

REPUBLIC OF TURKIYE
ÇUKUROVA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
ENGLISH LANGUAGE TEACHING DEPARTMENT
DESIGNING AN ESP COURSE THROUGH A PBL APPROACH IN AN EFL
SETTING



Baki DURSUN

MASTER OF ARTS

ADANA / 2024

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MASTER OF ARTS

ADANA / 2024

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ÖZET

ÖZEL AMAÇLI İNGİLİZCE VE PROBLEME DAYALI ÖĞRENME YÖNTEMLERİ İLE YABANCI DİL OLARAK İNGİLİZCE DERSİ TASARIMI

Baki DURSUN

Yüksek Lisans Tezi, İngiliz Dili Eğitimi Anabilim Dalı Danışman: Prof. Dr.

Yasemin KIRKGÖZ

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Dil öğretimi çalışmalarında öğrenci merkezli ve iletişim odaklı yaklaşımlar giderek önem kazanmaktadır. Özellikle karşılıklı iletişim ile dilin öğrenilmesini sağlayan yaklaşımlar ile beraber, 1970lerden günümüze kadar çok farklı yaklaşım ve metotlar kullanılmaya başlamıştır. Ülkemizde de 2023 Eğitim Vizyon Belgesi eşliğinde, dil eğitiminin hedefleri arasında ilk hedef olarak dilin hem sınıf içinde hem de sınıf dışında etkin bir şekilde kullanılması amaçlanmıştır. Bu bağlamda, bu çalışma lise seviyesinde son yıllarda dil öğretimi alanında gittikçe önem kazanan iki yaklaşımı biraraya getirerek, yabancı dil olarak İngilizce öğrenen lise seviyesindeki öğrencilerin dili etkin ve aktif kullanmasını, dil becerileri ile gerçek yaşam problemlerini çözebilmelerini ve bunu yaparken de yüksek bir motivasyon ile derslere katılmalarını amaçlamaktadır. Bu kapsamda, bu çalışmanın amacı Probleme Dayalı Öğrenme (PDÖ) ve Özel Amaçlı İngilizce(ÖAİ) yaklaşımlarını beraber kullanarak lise seviyesindeki öğrencilerin problem çözme becerilerini ve İngilizce kullanım becerilerini artırmadaki etkinliğini göstermektir. Çalışma ayrıca, bu iki yaklaşımın beraber kullanılmasının öğrenciler üzerindeki etkilerini, öğrencilerin bu iki yöntