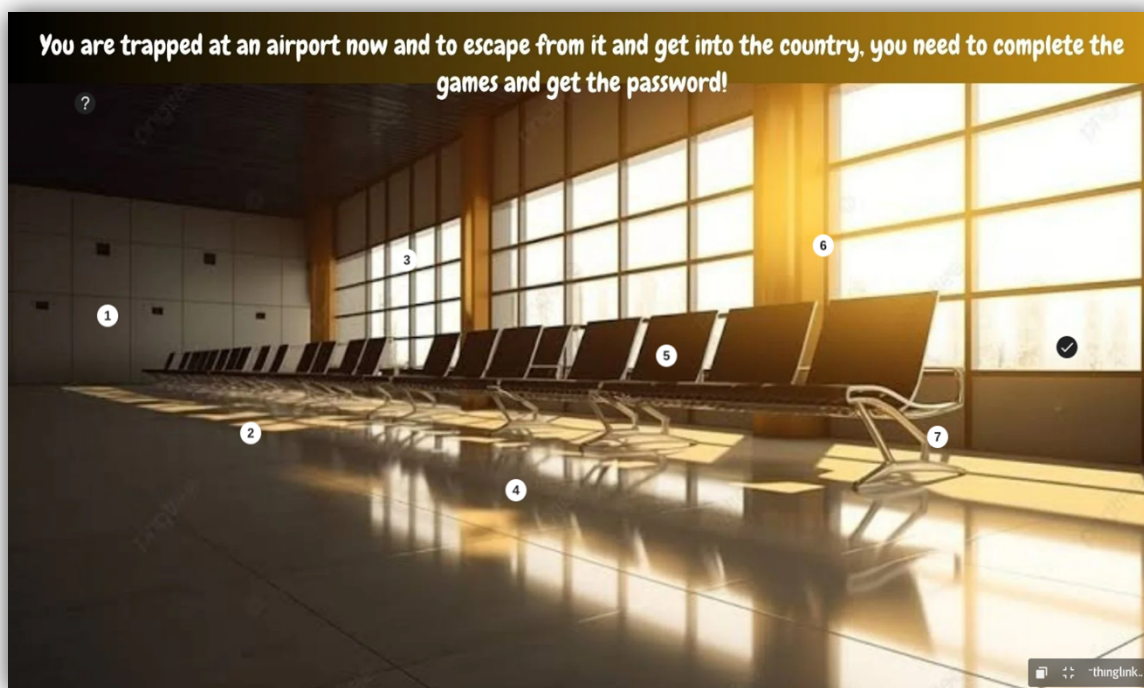
(<https://learningapps.org>).

3.4.1.2. Thinglink.com

Based on the information on the website, ThingLink can be defined as a flexible and powerful instrument that increases interaction and participation in the classroom, revolutionizing learning. Teachers can create dynamic learning experiences with pictures, videos, or 360-degree VR shots by using this website and app-based software. Teachers can add levels of information, such text explanations, historical background, or connections to more media, to particular spots within the content by using tags, or icons. As a result, ThingLink is an invaluable tool for classrooms, promoting interactive learning through the use of tags that let students interact with digital objects. Additionally, it encourages the fusion of various sources of data into a coherent presentation by acting as a platform for pupil works as well as a teaching tool. It is a dynamic instructional resource that encourages deeper and more interesting learning experiences across a variety of subjects by enabling instructors and pupils to create, exchange, and engage with content in novel ways (<https://www.thinglink.com>).

The researcher selected these websites depending on a number of criteria. First of all, to create different games, researcher needed a website that has a various option in terms of game types and designs. This website ought to be easy and free to use because of the practicality. Another important issue was that the chosen website ought to be suitable for embed format of the created games. Hence, LearningApps.org was chosen because it met all these necessities. Secondly, the researchers needed another website to embed the games. This website ought to have the feature to present the background picture and information. Moreover, it ought to be shareable and easy to use. Last but not least, the website should enable participants write the code and get out of the game page. Meeting all these necessities, Thinglink was chosen as the best website to create the digital escape room games for experimental treatment. Figure 14 presents a screenshot of the preface of the first week's game.

Figure 14. Screenshot of the Preface of the First Week's Game



As seen in Figure 14, a photo of an airport was used for background picture. Suitable for the basic characteristics of escape room games, the game created based on a story and it was given at the upper side of the background picture. On the top left corner, a question mark icon was placed to give some information about the game to the players. Games that included codes after reaching the solution were placed on different locations on the picture with number icons. The players needed to complete them all respectively to get the numbers for the final code. The tick icon on the right-centre was for writing the final code to get out of the game successfully.

The arrangement of each discrete game within the content of the game, on the other hand, was designed on LearningApps.org website. The games of each week had different styles and contents. The game styles included matching pairs, group assignment, multiple-choice quiz, word grid, cloze test, matching matrix, crossword, guess the word, the millionaire game, number line, pairing game and simple order formats (See Appendix 3). Each of the games were created based on an item of intercultural competence scale. Additionally, each week was themed with a sub-category of intercultural competence scale. Table 5 gives detailed information about the themes of each week, game formats and the items the games are related to.

Table 5. Detailed Information about the Games

Week	Theme of the week (Sub-dimensions of the scale)	Game formats
1 st week	Knowledge of intercultural interaction (Including 9 items)	7 games with matching pairs, group assignment, multiple-choice quiz, word grid and cloze test formats.
2 nd week	Affective orientation to intercultural interaction (Including 6 items)	6 games with matching matrix, matching pairs, crossword, word grid, multiple-choice quiz and guess the word formats.
3 rd week	Behavioural performance in intercultural interaction (Including 7 items)	6 games with matching pairs, multiple-choice quiz, guess the word, cloze test and the millionaire game formats.
4 th week	“Self-efficacy in intercultural situations” and “Display of intercultural consciousness” (Including 3+5=8 items)	6 games with matching pairs, number line, cloze test, pairing game, multiple-choice quiz, and simple order formats.

In addition to all details, each of the games started with a basic information about the related item and objectives to be reached after playing the games. These instructions were based on the concrete items and sub-categories of intercultural competence scale. After the instructions, tasks were described to the players.

3.5. Data Collection Instruments

Two methods of data collection were employed in this study to address the two primary research questions. Because of the fact that the researchers of this study adopted quasi-experimental research design, the participants were grouped as control and experimental group members. They were given pre and post-test to see the effectiveness of digital escape room games on their intercultural competence. This pre and post-test was the first data collection tool of the study. After completing the experimental treatment and post-test, open-ended question form was filled by the experimental group participants to get their ideas deeply on the digital escape room games used in the study. This was the second data collection tool of this research. Table 6 presents an overview of the study topics, data collection tools, and data analysis techniques related to the questions.

Table 6. Research Questions, Data Collection Instruments and Data Analysis Methods

Research Question	Data Collection Instrument(s)	Data Analysis Method(s)
1. How can digital escape room games affect the development of intercultural competency in pre-service EFL teachers? a. Are there any significant differences in the intercultural competence of pre-service EFL teachers between the control group and the experimental group engaged in escape games? b. Are there any significant differences in the sub-dimensions of intercultural competence among pre-service EFL teachers between the control group and the experimental group engaged in escape games?	Scale (Intercultural competence scale was used as pre-scale and post-scale)	Quantitative Independent samples t-test
2. How do pre-service EFL teachers perceive the instructional effectiveness of digital escape room games in enhancing their intercultural competence? 3. What are the perceived advantages and disadvantages of utilizing digital escape games for improving intercultural competence among pre-service EFL teachers? 4. What impact do digital escape room games have on the willingness of pre-service EFL teachers to incorporate them into their future teachings to foster intercultural competence?	Open-Ended Question Form	Qualitative Content analysis method

3.5.1. Intercultural Competence Scale

To see the effectiveness of digital escape room games, as suitable to the chosen research methodology, an Intercultural Competence Scale (ICS) was chosen and applied as the pre and post-test. The permission to use the scale was taken from the developer by the researchers via e-mail.

This Intercultural Competence Scale was developed by Tzu-Chia Chao and applied on University English as a foreign language (EFL) learners in 2014. As Chao (2014) explains in her research paper, the scale was created after doing a review of the literature, establishing an Intercultural Competence model, creating an item pool, and gathering data from a pilot survey and a formal study. After exploratory factor analysis, five factors were produced, and the final 30-item's Cronbach's alpha value (.93) demonstrated the scale's high level of reliability. These five main factors were grouped according to the relevance of the items and given in Table 7.

Table 7. Main Factors and Items of Intercultural Competence Scale

Main Factors	Items
1. Knowledge of intercultural interaction	1. I know the routine aspects of life in other cultures (e.g., cuisine and customs). 2. I know the rules of non-verbal behaviors in other cultures. 3. I know the visible achievement cultures, related to the facts and knowledge of world civilizations (e.g., arts, literature). 4. I know the rules of verbal behaviors in other cultures. 5. I know the signs of cultural stress and strategies for overcoming culture shock. 6. I know how to use the culture-value approach to understand the attitudes and behaviors of people from different cultures. 7. I know how historical and socio-political factors influence the attitudes and behavior of people from different cultures. 8. I know how to appropriately negotiate with people from different cultures in intercultural contexts. 9. I know the interactive behaviors common among people of different cultures in professional areas.
2. Affective orientation to intercultural interaction	10. I enjoy communicating with people from different cultures. 11. I am willing to acquire knowledge regarding different world cultures. 12. I am willing to manage emotions and frustrations when interacting with people from different cultures. 13. I am willing to demonstrate my interest in understanding people of other cultures that are unfamiliar to me. 14. I am willing to modify my attitude and behavior for interacting appropriately with people of other cultures. 15. I am willing to communicate with people of other cultures to broaden my worldview.
3. Self-efficacy in intercultural situations	16. I am confident that I can interact with people of other cultures appropriately and effectively. 17. I am confident that I can adjust to living in different cultural contexts. 18. I am confident that I can adjust to the stress of culture shock.
4. Behavioral performance in intercultural interaction	19. I can effectively use English to communicate with other people of different cultural backgrounds. 20. I can eat what others eat in culturally diverse situations. 21. I can use functional languages (e.g., invitation, refusal, and apology) flexibly for achieving appropriate intercultural communication. 22. I can develop appropriate interactive strategies (e.g., directness and face-saving) to adjust to the diverse styles of intercultural communication. 23. I can modify the way I dress when it is necessary in intercultural situations. 24. I can change my verbal behavior (e.g., speed, accent) when it is necessary in intercultural situations.

	25. I can change my non-verbal behavior (e.g., gestures, facial expressions) when it is necessary in intercultural situations.
5. Display of intercultural consciousness	26. I do not generalize a person's behaviors as representative of a particular culture.
	27. I am well prepared before any intercultural contact.
	28. I can realize the cultural knowledge I apply to intercultural interaction.
	29. I can sense how my cultural background influences my attitudes and approaches to managing emerging problems during intercultural communication.
	30. I can sense that the responses other people provide during intercultural communication often reflect their own values and beliefs.

As Table 7 shows, five main factors of the scale were determined as “knowledge of intercultural interaction”, “affective orientation to intercultural interaction”, “self-efficacy in intercultural situations”, “behavioural performance in intercultural interaction” and “display of intercultural consciousness” (Chao, 2014, p.100). In this study, these main factors were used as the sub-dimensions of intercultural competence scale.

The reason to choose this scale was that it was suitable for the nature of this research in terms of the chosen methodology, the subject, the participants, the number of items and its high level of reliability in both the results of its development study and the results of piloting stage of this study. This up-to-date scale was appropriate for the methodology because the quasi-experimental research design is conducted through pre and post-test to reveal the difference after the application process. This intercultural competence scale could be used as both the pre and post-test to assess and reveal the effectiveness of digital escape room games. The number of items were satisfactory because there were 30 items and they consisted of all the necessary sub-dimensions related to the intercultural competence. The number of items were also enough and not too many because it is considered as an important factor for not making the participants tired and uninterested. The subject of the scale was closely related to the research topic since they both were based on assessing the intercultural competence of the participants. The participants of this chosen scale were also the university students who learn English as a foreign language. Lastly, the high level of reliability of the scale played an important role on choosing this scale to use in this study. The Cronbach's Alpha value of the scale was calculated as .93 by Chao (2014). This value can be regarded as a clue of the high level of reliability of the scale. As will be discussed in the Pilot Study section, the result of the piloting of the scale had a similar result and the reliability of the scale was calculated as .97 by the researchers, which can also be considered as a sign of high reliability of the scale.

ICS was in the form of Likert scale. Likert scale is a type of scale for psychometric responses that is generally employed in surveys to measure participants' preferences or levels of agreement with a proposition or collection of statements. Likert scales are a non-comparative scaling method that are single-dimensional. By using a Likert scale, participants are asked to rate how much they agree with a statement and unobservable phenomena are measured in this way (Bertram, 2007; Jebb et al., 2021). In this study, as suggested in the original scale (Chao, 2014), the participants were to choose the option that described them best among these six factors: 5 = “strongly agree”; 4 = “agree”; 3 = “slightly agree”; 2 = “slightly disagree”; 1 = “disagree”; 0 = “strongly disagree”.

The scale was used in its original form. The researchers didn't change its structure or language. The reason not to use Turkish in the scale was that, even though it was translated into Turkish and adapted to Turkish culture by Sarı and Özdil (2022), the pilot study showed the satisfactory results of the reliability and understandability of the scale. Because the participants were having bachelor's degree in ELT department, they didn't have any difficulty in understanding and filling the scale in English.

Before the experimental treatment and pilot study, the scale was sent to three academicians to get their expert opinion. All these experts had studies on intercultural competence field. Their feedback showed that the scale was suitable for Turkish culture and the scope of this research. As a result, the scale was used with no change on it.

3.5.2. Open-Ended Question Form

The second data collection tool was the open-ended question form. The open-ended question form of this study was prepared depending on the literature review and the subdimensions of the intercultural competence scale by the researchers. The form was sent to three academicians in ELT department of different universities to get their expert opinion. The experts mentioned some problematic parts of the form. The form was redesigned according to their ideas. Because some of the experts said that they were unnecessary, two questions were excluded from the form. According to the views of the experts, three questions were changed. Similarly, depending on the thoughts of the experts, one question was added to the open-ended question form. And finally, the form was sent to another expert in ELT field to check the grammatical mistakes. After that, the form was ready to use.

Because the open-ended question participants were also experimental group participants, the forms didn't include any demographical questions. It only consisted of seven

questions and aimed at revealing the thoughts and experiences of the participants about their digital escape room treatment period deeply. The questions were starting with “What do you think about the efficacy of digital escape room games in increasing your intercultural competence in general?” and ending with “Do you think digital escape room games are a good way to teach about understanding different cultures? Why or why not?”.

3.6. Reliability and Validity Concerns

For the quantitative data, in her study, Chao (2014) examined the reliability of ICS and the results showed that the scale had a high level of reliability, with a reported Cronbach's alpha value of .93. The scale was utilized in the current study in the same way it was used in Chao (2014)'s study, with no modifications.

In addition, in the current study, triangulation was used to increase validity. In other words, ICS and open-ended question form were the two distinct instruments used to collect both quantitative and qualitative data. Triangulation is “the combination of two or more data sources, investigators, methodologic approaches, theoretical perspectives” (Thurmond, 2001, p.253). By using several data sources, approaches, or viewpoints, researchers can increase the validity and dependability of their conclusions through the use of data triangulation. Triangulation helps validate results by addressing researcher bias and promoting more trust in research conclusions through cross-verification of data (Lauri, 2011; Noble & Heale, 2019; Thurmond, 2001).

Furthermore, 10% of the qualitative data were analysed by a different researcher in the field of foreign language instruction in order to achieve intercoder reliability, with the goal of bolstering the validity and reliability of the research in the data analysis process.

Moreover, while analysing and reporting the qualitative data, the identity of the participants was not revealed by giving a code for each participant. First of all, each participant was given a number. For example, “P3” code stands for the third participant. In this way, the participants were not revealed directly. Finally, pilot studies for both the scale and open-ended question form were conducted prior to their formal application in order to identify any issues with its language or content.

3.6.1. The Pilot Study of The Scale

In order to identify confusions, inadequately phrased questions and statements that the students do not fully understand, piloting is crucial (Van Teijlingen & Hundley, 2001). To

identify the scale's statement flaws and assess its suitability to our culture, the scale was piloted before the study. The students who were involved in the pilot study were equal to the real participants and they did not take part in the actual research.

The scale was piloted with 42 volunteer students who were in the 4th grade of their bachelor's degree at the English Language Teaching Department of a state university in Türkiye in 2022-2023 academic year. Before filling the scale, the students were informed about the objectives of the study, and they all stated that they participated in the study voluntarily. The participants were given 40 minutes to finalize the scale. After completing the scale, the students were questioned about any issues they had with the statements' language, comprehension, or anything else and they all approved the clarity and understandability of the questions. Table 8 shows the demographical information about the pilot study participants.

Table 8. Demographical Information about Pilot Study Participants

Age	<i>n</i>	%
21-22	16	38
23-24	20	48
25-28	3	7
31-33	3	7
Gender		
Female	29	69
Male	13	31

The data analysis of the pilot study of the scale was done using SPSS program and the Cronbach's Alpha was calculated as .97, which demonstrated the scale's high level of reliability. The sub-dimensions of the scale were also analysed, and their results are presented in Table 9.

Table 9. Cronbach's Alpha Values of Pilot Study Results

Sub-dimensions of the scale	Cronbach's Alpha
Knowledge of intercultural interaction	.89
Affective orientation to intercultural interaction	.82
Self-efficacy in intercultural situations	.86
Behavioral performance in intercultural interaction	.85
Display of intercultural consciousness	.84
Total	.97

As Table 9 demonstrates, the Cronbach's Alpha value of pilot study was calculated as .97. The table also shows that "knowledge of intercultural interaction" sub-dimension's Cronbach's Alpha value is .89, "affective orientation to intercultural interaction" sub-

dimension's Cronbach's Alpha value is .82, "self-efficacy in intercultural situations" sub-dimension's Cronbach's Alpha value is .86, "behavioural performance in intercultural interaction" sub-dimension's Cronbach's Alpha value is .85, and "display of intercultural consciousness" sub-dimension's Cronbach's Alpha value is .84. All these sub-dimensions' values are satisfactory in terms of reliability of the pilot study.

3.6.2. The Pilot Study of the Open-Ended Question Form

Two participants, who were not included in the actual study, took part in the open-ended question form's piloting to assess the accuracy and clearness of the questions. These participants were also included in the application of the piloting of scale. They were questioned on the clarity of the questions after completing the form. They stated that the questions were easy to understand and inclusive about the study's content. Filling open-ended question form for the pilot study lasted about ten minutes, and it was decided by the participants that the study could be utilized to the participants with no change.

3.7. Normality Analysis of the Quantitative Data

The assumptions of normality, variance homogeneity, and sphericity must be verified in order to perform independent samples t-test (Field & Hole, 2019). The Shapiro-Wilk Test is used to determine the normality of data, with a significance value (*sig.*) over 0.05 denoting normality. On the other hand, a significant deviation from a normal distribution is indicated by a *sig.* value less than 0.05. When normality cannot be definitively ascertained using the Shapiro-Wilk test, skewness and kurtosis values are employed. Furthermore, a histogram or normal Q-Q Plot can be used to visually analyse normality; data points that closely correspond with the diagonal line are indicative of a normal distribution. On the other hand, non-normal distribution is indicated by a discernible non-linear divergence of data points from the line. In this study, prior to analysis, Shapiro-Wilk normality test, skewness-kurtosis, the histogram, and the normal quartile (Q-Q plot) graphs were examined for the normality assumption.

Given our limited sample size, it was crucial to ascertain the variables' distribution in order to select the most suitable statistical method. Consequently, a Shapiro-Wilk test was run was performed on each data set after the quantitative data were gathered to see whether the information obtained from the pre- and post-scales in the experimental and control groups had a normal distribution. The test results are shown in Table 10.

Table 10. The Results of the Shapiro-Wilk Normality Tests

	Statistic	Shapiro-Wilk Test	
		df	Sig.
Control Group Pre-Scale	.88	26	.006
Control Group Post- Scale	.96	26	.302
Experimental Group Pre- Scale	.99	26	.953
Experimental Group Post- Scale	.95	26	.191

As Table 10 illustrates, the Shapiro-Wilk test results revealed that three of the data sets had a normal distribution and a p -value more than 0.05. The control group's post-scale had normally distributed data, with p -value of .302 ($p > .05$). In a similar vein, the experimental group data were normally distributed in both the pre- and post-questionnaires ($p > .05$; p -values of .953 and .191, respectively). However, only one of the data sets, which is the control group's pre-scale data, didn't have a normal distribution and a p -value less than 0.05 ($p > .05$; p -value of .006).

Because all the data sets didn't have a normal distribution as a result of Shapiro-Wilk test, skewness and kurtosis values were calculated. While calculating and obtaining z values for skewness and kurtosis values, it is accepted that the values obtained do not exceed the critical value (± 1.96 for a significance level of .05). It is stated that it is an indicator of normal distribution (Hair et al., 2010, p. 73) In this study, all z values calculated for skewness and kurtosis were found between -1.96 and +1.96, as an indicator of normal distribution of gathered data.

Finally, after examining the histogram and normal quartile (Q-Q plot) graphs, it was determined that the data were approximately normally distributed and suitable for parametric analysis.

3.8. Data Collection Process

Before conducting the study, the ethical consent of the university's Human Subjects Ethics Committee was obtained. Likewise, approval from the administration of the department, which served as the study's setting, was secured. The study was conducted during 2023-2024 academic year and experimental treatment lasted for four weeks.

In order to collect data, 4 digital escape room games were designed using LearningApps.org and Thinglink.com websites by the researchers. Each of these games consisted of the sub-dimensions of the intercultural competence scale. These subdimensions were "knowledge of intercultural interaction", "affective orientation to intercultural

interaction”, “self-efficacy in intercultural situations”, “behavioural performance in intercultural interaction” and “display of intercultural consciousness” (Chao, 2014, p.100). Because the “self-efficacy in intercultural situations” and “display of intercultural consciousness” subdimensions had less items than others, they were taken together and only one game was created for these two subdimensions.

The intercultural competence scale, developed by Chao (2014), was used as pre and post-test. The reason to conduct the same test was to see the effectiveness of the digital escape room games on participants’ intercultural competence abilities by displaying the differences between these two test results. The participants were divided into two groups as control and experimental groups. The groups were determined homogenously in terms of the age, gender, and number of the participants. Each of the control and experimental groups consisted of 26 students and totally, 52 students participated in the study. Both the control and experimental groups filled the same pre and post-tests.

All of the participants, including control and experimental groups, were asked to fill the pre-test before the application of digital escape room games to ascertain the students' level. They were given 40 minutes to finalize the scale. Then, each of the digital escape room games were presented to the experimental group students totally in four weeks, including one game for each week. The control group had the same lesson traditionally. They were not included in the application of the games. Throughout the process, the researchers actively participated in the classroom to help the participants if necessary. Once the application of the digital escape room games completed, the participants, including both the control and experimental groups, were given the post-test to complete in 40 minutes. The goal of the post-test was to assess the effectiveness of the applied games.

After 4 weeks application of digital escape room games and filling the post-test, open-ended question form was handed out to the experimental group students to collect their ideas about the effectiveness of digital escape room games on their intercultural competencies deeply.

After completing data collection process, all the experimental group participants were provided with an attendance certificate that they could include in their social transcriptive. The certificates were designed by the researchers.

3.9. Data Analysis Process

This study had both quantitative and qualitative data thus two different data collection tools were used while gathering data. The Intercultural Competence scale, which created basis for pre and post-test, provided quantitative data and the open-ended question form provided qualitative data for the study.

3.9.1. The Analysis of Quantitative Data

The quantitative data, which were gathered through the pre and post-test results of the participants, were analysed using SPSS program to carry out the analytical calculations. In order to gain a broad understanding of data, the mean, percentage, and standard deviation of each item were utilized as descriptive statistics. Next, the assumptions of independent samples t-test were checked, and it was seen that they were satisfactory. Later, normality was verified through conducting Shapiro-Wilk normality test and checking skewness-kurtosis, the histogram, and the normal quartile (Q-Q plot) graphs to see if they had a normal distribution. Moreover, the pre and post-test results were calculated to generate the numerical data. The groups were compared in terms of their pre- and post-test scores as well as the variations between these two scores using independent-samples t-test. Tables were used to present the results.

3.9.2. The Analysis of Qualitative Data

The qualitative data, which were obtained from the open-ended question form, were analysed using MAXQDA program. Content analysis method was chosen for the analysis of open-ended questions. Although it is sometimes thought of as a technical tool for basic, superficial, and simple text sorting, qualitative content analysis is actually appropriate for a wide range of data, including interviews, observational protocols, articles that have undergone literature reviews, diaries, and websites. This approach recognizes the value of comprehending the context in which the analysed items appeared and emphasizes the creation of categories from the data. Although description and interpretation are the primary characteristics of the qualitative content analysis approach, it is primarily appropriate for researchers who prefer a deeper level of description over an abstract interpretation (Lindgren et al., 2020; Vaismoradi & Snelgrove, 2019; Vespestad & Clancy, 2021). The aim of the open-ended questions was to get detailed information about the application of the digital escape room games, that's why content analysis method was adopted as the analysis method of the qualitative data which were

gathered through open-ended question form.

To guarantee the validity and reliability of qualitative findings, credibility procedures from four categories, including credibility, transferability, dependability, and confirmability which was proposed by Lincoln and Guba (1985), were used. The researcher needed to have been in the field for a sufficient period of time in order to comprehend the social context of the participants and notice components linked to the research problem. This was necessary to establish credibility. Peer review was then carried out in order to detect any prejudices the researcher may have had with reference to the research problem. Another researcher coded the participant responses on an independent basis during this process. After that, the researchers utilized the Miles and Huberman (1994) method for estimating intercoder reliability. In this method, a small portion of the obtained data are recoded by the second coder in order to determine intercoder reliability. Suitable to the method, the second coder recoded 10% of the qualitative data results independently and the intercoder reliability was calculated as .95. This result is satisfactory and indicates sufficient level of agreement between coders. In addition, the acquired codes and themes were thoroughly discussed along with their settings for transferability, and direct quotes from participant responses were used to bolster the explanations. When presenting the results, the participants' identities were not revealed. Instead, the participants were given codes. Following the presentation of the results, an external auditor who was not involved in the research reviewed the validity and reliability of the qualitative research process, results, and report. For confirmability, the qualitative study methodology was also disclosed in full and transparently.

CHAPTER IV

4. RESULTS

The first section of this chapter includes the results of the analysis carried out on the quantitative data that was gathered using the intercultural competence scale. The results of the examination of the qualitative data acquired through open-ended question form are then presented. The findings are presented depending on the related research questions.

4.1. The Effect of Digital Escape Room Games on Pre-service EFL Teachers' Intercultural Competency Development

The intercultural competence scale, which measured the participants' intercultural competence levels through Likert scale items, was given to both the experimental and control groups before and after the experimental treatment to gain insights into their intercultural competence levels. Descriptive statistics were applied to the data sets to determine the mean scores and standard deviations that each group possessed in the pre- and post-scales. This was done with the intention of comparing the scores obtained on each administration of the scale. After that, to determine if the groups' levels of intercultural competence changed after the digital escape room games treatment, the between-groups in the mean scores were calculated. Table 11 displays the mean values and standard deviations of the two groups for the pre- and post-scales.

Table 11. Means and Standard Deviations of the Scale

	Pre-Scale		Post-Scale		Difference
	Mean	SD	Mean	SD	Mean
Control Group (<i>n</i> = 26)	4.63	.52	4.89	.50	.27
Experimental Group (<i>n</i> = 26)	4.72	.56	5.28	.44	.55

As Table 11 illustrates, the mean values of the pre-scale of experimental group and the control group were reasonably close to one another. While the mean score of the control group was 4.63, the experimental group's mean score was 4.72. The results of the post-scale, however, showed that there was a higher difference between the control and experimental

groups' mean scores (4.89 and 5.28, respectively). The difference between the pre and post scale mean scores of control group was calculated .27. However, the difference between the mean scores of experimental group's pre and post scale was much higher (.55).

The findings indicate that, according to results, the experimental group demonstrated a greater degree of intercultural competence than the control group following the implementation of the digital escape room games treatment. However, significance tests were conducted on the data to determine whether the results were statistically significant. The findings of these tests are shown in the sections that follow.

4.1.1. Between-Groups Differences in the Pre-Scale Results

To discover whether there was a statistically significant difference between the groups prior to the digital escape room games treatment, the pre-scale scores of the control group ($M = 4.63$) and the experimental group ($M = 4.73$) were compared. To compare the mean scores each group received on the pre-scale, an independent-samples t-test was used. When the t-test was performed, the findings of the Levene's Test for Equality of Variances showed that the variances for the pre-scale scores for the control and the experimental groups were equal ($p = 0.513 > 0.05$). Thus, the interpretation of the t-test results assumed of equal variances. Table 12 contains the findings of these analyses.

Table 12. Between-Groups Differences in the Pre-Scale According to Independent-Samples T-Test

Group	Mean	SD		F	Levene's Test for Equality of Variances		t-test for Equality of Means	
					Sig.	t	df	Sig. (2-tailed)
Control (n = 26)	4.63	.52	Equal variances assumed	.44	.513	-.67	50	.507
Experimental (n = 26)	4.73	.56						

As Table 12 demonstrates, the results of the independent-samples t-test showed that there was no significant difference in the group mean scores in the pre-scale; $t(50) = -0.67$, $p = 0.507 > 0.05$. According to these findings, participants' levels of intercultural competence before the experimental digital escape room games treatment were comparable between the control and experimental groups.

4.1.2. Between-Groups Differences of the Sub-Dimensions in the Pre-Scale Results

To investigate the variations between groups, the mean scores for the sub-dimensions of the scale were also examined separately. An independent-samples t-test was performed on each of the 5 sub-dimensions to achieve this goal. It was determined whether the data had equal variances before interpreting the findings of the independent-samples t-test. The data had equal variances for each of the sub-dimensions of the scale, according to the findings of the Levene's Test for Equality of Variances. As a result, the interpretation of the independent-samples t-test results was based on the assumption that each sub-dimension's variance was equal. Table 13 contains the findings of these analyses.

Table 13. Between-Groups Differences in the Sub-dimensions of the Pre-Scale According to Independent-Samples T-Test

Factor No	Sub-Dimension	Group	Mean	SD	t	df	Sig. (2-tailed)
1	Knowledge of intercultural interaction	Cont.	4.35	.73	-.61	50	.546
		Exp.	4.47	.79			
2	Affective orientation to intercultural interaction	Cont.	5.34	.62	-1.46	50	.148
		Exp.	5.57	.50			
3	Self-efficacy in intercultural situations	Cont.	4.71	1.14	-.33	50	.742
		Exp.	4.79	.78			
4	Behavioural performance in intercultural interaction	Cont.	4.42	.83	-.09	50	.924
		Exp.	4.45	.82			
5	Display of intercultural consciousness	Cont.	4.52	.75	-.03	50	.973
		Exp.	4.53	.91			

As displayed in Table 13, the results of the t-test applied to the sub-dimensions of the intercultural competence indicate that none of the sub-dimensions of the pre-scale showed statistically significant differences between the control and experimental groups. Even though experimental group scored higher than the control group in all sub-dimensions, it was not statistically significant for any of these scores. In other words, the results of the comparison of the total scores for this section were confirmed by the independent samples t-test analysis of

the between-groups differences in the sub-dimensions of the pre-scale, which verified that there were no statistically significant differences between the two groups' scores in the pre-scale. Thus, prior to the digital escape room game treatment phase, the control and experimental groups were comparable to one another in terms of intercultural competence degree they felt they had.

4.1.3. Between-Groups Differences in the Post-Scale Results

According to the results of the independent-samples t-test conducted on the mean of the pre-scale scores, the control group ($M = 4.63$) and the experimental group ($M = 4.73$) did not significantly differ from one another; $t(50) = -0.67, p = 0.507 > 0.05$. To examine the impact of the treatment on the experimental group, the between-groups differences in the intercultural competence levels of the two groups at the completion of the digital escape room games treatment period were compared, as well.

The experimental group outscored the control group ($M = 4.90$) in the post-scale, with a mean overall score of $M = 5.28$. The same methodology that was used to compare the control and experimental group's pre-scale scores was applied to ascertain whether there was a statistically significant difference between them and an independent-samples t-test was conducted to examine the variations between the groups. The groups' scores in the post-scale had equal variances, as indicated by the Levene's Test for Equality of Variances results ($p = 0.535 > 0.05$). As a result, the interpretation of the t-test results assumed equal variances. The findings are presented in Table 14.

Table 14. Between-Groups Differences in the Post-Scale According to Independent-Samples T-Test

Group	Mean	SD	F	Levene's Test for Equality of Variances		t-test for Equality of Means			Effect size ^a
				Sig.	t	df	Sig. (2- tailed)		
Control (n = 26)	4.90	.50	.39	.535	-2.92	50	.005*	.15	
Experimental (n = 26)	5.28	.44							

* $p < .05$.

^a Eta squared.

Table 14 illustrates the t-test results, which indicate that there was a statistically

significant difference between the control and experimental groups in the post-scale. Specifically, the experimental group's overall mean score was significantly higher than the score of the control group; $t(50) = -2.92, p = 0.005 < 0.05$. The magnitude of this difference was large (eta squared = 0.15). These findings imply that following the digital escape room games treatment, the experimental group's level of intercultural competence was noticeably higher than the level of the control group. The results of the two independent samples t-tests collectively verify that the digital escape room games treatment raised the self-perceived intercultural competence level of the experimental group by rendering the group significantly more interculturally competent compared to the control group based on the participants' perceptions, given that the pre-scale mean scores of the two groups were not significantly different from each other.

4.1.4. Between-Groups Differences of the Sub-Dimensions in the Pre-Scale Results

The between-group differences were examined for each of the sub-dimensions of the post-scale after the comparison of the overall mean scores. As a result, an independent-samples t-test was used to compare the groups' mean scores for each sub-dimension independently and the results are given in Table 15. Levene's Test for Equality of Variances findings were used to determine whether the data had equal variances for each sub-dimension, and the numbers were added to the table accordingly. Therefore, the results of the t-test in Table 15 are presented in accordance with the assumptions of the Levene's Test for Equality of Variances.

Table 15. Between-Groups Differences in the Sub-Dimensions of the Post-Scale According to Independent-Samples T-Test

(Control group $n = 26$, Experimental group $n = 26$)								
Factor No	Sub-Dimension	Group	Mean	SD	t-test			
					t	df	Sig. (2-tailed)	Effect size ^a
1	Knowledge of intercultural interaction	Cont.	4.64	.705	-2.95	46.81	.005*	.15
		Exp.	5.15	.54				
2	Affective orientation to intercultural interaction	Cont.	5.46	.48	-2.16	47.23	.036*	.09
		Exp.	5.71	.37				
3	Self-efficacy in	Cont.	4.76	1.00	-2.19	43.05	.034*	.09

	intercultural situations	Exp.	5.27	.65				
4	Behavioural performance in intercultural interaction	Cont.	4.82	.71	-1.70	50	.096	-
		Exp.	5.14	.62				
5	Display of intercultural consciousness	Cont.	4.89	.63	-1.89	50	.064	-
		Exp.	5.21	.57				

* $p < .05$.

^a Eta squared.

Table 15 shows that the experimental group outscored the control group on all the sub-dimensions. Based on the participants' opinions, the results indicate that at the end of the digital escape room games treatment, the experimental group felt more intercultural competent than the control group, even if not all these changes were statistically significant.

The greatest difference between the groups was in sub-dimension one, which questioned about the knowledge of intercultural interaction. For this item, the experimental group's mean post-scale score was 5.15, compared to the control group's 4.64. Between the two scores, there was a statistically significant difference; $t(46.81) = -2.95$, $p = 0.005 < 0.05$ and the effect size was large (eta squared = 0.15). This means that at the conclusion of the four-week treatment, the experimental group felt that they had more knowledge of intercultural interaction than the control group. As given in section 4.1.2, there was no statistically significant difference observed in the pre-scale scores for this sub-dimension between the control ($M = 4.35$) and experimental ($M = 4.47$) groups. This suggests that the treatment of the digital escape room games enhanced the experimental group's knowledge of intercultural interaction.

Another notable difference was in the sub-dimension two, which included items related to the affective orientation to intercultural interaction. The experimental group's ($M = 5.71$) and the control group's ($M = 5.46$) post-scale scores for this sub-dimension had a significant difference; $t(47.23) = -2.16$, $p = 0.036 < 0.05$ and eta squared score (0.09) indicates that the difference was likewise significant in magnitude. The results suggest that the experimental group believed they had better the affective orientation to intercultural interaction than the control group because there was no significant difference in the pre-scale scores for this item between the experimental ($M = 5.57$) and control ($M = 5.34$) groups.

Similarly, there was a significant difference between the groups' post-scale scores for sub-dimension three, which questioned about the students' self-efficacy in intercultural situations. The control group's mean score was 4.76 while the experimental group's mean score was 5.27. That means there was a statistically significant difference between the two scores; $t(43.05) = -2.19$ and $p = 0.034 < 0.05$ and eta squared effect size was 0.09. These findings imply that the experimental group thought more highly of their self-efficacy in intercultural situations than did the control group. The pre-scale did not reveal any statistically significant differences between the groups ($M(\text{control}) = 4.71$, $M(\text{experimental}) = 4.79$), which supports the idea that the digital escape room games treatment had an impact on the variation in scores.

Apart from the sub-dimensions where the two groups' post-scale scores differed significantly, the experimental group outperformed the control group in the post-scale on sub-dimensions 4 and 5, which questioned the students' behavioural performance in intercultural interaction and display of intercultural consciousness, respectively. The results confirm that the experimental group had a higher level of self-perceived intercultural competence than the control group, even if the differences were not statistically significant. However, it should be mentioned that the experimental group outperformed the control group in the pre-scale on these sub-dimensions. These differences were not statistically significant. When both the pre- and post-scale scores are considered, it can be concluded that the experimental group's scores for these items were marginally higher than the control group's scores.

Overall, after the conclusion of the experimental treatment, the experimental group had a higher level of intercultural competence than the control group, according to the analysis of the between-groups differences in the post-scale. The statistical significance of the difference was indicated by a comparison of the total post-scale scores, and this conclusion was confirmed by a comparison of the sub-dimension scores. Given that there was no statistically significant difference between the groups in the pre-scale, the results imply that the digital escape room games treatment contributed to the increased intercultural competence level of the experimental group.

4.2. Pre-Service EFL Teachers' Perceptions on the Instructional Effectiveness of Digital Escape Room Games in Enhancing their Intercultural Competence

The other aim of the study was to investigate participant perceptions of the effectiveness of digital escape room games in enhancing their intercultural competence. As a result, an investigation was conducted on how the experimental group's participants perceived their experiences on the effectiveness of digital escape room games in enhancing their intercultural competence. Open-ended question form was used for gathering qualitative data to achieve that goal. The analysis of participants' responses regarding open-ended questions included six codes, as presented in Table 16.

Table 16. Participants' Views on the Effectiveness of Digital Escape Room Games in Enhancing Their Intercultural Competence

Code	<i>f</i>
learning information about cultures	36
recognizing other cultures	13
improving communication skills	12
feeling confident in meeting new people	2
improving team-work abilities	2
developing problem-solving skills	1
Total	66

As seen in Table 16, the most common point mentioned by the participants was that digital escape room games were effective in *learning information about cultures*. They indicated that to learn information about cultures, digital escape room games can be used effectively. The second most often expressed issue by the participants was that digital escape room games were efficient in *recognizing other cultures*. They mentioned that playing digital escape room games helped them notice a lot about different cultures. Concerning these two codes, one participant expressed that “Thanks to this game, I think I learned new things about cultures, and it increased my intercultural competence. Now, I know what I should do in specific situations” (P10). Moreover, another participant mentioned, “The game teaches us other cultural things like festivals and what to do in some situations. It increases our intercultural competence” (P22). Similarly, another participant stated, “I didn't have much knowledge about cultural dances. While matching them, I realized that my own knowledge was incorrect. The costumes were different from what I expected. I was very surprised by that. Therefore, I think it was effective” (P24). Likewise, one participant shared her views as:

I think it was effective. I learned things about other cultures that I had never seen before. Perhaps things I hadn't taken the time to research myself. Many things stuck in my mind, such as their cultural activities, preferences, and so on. So, in my opinion, it was

quite sufficient, and a very good activity indeed. I believe it would be even more effective for children. I think learning such things from a young age is much better. It was truly adequate, in my opinion (P18).

The third code that was often mentioned by the participants was *improving communication skills*. The participants stressed that thanks to digital escape room games, their communication abilities were developed. To exemplify, some participants stated that “Thanks to these games, I am aware of how I can behave when I experience to communicate people from different culture. I know how I should behave” (P9), “Now I have other opinions about how I can communicate with people from other cultures” (P17), “While playing the game and talking to your friend, you not only engage in communication but also gather information by researching” (P24), and “Yes, I learned many things about starting a communication with a foreigner” (P7).

In addition to the effects given above, participants also noted that digital escape room games were effective in *feeling confident in meeting new people, improving team-work abilities, and developing problem-solving skills*. By stating these effects, the participants stressed that these games helped them be more competent in starting a conversation with someone foreign, being more active in a team and solving problems, as can be understood from these statements: “As a result of playing escape room games, I am more confident about meeting new people from different cultures” (P2), “It lit up some ideas in my mind about how to start a relationship with a foreigner” (P7), “I learned how to work in group activities after playing these games” (P14), and “Such games develop our problem-solving skills” (P17).

These codes can be thought of as a sign that the participants were affected positively in terms of learning and recognizing about different cultures, feeling competent in starting an intercultural relationship, as well as improving communication, team-work and problem-solving skills.

4.3. Perceived Advantages and Disadvantages of Utilizing Digital Escape Room Games for Improving Intercultural Competence among Pre-Service EFL Teachers

The third research question aimed to reveal the advantages and disadvantages of utilizing digital escape room games for improving intercultural competence among pre-service EFL teachers. In this direction, the participants were asked two specific questions in open-ended question form. The questions were “What are the advantages of using digital escape

games in increasing the intercultural competence in general?” and “What are the disadvantages of using digital escape games in increasing intercultural competence in general?”. Table 17 shows the codes that arose from the analysis of these questions’ responses, which were divided into categories of advantages and disadvantages.

Table 17. Participants’ Views on the Advantages and Disadvantages of Utilizing Digital Escape Room Games for Improving Intercultural Competence

Category	Code	<i>f</i>
Advantages	enjoyable	29
	technology integration	18
	teamwork	11
	innovative learning	10
	motivating	10
	interesting	8
	practical	7
	instrumental	5
	cost-effective	1
	Total	99
Disadvantages	lack of genuine interaction	7
	connection problems	6
	technology necessity	5
	lack of graded difficulty	5
	monotonous	3
	competition oriented	3
	lack of effective feedback	3
	limited number of players	2
	prone to cheating	1
	Total	35

Table 17 demonstrates that, among the advantages of utilizing digital escape room games for improving intercultural competence, the participants mostly mentioned that these games were *enjoyable*. They stated that they had fun while playing these games. the participants also expressed that *technology integration* was another advantage of utilizing these games. They reflected that because we are living in a technology dependent era, integrating technology in teaching is beneficial. They also emphasized that people learn easier when they have fun. The following statements can be given as examples of participants’ views on these advantages: “Such games are more enjoyable and motivating than traditional ways” (P9), “It is fun, and people learn easily when they are having fun” (P12), “I think it will be very appealing for children. Being a technological game makes it a more enjoyable and fun environment, thus making it more interactive. We had a lot of enjoyable time here” (P18), and:

First of all, I believe it has significantly enhanced my intercultural competence because

it is a very different material. This is due to the benefit provided by technology. I truly think it has improved my intercultural competence in a positive way because I consider it a great way to use technology in a positive direction (P8).

The participants mentioned that digital escape room games were advantageous in developing *teamwork* skills. They also stated that these games are a kind of *innovative learning* experience. By pointing these features, they emphasized the importance of innovation in fostering learning and collaboration among the learners. As an example, one of the participants expressed that, “The students' communication with each other positively influences their interaction, and students gain knowledge in an implicit way of learning without realizing it” (P24). Likewise, another participant noted that, “It is a rare thing to experience meaningful time in nowadays' school environment. These games are brilliant, and they are helping greatly towards a positive outcome of the game” (P25). Similarly, one of the participants reported that:

Due to my ability to quickly access information and respond, along with teamwork, it has been more advantageous for me in terms of learning. Also, the team collaboration aspect adds to its effectiveness in learning, and I believe it is much more beneficial for learning because it is a different material (P8).

As an advantage, some of the participants focused on that digital escape room games were *motivating* and *interesting*. By saying that, they meant they were encouraged to learn intercultural competence in an engaging way. They also stressed that these advantages make digital escape room games more effective in terms of learning. For example, one of the participants stated that, “It motivates students to learn both language and culture of a country at the same time” (P7). In the same direction, another participant noted that, “As it is interesting for students, it is much more comprehensible” (P26). Moreover, another participant declared that “The diversity of the games was also effective, I believe, because repetition made them more impactful” (P18). Similarly, one of the participants stressed that, “I might use such games because they are not taking much time to play and can be interesting for learners” (P19).

According to the views of the participants, being *practical*, *instrumental*, and *cost-effective* were among the advantages of digital escape room games. thanks to these advantages, the participants stated that such games are easy to use in teaching environments. The following quotations illustrate the views of the participants regarding these advantages: “The instructions were quite explanatory. It was clear enough to figure out what to do, and there was even more

clarity with the instructions. It was clear and practical in terms of what we needed to do” (P8). “It can be useful for learning and teaching now cultures” (P14). “I think these games are useful because they encourage people to play, and they are fun” (P23). “It is a good way because it is cheap, attractive, and interesting. If students have fun, they learn” (P15).

In addition to the advantages, some of the participants mentioned the disadvantages of digital escape room games. *Lack of genuine interaction* was the most frequently stated disadvantage of these games. the participants stressed that instead of playing digital escape room games, they would prefer face-to-face interaction with people from different cultures to foster their intercultural competence. For instance, one of the participants noted that “If it were someone else, from a different culture, I think my motivation would have increased more by learning from them through communication and social teaching” (P20). Likewise, another participant declared that “These games are good in general, but I would rather play games online with foreign people to enhance my intercultural competence. They can be good, but it is the best to interact with people from different cultures instead” (P19). In addition, one of the participants stated that “I believe I'll feel more confident by communicating with people in person” (P12).

Other disadvantages stated by the participants were related that these games were technology-based. They mentioned that having *connection problems* and *technology necessity* to play these games were drawbacks of digital escape room games. By emphasizing these disadvantages, the participants stated that playing these games without technology, the games would be more effective. In this regard, one of the participants declared that “Because of the Internet connection problems we had difficulties while playing the games” (P2). Another participant noted that “At first, the internet connection was not very good. We had some problems when we wanted to see the next page, so it shortened the process while playing” (P5). Also, the following excerpts reflect other views of the participants about these disadvantages:

Technology can also be a disadvantage because not everyone may have access to a computer or other devices. Even if they do, computers can sometimes be insufficient, and there may be disruptions on the internet. I think this may be a disadvantage (P18).

A disadvantage of these games could be that it may not be possible to play everywhere, and there might not be equipment available everywhere. It was technology-based after all, but it doesn't necessarily have to be so. It can be done in the classroom as well. For

instance, questions could be posted around (P20).

It would be challenging to play this game in village schools from a technological standpoint because not every student may have technological devices at home. It's a difficult choice for students in rural areas in the east side of our country. However, if it were organized physically at the class level as an escape game, it would be effective. Students would actively participate here, and it would be nice (P24).

Along with these disadvantages, the participants also mentioned that these games were not efficient enough for being *monotonous*, *competition oriented* or *lack of graded difficulty*. While some of the participants focused on the boringness because of the same concept of the games, some others concentrated on winning instead of learning. Some others, however, complained that the difficulty of the games was all the same as each other. They meant that if the games were organised from easy to difficult, they would be more effective, as indicated in the following excerpts: “The concept of it is similar every week. It is boring sometimes” (P16), “I don't think it has increased my intercultural level much, because we have focused on winning and didn't focus on information” (P11), “Because I was striving to be the first, the ambition and all. Actually, my goal was not to learn too much (P20), and “The last game is easier than others. The games can be improved in terms of their difficulty level. When we go on the steps, it can be more and more difficult” (P14).

Except from the given disadvantages, some of the participants pointed out that the games could be played with a *limited number of players*. They stressed that the games would not be effective in crowded classrooms. Some others noted that the games had a *lack of effective feedback* and that caused confusion while playing the games. One participant, however, stated that the games were *prone to cheating* so the players might not benefit from them effectively. The following quotes are indicative of these disadvantages: “We might not be able to accommodate a large number of people to play these games. So, I don't know if it can be applied in very crowded classrooms” (P20), “Some game parts did not give effective feedback” (P1), “The solutions of the games were predictable. When we do mistakes, it shows how we can find the correct option” (P14), and “We were playing the games in the same room, that's why students may cheat on others. For example, students may look at others' screen to see the code or the answer” (P21).

These codes of the participants' views reflect that digital escape room games have both advantages and disadvantages to integrate in fostering intercultural competence. However, it is noteworthy that the participants mentioned the advantages much more than the disadvantages

in total.

4.4. Impact of Digital Escape Room Games on the Willingness of Pre-Service EFL Teachers to Incorporate them into their Future Teachings to Foster Intercultural Competence

The purpose of the fourth research question was to ascertain the impact of digital escape room games on the willingness of the participants to incorporate them into their future teachings to foster intercultural competence. Two specific open-ended questions were asked to the participants in this direction and these questions were “Would you like to use such games when you start teaching? Why/Why not?” and “Do you think digital escape room games are a good way to teach about understanding different cultures? Why/Why not?”. The codes that emerged from the analysis of the participants’ responses to these questions, which have been organized down into categories based on the willingness and unwillingness categories, are displayed in Table 18.

Table 18. Participants’ Views on the Impact of Digital Escape Room Games on their Willingness to Incorporate them into Their Future Teachings to Foster Intercultural Competence

Category	Code	<i>f</i>
Willingness	being interactive	15
	smooth learning	13
	permanent learning	7
	competitive environment	5
	timesaving	4
	implicit learning	2
	gamified learning	2
	teaching different cultures	2
	attractive	2
	Total	52
Unwillingness	time consuming	1
	Total	1

Table 18 shows that most of the participants were willing to incorporate digital escape room games into their future teachings. Only one of the participants stated that she would not like to use them because they are *time consuming* with these words: “*I would not use them while teaching because it takes time*” (P16).

The most frequently uttered reason of the participants to be willing to use digital escape room games in their future teachings was the reality that these games were *interactive*. They

also added that for being interactive, these games were effective in developing students' knowledge, collaboration skills, engagement and overcoming shyness. The following statements can exemplify these views of the participants: "I would use these games because it could be more interactive and efficient while teaching" (P2), "Such games make learning more interactive for a student who is not very eager. Instead of just presenting it theoretically, these games make it more engaging for everyone to participate" (P20), and:

I believe these games are interactive, especially when done in pairs. Because an activity which is done collaboratively, with questions asked to the teacher, etc., or even done individually, such games add interactivity to the lessons. Besides that, it seems like an application that will increase awareness, thanks to the information it provides (P18).

The participants pointed out that these games provided *smooth learning* and *permanent learning*. In this way, these games facilitated effective teaching and learning. That's why they expressed their willingness to use them in their future teachings, as indicated by the following excerpts of the participants: "Yes I would like to use these games because they are fun and people learn easily when they are having fun" (P12), "I think these games are a useful thing because they are fun and encourage people to play and learn" (P23), "Due to the abundance of new information about other cultures, matching these pieces of information with games, fill-in-the-blank exercises, and so on. I think creating games in this way made the information more memorable" (P18), and "Failures that cost time are memorable. The games include a competition and a time trial. Therefore, a mistake made is hardly ever forgotten" (P25).

Other reasons of the participants for being willing to use digital escape room games in their future teachings include that these games were *timesaving* and provided *competitive environment* and *implicit learning*. By saying that the participants emphasized that thanks to these games, they could help their learners get the necessary information implicitly in a quick way by adding competition. As an example, one of the participants stated that "The competitive environment has actually been beneficial for me to get the necessary information" (P8). Another participant noted that "It is a good way to teach because it provides a competitive environment" (P4). One other participant pointed out that "The students' communication with each other positively influences their interaction, and students gain knowledge in an implicit learning way without realizing it" (P24). Similarly, another participant expressed that "I might use such games in the future since they are not taking much time to play and can be interesting" (P19).

In addition to the aforementioned reasons, participants also mentioned that they would prefer using digital escape room games in their future teachings because they found these games were *attractive*, and provided *gamified learning* which is an effective way in *teaching different cultures*. They emphasized that gamifying learning makes it more attractive and effective in presenting the new knowledge to the learners. The following quotations reflect the views of the participants about these reasons: “I would like to use such games surely because the lessons are already boring for the students. We, as the teacher candidates, should be doing our lessons interesting by using such games” (26), “It is really effective in teaching intercultural competence because I believe everything becomes more enjoyable as it becomes gamified” (P20), “When it's game-based, it feels fun for everyone” (P23), “I would like to use such games because it can be a good way to teach different cultures for children” (P14).

These codes reveal that the participants are generally willing to use digital escape room games in their future teachings for different reasons. Only one participant has mentioned her unwillingness. The reality that nearly all the participants are keen on integrating these games into their lessons can be considered as a sign that the participants have positive views on these games, and they found them as an effective way to teach intercultural competence.

CHAPTER V

5. DISCUSSION

This section encompasses the discussion of the results and the interpretation of these with respect to the relevant literature.

5.1. Discussion on the Findings Related to the Effects of the Digital Escape Room Games Treatment on Intercultural Competence

The results suggested that, prior to the digital escape room games treatment, the control and experimental groups' levels of self-perceived intercultural competence were comparable to one another. However, when the mean post-scale scores of the two groups were compared using another independent-samples t-test, it was discovered that the mean score of the experimental group was considerably higher than the mean score of the control group. The results of the two t-tests indicate that while the two groups' levels of self-perceived intercultural competence were comparable prior to the digital escape room games treatment, they differed significantly at the conclusion of the intervention, with the experimental group's level being higher. This indicates that the digital escape room games treatment had an impact on fostering the experimental group's level of intercultural competence.

Except from the total scores, the sub-dimensions of the scale were also checked via independent samples t-test. In all the five sub-dimensions, the post-scale scores were found to be higher than the pre-scale scores. This result indicates that the treatment of digital escape room games was effective in fostering the knowledge of intercultural interaction, affective orientation to intercultural interaction, behavioural performance in intercultural interaction, self-efficacy in intercultural situations and display of intercultural consciousness of the participants. Even though all the sub-dimensions of the scale were found to be positively affected by the treatment, the results showed that knowledge of intercultural competence was the sub-dimension that had the highest difference between the pre and post-scale results. This result is a sign that the treatment of the digital escape room games has improved the knowledge of the participants more than other sub-dimensions of the scale.

The result that digital escape room games treatment was effective in fostering the intercultural competence of the pre-service EFL teachers could be associated with the genre, or the mode of the digital escape room games used in this study, because the tools used in this

study to create the games are possibly effective in the results of the study (Altınbaş, 2023). Therefore, it worths to note that with different tools, the study could end up with a different result.

The fact that digital escape room games were effective in fostering content knowledge was concluded by some previous research results as well (Adams et al., 2018; Borrego et al., 2017; Brown et al., 2019; Cotner et al., 2018; Craig et al., 2019; Eukel et al., 2017; Ferreiro González et al., 2019; Gordon, 2017; Guigon et al., 2018; Hermanns et al., 2018; Ho, 2018; Nelson et al., 2017; Peleg et al., 2019; Tükle, 2020). Likewise, some other research results showed that integrating these games into learning process was efficient in promoting learning (Veldkamp et al., 2020). Related to this topic, there also exists some research revealing that gamification has a contribution to boost knowledge (Costa et al., 2020) and improve learning process (Luo, 2021; Plump & Meisel, 2020; Qiao et al., 2023). All this research and the findings of this study are comparable each other in that integrating escape room games is an effective way to improve the knowledge of the learners.

In addition, it is possible to see some other research that support the results of this study regarding the contribution of digital escape room games in developing affective orientation to intercultural interaction of the participants. For example, the results of the study conducted by Bellés-Calvera and Martínez-Hernández (2022) showed that the participants were extremely motivated and felt less anxious to speak the target language while playing the escape room games. Likewise, the conclusions of Moreno-Reyes et al. (2022)'s study demonstrated the potential of gamification in the classroom, encouraging students to take an active role in their education and addressing issues brought up by both traditional, passive teaching techniques and real-world scenarios. In addition, Kara (2021) concluded that academic performance and motivation were positively impacted by educational digital escape games. Moreover, the findings of Urbieto and Peñalver (2019)'s study showed that students had positive attitudes towards the escape room games and they reported that learning was more effective than the traditional techniques.

The results showed that digital escape room games treatment had an effect on developing the participants' behavioural performance in intercultural interaction, display of intercultural consciousness, and also self-efficacy in intercultural situations. This result is consistent with the results of some earlier studies conducted on the effectiveness of escape room games. While some studies found out that gamification enhanced student engagement,

achievement, and outcomes (Cruaud, 2018; Luo, 2021; Rachels & Rockinson-Szapkiw, 2017), some others concluded that escape room games are entertaining, challenging, motivating, informative and worthwhile learning exercises (Eukel et al., 2017; Schenker & Kraemer, 2022). Additionally, the results of Stollhans (2020)'s study demonstrated the potential of escape room games for language learning in terms of student experiences and skill development.

As discussed above, digital escape room games have a positive effect on improving the knowledge, affective orientation, behavioural performance, self-efficacy, and display of various subjects of the learners. Overall, as supported by the previous studies and indicated by the results of quantitative data of this study, such games are effective in developing intercultural competence of the pre-service EFL students. In addition, because of the fact that the aim of this research was to reveal the effectiveness of digital escape room games on promoting intercultural competence, it can be said that this study reached its goal by concluding the efficiency of these games.

5.2. Discussion on the Findings Related to the Perceptions of Pre-Service EFL Teachers on the Instructional Effectiveness of Digital Escape Room Games in Enhancing Their Intercultural Competence

The examination of the qualitative data gathered using the open-ended questions enlightened that integrating digital escape room games were found to be effective in fostering intercultural competence by the participants. They stated that these games were efficient in learning information about cultures and recognizing other cultures. In a broader sense, they meant that these games were persuasive and useful in presenting a new subject to the learners. This finding is supported by some other research which had a conclusion that escape room games were effective in introducing the students to a new subject (Borrego et al., 2017; Brown et al., 2019; Cotner et al., 2018; Craig et al., 2019; 2017; Gordon, 2017; Hermanns et al., 2018; Ho, 2018; Peleg et al., 2019;). These previous research findings and the results of this study are parallel to each other and indicate that these games can be used effectively to improve the achievement of the learners on a subject.

The participants also mentioned that these games were efficient in improving communication skills and feeling confident in meeting new people. Because they had a chance to communicate with each other while playing the games and they had some theoretical knowledge on the different usages of language on various cultural situations, they could

progress in language and felt more competent while talking to people from diversified cultural backgrounds. Likewise, some of the previous studies focused on the communication aspect and concluded that escape room games were persuasive in fostering communication skills (Chou et al., 2020; Clarke et al., 2017; Craig et al., 2019; Dietrich, 2018; Friedrich et al., 2019; Healy, 2019; Lathwesen & Belova, 2021; Nicholson, 2018; Ross et al., 2021; Schenker & Kraemer, 2022; Stollhans, 2020; Veldkamp et al., 2020; Vidergor, 2021; Vörös & Sárközi, 2017; Wu et al., 2018). All these studies and the results of this study can be proof that it is a wise choice to use escape room games to improve the learners' communication abilities.

Depending on the data collected, it was seen that the participants had a perception that digital escape room games were capable of improving team-work abilities and developing problem-solving skills because they played the games in pairs, suitable to the nature of escape room games, they were involved in games and tried to get the solution together as a team. Just like this result, some previous research showed that escape room games could be used to facilitate the learners both teamwork abilities (Fotaris & Mastoras, 2019; Hermanns et al., 2017; Lathwesen & Belova, 2021; Montoro, 2020; Nicholson, 2015; Schenker & Kraemer, 2022; Stollhans, 2020; Veldkamp et al., 2020; Wiemker et. Al., 2015) and problem-solving skills (Fotaris & Mastoras, 2019; Hermanns et al., 2017; Montoro, 2020; Nicholson, 2015; Nicholson, 2018; Schenker & Kraemer, 2022; Veldkamp et al., 2020; Wiemker et. Al., 2015). To sum up, it can be said that, in addition to the content knowledge, escape room games can be used to progress the learners on 21st century skills such as teamwork and problem-solving abilities.

5.3. Discussion on the Findings Related to the Perceived Advantages and Disadvantages of Utilizing Digital Escape Room Games for Improving Intercultural Competence among Pre-Service EFL Teachers

Participants' views on the advantages and disadvantages of digital escape room games were questioned qualitatively and the data analysed showed that the codes arose from the views of the participants regarding the advantages of digital escape room games included the terms; enjoyable, technology integration, teamwork, innovative learning, motivating, interesting, practical, instrumental, and cost-effective. These results are in consonance with the findings of some related previous research which unearthed that escape room games were entertaining (Costa, 2020; Fotaris & Mastoras, 2019; Schenker & Kraemer, 2022), motivating (Bartlett & Anderson, 2019; Chou et al., 2020; Fuentes-Cabrera et al., 2020; Karageorgiou et al., 2019;

Macías-Guillén et al., 2021; Moura & Santos, 2019; Schenker, & Kraemer, 2022; Taraldsen et al., 2020; Veldkamp et al., 2020; Vidergor, 2021; Voloshynov et al., 2020), innovative (Merchán Macías, 2017; Nicholson, 2018), teamwork facilitator (Clauson et al., 2019; Friedrich et al., 2019; Gómez-Urquiza et al., 2019; López, 2019; Morrell & Ball, 2019; Seto, 2018; Styling et al., 2018; Vergne et al., 2019; Watermeier & Salzameda, 2019; Wu et al., 2018), and a good way to use technology (Makri et al., 2021). The results of the previous research and the findings of this study have a common conclusion that escape room games provide a range of advantages for the learners.

Even though the participants mentioned different advantages of these games, some others expressed their views on the disadvantages of digital escape room games. For example, some stated that these games had lack of genuine interaction, competition oriented and could be played with a limited number of players. Some others focused on that they had connection problems while playing the games and technology necessity was a problem for them. This finding has an opposing conclusion with some other research findings. For example, Llumiquinga (2022) found out as a conclusion of the study that technology integration and internet access were effective tools for student engagement and motivation. Likewise, Makri et al. (2021) concluded that technology use was one of the strong features of digital escape room games. Moreover, the findings of this study suggest that technology integration was among the advantages of these games. These findings may be proof that technology can be both a power and a weakness of digital escape room games.

Among the other disadvantages, some of the participants of the current study described digital escape room games as monotonous. As opposed to this finding, a variety of studies brought about that escape room games were entertaining (Costa, 2020; Fotaris & Mastoras, 2019; Schenker & Kraemer, 2022; Stollhans, 2020; Taraldsen et al., 2020). Likewise, the participants of this study defined these games as enjoyable, interesting, and motivating. Moreover, while concluding their study, Moura and Santos (2020) reported that using the escape room approach had a beneficial effect on student engagement, encouraging fun, collaboration, and higher enthusiasm for learning. This finding may show that the players might have different views on these games and this difference may be a result of the game design. Similarly, the other disadvantages uttered by the participants, such as lack of effective feedback, lack of graded difficulty and prone to cheating, may be associated with the design of the games, which may vary from one design or designer to another and cannot be

overgeneralized as the weaknesses of the escape room games.

5.4. Discussion on the Findings Related to the Impact of Digital Escape Room Games on the Willingness of Pre-Service EFL Teachers to Incorporate Them into Their Future Teachings to Foster Intercultural Competence

Participants were also asked to describe their perceptions related to the impact of digital escape room games on their willingness to incorporate them into their future teachings. While most of the participants noted that they were willing to use digital escape room games in their future teachings, only one of the participants stated her unwillingness because she found these games time-consuming. It was an interesting result because some other participants of the current study expressed their willingness to incorporate these games into their future teachings because they found these games timesaving. Related to this finding, some of the previous research showed that these games were effective in fostering time-management skills of the learners (Cruz, 2019; Stollhans, 2020).

As another reason for the willingness of the participants to incorporate these games into their future teachings was that these games were interactive. Thanks to this interactivity, the participants stressed that they were engaged in the subject and the lesson more than the traditional ways. This result corroborates the findings of some previous research that described these games interactive (Lathwesen & Belova, 2021; Nicholson, 2018; Veldkamp et al., 2020; Wiemker et al., 2015) and an effective way to boost student engagement (Llumiquinga, 2022; Moura and Santos, 2020; Schenker and Kraemer, 2022). In addition, some other research expressed the effect of gamification in general on the engagement of the learners in the learning process (Arnold, 2014; Costa et al., 2020; Kiryakova et al., 2014). These findings are interconnected and can be presented as evidence in that escape room games are effective in student involvement thanks to their interactive nature.

The participants of this study also stated that they were willing to use digital escape room games in their future teachings because they had a perception that these games were capable of providing smooth, permanent, implicit and gamified learning. In the same direction, in their studies, Hermanns et al. (2017) and Veldkamp et al. (2020) found out that escape room games help learners refresh and put their knowledge into use. Likewise, Nicholson (2018) stated that escape room games link what the students learn to their real lives. Moreover, Mudure-Iacob (2021) stressed that by utilizing gamified quizzes and digital escape room

situations, escape games demonstrated creativity, sustainability, and motivation among the learners. Also, the findings of Stollhans (2020)'s study revealed that escape room games were a great way to teach grammar in a contextualized way, indicating that they provided permanent learning. In addition, this result indicated that these games provided all the benefits of gamified learning, such as fun, attractive, motivating, enhancing student achievement and engagement (Basten, 2017; Costa et al., 2020; Cruaud, 2018; Çeker & Özdamlı, 2017; Luo, 2021; Rachels & Rockinson-Szapkiw, 2017; Wood & Reiners, 2015).

5.5. Interpretation of both Quantitative and Qualitative Results

It is clear that both qualitative and quantitative results are parallel to each other regarding that escape room games are effective in boosting the intercultural competence of the participants. The results of the quantitative data analysis proved that there was a significant difference between the pre and post questionnaire results of the experimental group. In the same direction, the results of the qualitative data, which were gathered through open-ended questions form, showed that the participants had a perception that digital escape room games were effective in learning information about cultures and recognizing other cultures. This result is also closely linked to quantitative data findings which revealed that digital escape room games treatment had a significant impact on the knowledge of intercultural interaction of the participants. Even though some of participants mentioned that these games had a lack of graded difficulty or effective feedback among the disadvantages, more of them stated their willingness to integrate these games into their future teachings because they found these games as an effective way in terms of teaching different cultures, as well as providing smooth, permanent, implicit, and innovative learning. All these findings have a close relationship with each other, and they support one another. In addition, some previous research findings corroborate with these results (Eukel et al., 2017; Hermanns et al., 2017; Nicholson, 2018; Schenker & Kraemer, 2022; Veldkamp et al., 2020).

The findings of the quantitative data also revealed that digital escape room games were effective in fostering the participants' self-efficacy in intercultural situations. This result was supported by the findings of the qualitative data in that the participants emphasized that they felt more confident in meeting new people from different cultures, supporting the findings of Llumiquinga (2022)'s study. However, it should not be forgotten that some of the participants in this study stated that they would feel even more competent if they had a chance to interact with people from various cultural backgrounds, noting that these games lacked genuine

interaction. This conflict between the views of the participants might be evidence that the participants of this study had different perceptions of the use of digital escape room games.

Moreover, the quantitative data analysis showed that digital escape room games treatment had an effect on developing the participants' behavioural performance in intercultural interaction and display of intercultural consciousness. Related to this finding, the participants described these games as efficient in improving communication skills, feeling confident in meeting new people, improving team-work abilities, and developing problem-solving skills. Among the advantages of using digital escape room games, some of the participants declared that these games were practical, instrumental, and useful in improving teamwork abilities. Finding these games interactive was one of the reasons of the participants to be willing to use these games in their future teachings. These results are in line with the findings of some earlier studies in that escape room games foster collaboration and cooperation (Nicholson, 2018; Chou et al., 2020; Ross et al., 2021; Veldkamp et al., 2020; Vidergor, 2021), and progress in teamwork (Clauson et al., 2019; Friedrich et al., 2019; Gómez-Urquiza et al., 2019; López, 2019; Morrell & Ball, 2019; Seto, 2018; Styling et al., 2018; Vergne et al., 2019; Watermeier & Salzameda, 2019; Wu et al., 2018).

According to the results, the participants improved their affective orientation to intercultural competence thanks to the treatment of digital escape room games. Alongside, the participants pointed out that they felt more confident in meeting new people from different cultures. As advantages, the participants remarked that these games were enjoyable, motivating, and interesting. Likewise, some of the participants were willing to incorporate these games in their future teachings because they had a perception that these games were attractive and created a competitive environment. All these results, along with some previous research findings (Costa, 2020; Fotaris & Mastoras, 2019; Lathwesen, & Belova, 2021; Schenker & Kraemer, 2022; Stollhans, 2020; Taraldsen et al., 2020) prove that the results of this study support each other in general.

In addition to the statements given above, however, the results disclosed that the participants had opposing perceptions about one another as well. For instance, the participants viewed digital escape room games as an effective way to improve communication. However, some participants declared that integrating these games was disadvantageous because of the lack of genuine interaction. While technology integration was seen as an advantage for the participants, technology necessity and connection problems were seen as disadvantages of

digital escape room games. According to some participants, digital escape room games were enjoyable, motivating, interesting and attractive. Nevertheless, some participants found them monotonous. Another disagreement between the participants was that while some of them were willing to use these games in their future teachings because they had a perception that these games were timesaving, some others were unwilling because they found them time-consuming. Although competitive environment was a reason for some participants in their willingness to integrate digital escape room games in their future teachings, some other participants stated that it was a disadvantage for being competitive oriented. Some participants had a positive perception on digital escape room games in terms of being cost-effective, practical, and instrumental. Nonetheless, some other participants expressed their views as these games were prone to cheating and could be played with a limited number of players. All these findings could be seen as evidence that the participants had different perceptions on the digital escape room games, even though they had positive views on them in general.

5.6 Pedagogical Implications

This research aimed at expanding the current state of research and practice regarding developing intercultural competence by examining the application of digital escape room games. It involved creating and implementing a digital escape room games treatment in order to accomplish this goal. The results have a number of implications in terms of how digital escape room games might be used to promote intercultural competence, and stakeholders in the area, including foreign language teachers, curriculum and program designers, teacher educators, policy makers, and researchers, should take them into consideration.

First and foremost, the current study discovered that the pre-service EFL teachers' levels of intercultural competence increased as a result of digital escape room games treatment. Additionally, the participants' general opinions of the digital escape room games treatment used in this study were favourable. Consequently, as the results suggest, language teachers and teacher trainers may utilize digital escape room games to help learners become more interculturally competent. In this sense, the digital escape room games intervention created and implemented for this study offers an example of how to employ these games in a particular method that promotes intercultural competence. Language teachers, curriculum designers, and program designers could utilize the current study's approach of digital escape room games to integrate these interactive learning tools into their language education programs to foster intercultural competence of the learners.

The current research discovered certain areas where intercultural competence was enhanced by the digital escape room games treatment. In other words, it was discovered that the students' knowledge of intercultural interaction, affective orientation to intercultural interaction and self-efficacy in intercultural, behavioural performance in intercultural interaction and display of intercultural consciousness all increased. Therefore, the digital escape room games implementation in this study may be useful to language teachers or teacher educators who explicitly see that their students' skills and capacities in these areas need to be improved. Namely, in light of the study's conclusions, providing the digital escape room games treatment to students may be a beneficial way to assist them in the previously listed areas.

The disadvantages uttered by the participants regarding the digital escape room games treatment represent another study implication. The opinions of the participants may serve as a guidance for language educators or teacher trainers who choose to apply the digital escape room games treatment. In addition to praising the advantages of the treatment, the participants identified a number of disadvantages as well. For example, regarding the disadvantages of these games, some of the participants expressed that they had connection problems while playing the games and technology necessity was a weakness of digital escape room games because of the possible difficulty in finding necessary equipment in all areas or learning environments. However, this disadvantage can be overcome by designing real-life escape room games in disadvantaged areas. Including some tools or materials from the digital escape room games treatment into in-class practice is another adjustment that might be done. Another disadvantage expressed by the participants was that these games could be played with a limited number of players. In crowded classes or other learning environments, it would be difficult to integrate these games. Yet, it is possible to recommend that the number of the group members in these games might be increased in such cases. Because of the fact that these games are played in pairs or groups, this adaptation would be suitable to solve this weakness of digital escape room games. Consequently, it is possible to adjust the games according to the features of the learning environments or for the learners to benefit from the advantages of utilizing digital escape room games.

The results also suggest that, like with any pedagogical application, a thorough and well-planned preparatory phase is necessary prior to the real treatment. Prior to designing and implementing the digital escape room games treatment, the needs and preferences of the learners, and their preparedness for the implementation were considered in the current study. As a result, the implementation was able to proceed without any significant issues. Before the

digital escape room games treatment is implemented in any learning situation, a similar investigation is required. Utilizing digital escape room games procedures necessitates that students possess particular technological ability. It is necessary to investigate their technical abilities and the resources at their disposal. In a similar vein, educators who choose to use digital escape room games in their lessons should have the technical proficiency and affordances, and if necessary, the teachers and teacher educators should receive any fundamental training. Each of these actions is necessary for the successful application of digital escape room games in any type of educational setting.



CHAPTER VI

6. CONCLUSION

The purpose of this study was to investigate the efficacy of digital escape room games on intercultural competence of pre-service EFL teachers. This study used a quasi-experimental research design with an experimental group and a control group. A total of 52 fourth-grade pre-service EFL students from a public university in Türkiye participated in the study. The intercultural competencies of the two groups were compared before and after the digital escape room game treatment using an intercultural competence scale. The experimental group was exposed to digital escape room games during the treatment. Following the course of treatment, students in the experimental group were given an open-ended questionnaire to delve further into their opinions regarding the online escape room games. In this manner, both quantitative and qualitative data was gathered from the participants.

The results of the independent-samples t-tests used to analyse the between-groups differences in the intercultural competence scale showed that, despite the fact that there was no significant difference between the two groups' pre-scale scores, the experimental group's post-scale score was significantly higher than the score of the control group. The independent-samples t-tests that compared the groups on each sub-dimension of the intercultural competence scale also revealed a statistically significant difference between the control and experimental groups in the post-scale for the sub-dimensions of knowledge of intercultural interaction, affective orientation to intercultural interaction, and self-efficacy in intercultural situations. For all of these items, there were no significant variations in the pre-scale scores; however, on the post-scale, the experimental group outperformed the control group by a wide margin. The experimental group outperformed the control group in the post-scale on the other two sub-dimensions, which questioned the students' behavioural performance in intercultural interaction and display of intercultural consciousness, respectively, with the exception of the sub-dimensions where the two groups' scores differed significantly. This indicates that, even though the differences were not statistically significant, the experimental group's self-perceived intercultural competence was higher than the control group's for these two sub-dimensions.

The analysis of the qualitative information acquired through the open-ended questions revealed that the participants believed that incorporating digital escape room games was beneficial for promoting intercultural competency. They stated that the activities were effective for learning information about cultures, recognizing other cultures, improving communication

skills, feeling confident in meeting new people, improving team-work abilities, and developing problem-solving skills. The participants expressed that they found digital escape room games advantageous because they found them enjoyable, motivating, interesting, practical, instrumental, and cost-effective. They also noted that these games were beneficial for technology integration, teamwork, and innovative learning. However, the terms lack of genuine interaction, connection problems, technology necessity, lack of graded difficulty, monotonous, competition oriented, lack of effective feedback, limited number of players, and prone to cheating were included in the codes under the disadvantages category. The majority of participants expressed their willingness to incorporate digital escape room games into their future teachings, with the exception of one who expressed her disapproval due to the time-consuming nature of these games. The participants expressed reasons for their willingness to utilize these games with the statements that they found these games as interactive, timesaving, attractive, and a good way for smooth learning, permanent learning, competitive environment, implicit learning, gamified learning, and teaching different cultures.

The present study brought to light a number of aspects that foreign language education stakeholders should take into account. It was specifically recommended to use digital escape room games to establish a learning environment that encourages intercultural competence. In this sense, a workable substitute for the application of digital escape room games was provided by the treatment used in the current study. The disadvantages of these games uttered by the participants, together with other important considerations for the implementation process, were highlighted in an effort to increase the treatment's effectiveness.

6.1. Limitations of the Study and Suggestions for Further Research

In terms of its application and design, the current study has a number of limitations. It might be helpful to take these limitations into account when assessing the study's conclusions. Furthermore, the limitations could draw attention to the areas that deserve further research.

The first limitation is about the generalisation of the findings. In order to select participants for the quantitative part of the study, a non-probability sampling technique - convenience sampling- was used. As a result, the study's conclusions have limitations with regard to their representativeness and generalizability. In light of this, future research could use a sample selected using a probability sampling technique to produce findings that are more broadly applicable.

One potential limitation may be associated with the study participants, who were the

pre-service EFL teachers. Because they already had lessons related to intercultural competence, they had background knowledge. Consequently, it is possible that their levels of willingness and motivation to study differed from those of students studying subjects unrelated to intercultural competence. This might have an impact on how broadly applicable the study's conclusions are. It is also advised that participants in future research come from a variety of academic disciplines in order to examine the consequences of the digital escape room treatment from a variety of angles. In addition, further research may focus on teenagers, who are supposed to be eager to compete in such digital games.

Furthermore, the results, both quantitative and qualitative, indicate that the digital escape room games treatment should be implemented over a longer period of time. The purpose of the current study was to examine the outcomes of a four-week treatment of digital escape room games. Therefore, it's possible that the time allotted might not be sufficient for the development of learner competencies and skills linked to intercultural competence. Therefore, even though the results were supported with qualitative data in this study, additional research could extend the digital escape room games treatment period. This would enable a more thorough comparison to be made between the experimental and control groups. Likewise, a more thorough search into the opinions of the participants regarding the efficacy of the treatment is possible.

The way the study's groups were formed has several limitations as well. First of all, the design of the study was quasi-experimental research design. That is, the experimental and the control groups were not decided randomly. Instead, the participants in the experimental group were chosen on a volunteer basis. Even though the experimental and control groups for the four classes were assigned at random, a real experimental design as opposed to a quasi-experimental one could enhance the study's findings by enabling more accurate research.

In addition to the previously indicated recommendations, further research might be conducted by broadening the methods used for gathering data or looking at the problem from several angles. In this study, learner perceptions were used to investigate the impact of the digital escape room games treatment. Future research could explore the application of the digital escape room games treatment from the perspectives of teachers or teacher educators in order to acquire a deeper knowledge of the issue. An additional domain for further research may be the impact of the digital escape room games intervention on intercultural communicative competence. Examining whether the digital escape room games treatment had any impact on the participants' intercultural communicative competence was outside the purview of the current study. Future research, however, might concentrate on this issue because

the participants reported that they believed the intercultural communicative competence had improved their communication abilities.



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APPENDICIES

Appendix 1. Approval of Ethical Committee

	AMASYA ÜNİVERSİTESİ
	SOSYAL BİLİMLER ETİK KURUL DEĞERLENDİRME FORMU

Ek-1

Araştırmanın Başlığı: Cracking the code: Exploring the efficacy of escape room games in teaching intercultural competence to ELT student teachers	
Başvuru Formunun Etik Kurula geldiği tarih	04.05.2023
Başvuru Formunun Etik Kurulda incelendiği tarih	16.05.2023
Karar tarihi	16.05.2023

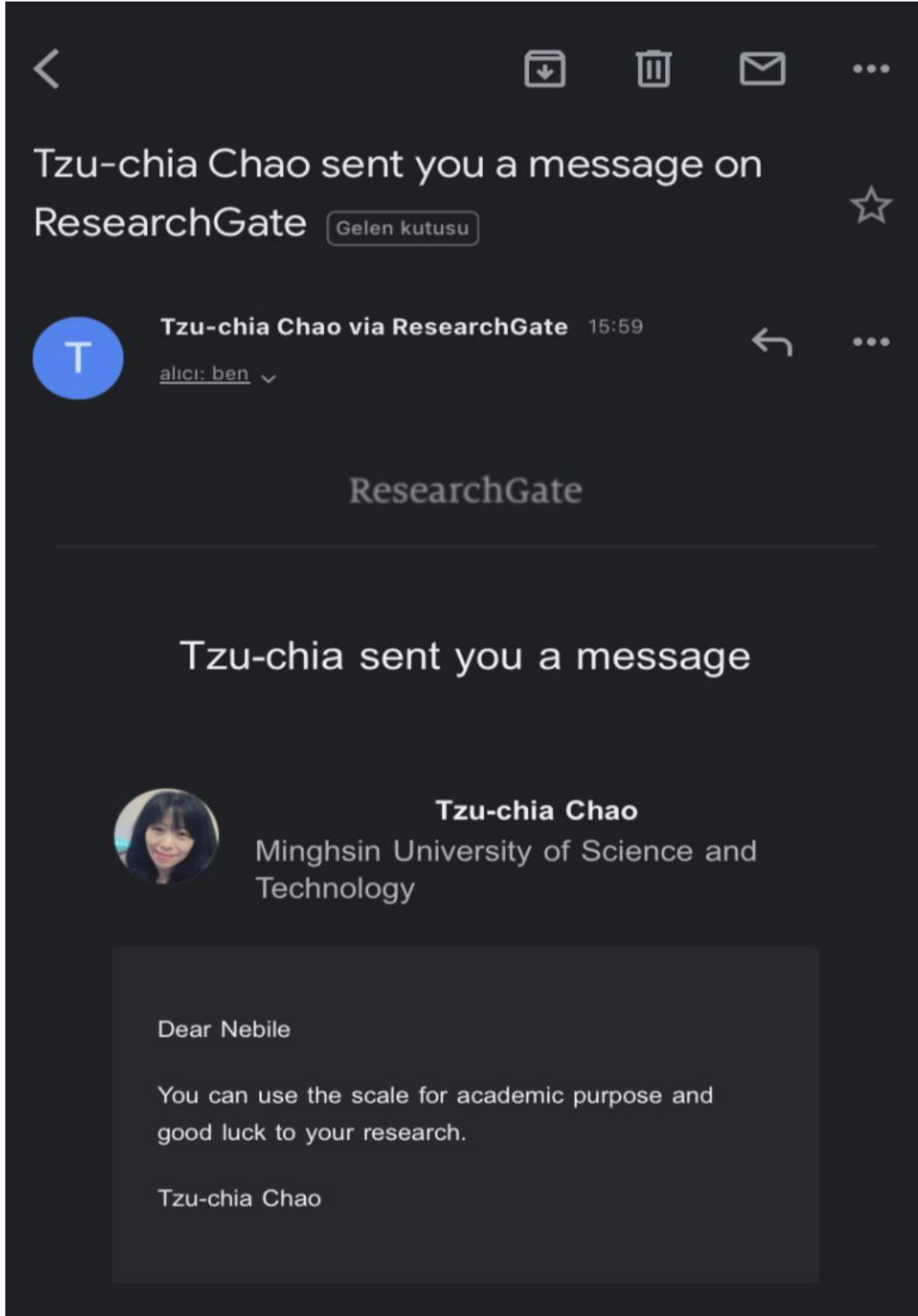
SONUÇ

1.	☒ Kabul
2.	☐ Düzeltme gereklidir: Etik sorun olabilecek sorular/maddeler, süreçler ya da unsurlar bulunmaktadır. Açıklama:
3.	☐ Red Gerekçe, Görüş, Tavsiye ve Açıklamalar:

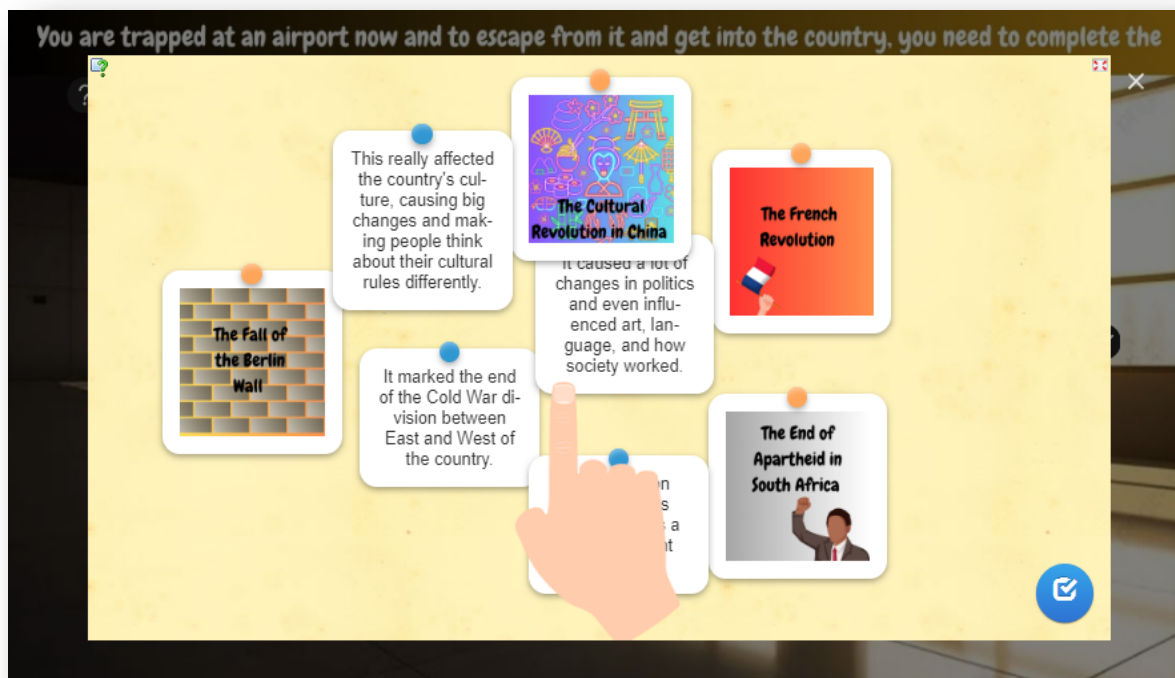
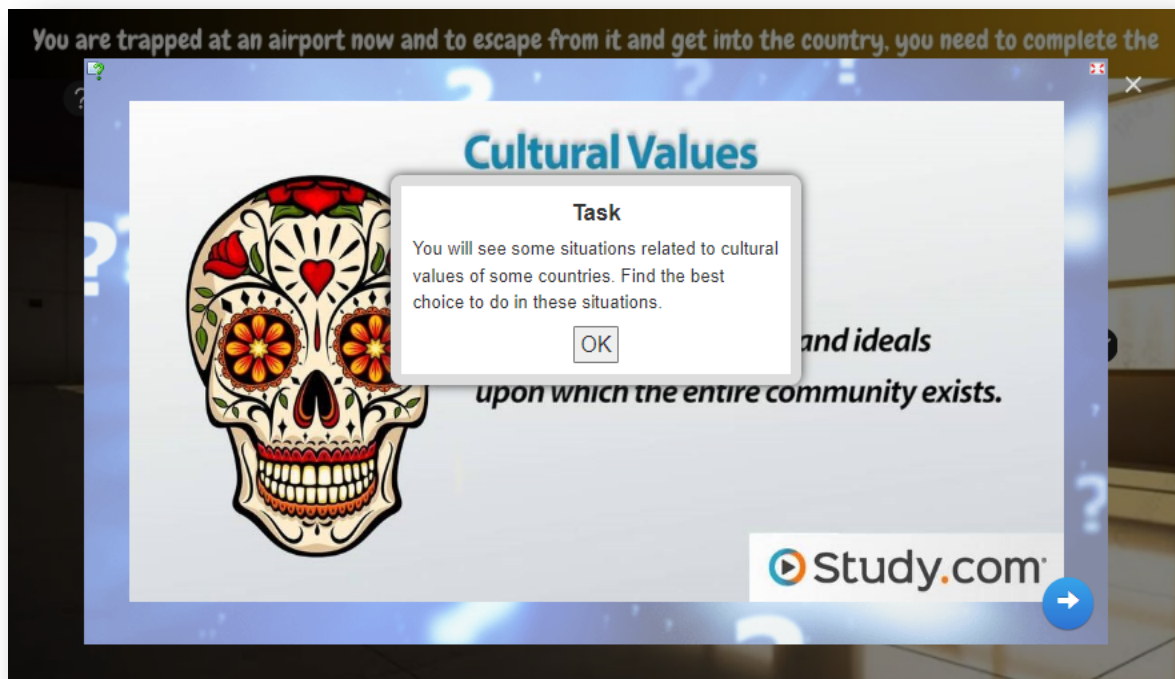
Başvuru dosyasının incelenmesinde hazır bulunan ve araştırmayla doğrudan veya dolaylı olarak ilişkisi bulunmayan Etik Kurul başkan ve üyelerinin ad,soyad ve imzaları.

Prof. Dr. Songül KEÇECİ KURT	Başkan	Fen Edebiyat Fakültesi
Doç. Dr. Melike BAŞ	Üye-Raportör	Eğitim Fakültesi
Doç. Dr. Üyesi Fatih CAN	Üye-Başkan Yard.	Eğitim Fakültesi
Doç. Dr. Seda Sabah	Üye- Başkan Yard.	Eğitim Fakültesi
Doç. Dr. Aslı ALTANLAR	Üye	Mimarlık Fakültesi
Doç. Dr. Davut AĞBAL	Üye	İlahiyat Fakültesi
Doç. Dr. Önder ERYILMAZ	Üye	Eğitim Fakültesi
Dr. Öğr. Üyesi Nida EMÜL	Üye	Eğitim Fakültesi
Dr. Öğr. Üyesi Ayşe ŞAHİN	Üye	Sabuncuoğlu Şerefeddin SHMYO

Appendix 2. Permission to Use Intercultural Competence Scale

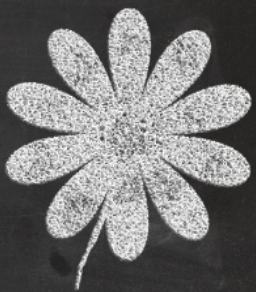


Appendix 3. Samples of Game Interface



You are trapped at an airport now and to escape from it and get into the country, you need to complete the

In France, it's common to have before or after the main meal.

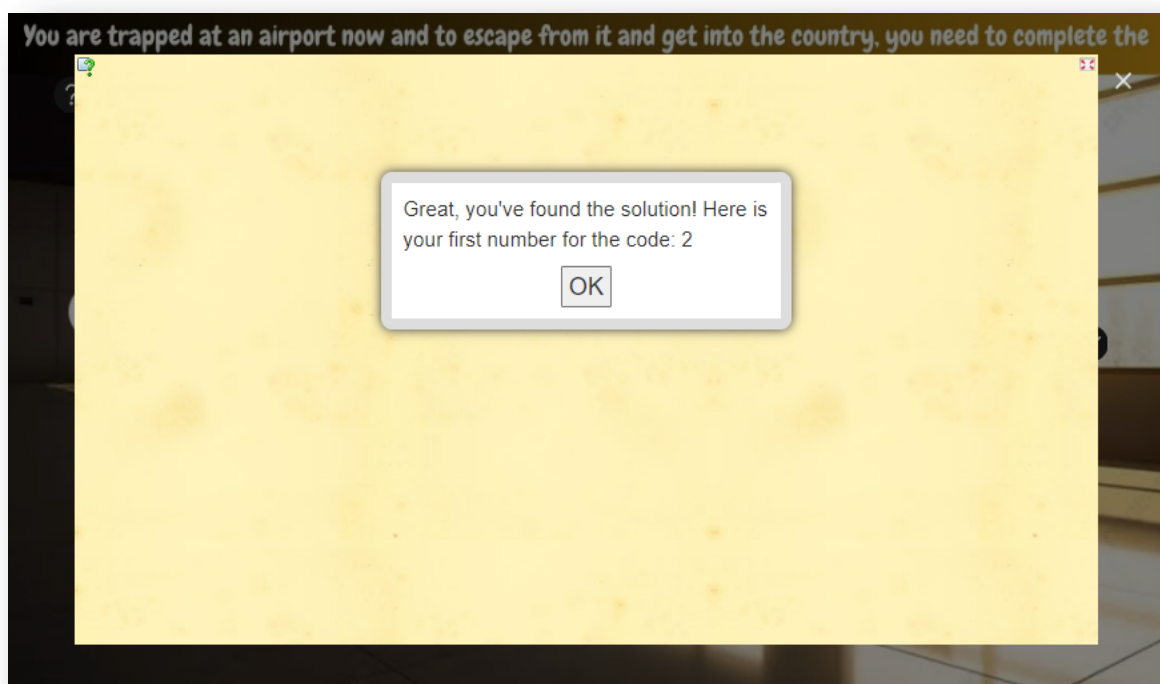
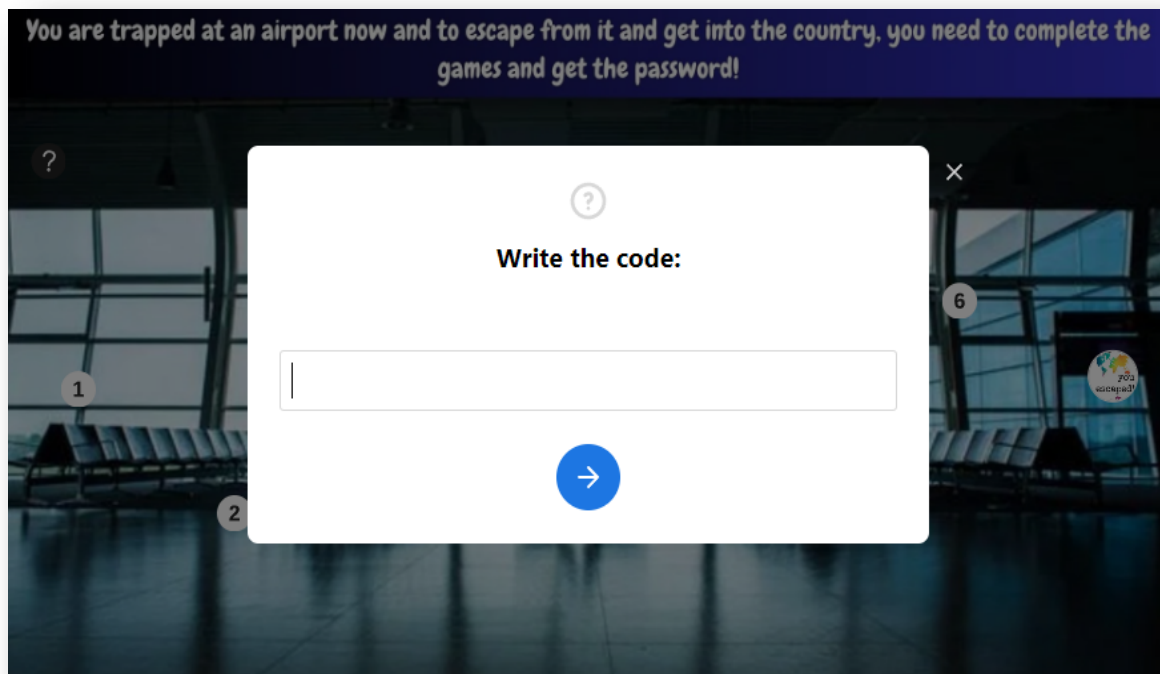


A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Q	R	S	T	U	V	W	X	Y	Z						

You are trapped at an airport now and to escape from it and get into the country, you need to complete the

Communication with people from various _____ is easier when we understand their customs and etiquette. For example, a warm _____ is common in many cultures, but in some, a _____ bow is preferred. Learning these cultural _____ can enhance our English conversations with people of _____ background. Recognizing and respecting these _____ not only fosters smoother interactions but also shows our willingness to embrace and _____ the richness of diverse cultural practices. In doing so, we build _____ of understanding and promote inclusive and meaningful cross-cultural relationships.



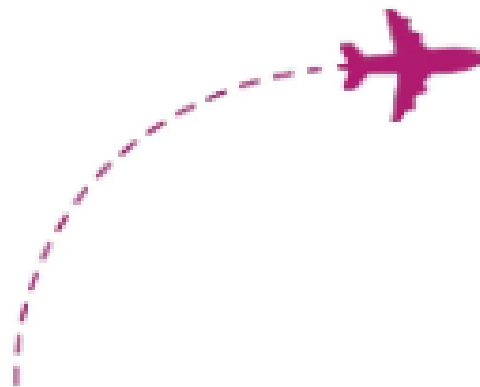


congrats!



you

escaped!



Appendix 4. Intercultural Competence Scale (ICS)

Intercultural Competence Scale (ICS)

Please choose the option which describes you best:

5 = strongly agree; 4 = agree; 3 = slightly agree;

2 = slightly disagree; 1 = disagree; 0 = strongly disagree

Factor 1: Knowledge of intercultural interaction

1. I know the routine aspects of life in other cultures (e.g., cuisine and customs).
2. I know the rules of non-verbal behaviors in other cultures.
3. I know the visible achievement cultures, related to the facts and knowledge of world civilizations (e.g., arts, literature).
4. I know the rules of verbal behaviors in other cultures.
5. I know the signs of cultural stress and strategies for overcoming culture shock.
6. I know how to use the culture-value approach to understand the attitudes and behaviors of people from different cultures.
7. I know how historical and socio-political factors influence the attitudes and behavior of people from different cultures.
8. I know how to appropriately negotiate with people from different cultures in intercultural contexts.
9. I know the interactive behaviors common among people of different cultures in professional areas.

Factor 2: Affective orientation to intercultural interaction

10. I enjoy communicating with people from different cultures.
11. I am willing to acquire knowledge regarding different world cultures.
12. I am willing to manage emotions and frustrations when interacting with people from different cultures.
13. I am willing to demonstrate my interest in understanding people of other cultures that are unfamiliar to me.
14. I am willing to modify my attitude and behavior for interacting appropriately with people of other cultures.
15. I am willing to communicate with people of other cultures to broaden my worldview.

Factor 3: Self-efficacy in intercultural situations

- 16. I am confident that I can interact with people of other cultures appropriately and effectively.
- 17. I am confident that I can adjust to living in different cultural contexts.
- 18. I am confident that I can adjust to the stress of culture shock.

Factor 4: Behavioral performance in intercultural interaction

- 19. I can effectively use English to communicate with other people of different cultural backgrounds.
- 20. I can eat what others eat in culturally diverse situations.
- 21. I can use functional languages (e.g., invitation, refusal, and apology) flexibly for achieving appropriate intercultural communication.
- 22. I can develop appropriate interactive strategies (e.g., directness and face-saving) to adjust to the diverse styles of intercultural communication.
- 23. I can modify the way I dress when it is necessary in intercultural situations.
- 24. I can change my verbal behavior (e.g., speed, accent) when it is necessary in intercultural situations.
- 25. I can change my non-verbal behavior (e.g., gestures, facial expressions) when it is necessary in intercultural situations.

Factor 5: Display of intercultural consciousness

- 26. I do not generalize a person's behaviors as representative of a particular culture.
- 27. I am well prepared before any intercultural contact.
- 28. I can realize the cultural knowledge I apply to intercultural interaction.
- 29. I can sense how my cultural background influences my attitudes and approaches to managing emerging problems during intercultural communication.
- 30. I can sense that the responses other people provide during intercultural communication often reflect their own values and beliefs.

Appendix 5. Open-Ended Question Form**OPEN-ENDED QUESTION FORM****Part 1. Demographical Questions:**

1. What is your age?
2. What is your gender?

Part 2. Questions:

1. What do you think about the efficacy of digital escape room games in increasing your intercultural competence in general?
2. What are the advantages of using digital escape games in increasing the intercultural competence in general?
3. What are the disadvantages of using digital escape games in increasing intercultural competence in general?
4. Would you like to use such games when you start teaching? Why/Why not?
5. Now that you've used digital escape room games, do you feel more confident in your skills to communicate with people from different cultures?
6. Can you talk about any experiences or situations during the digital escape room games that you think helped you learn more about different cultures?
7. Do you think digital escape room games are a good way to teach about understanding different cultures? Why or why not?

CURRICULUM VITAE

NEBİLE USLU KAPLAN

Education

Master's Degree 2022-.....	Amasya Üniversitesi Department of English Language Teaching (Assist. Prof. Dr. Gamze ERDEM COŞGUN)
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Scientific Activities

- Kaplan, N. U., & Coşgun, G. E. (2023). Metaphorical understanding of ELT students toward a master's degree. *Bayburt Eğitim Fakültesi Dergisi*, 18(40), 1366-1385.
- Kaplan, N. U., & Alkan, M. F. (2023). eTwinning projelerinin mesleki yeterliklere katkısına yönelik öğretmen görüşlerinin incelenmesi. *Erciyes Journal of Education*, 7(2), 58-78.

Foreign Languages

English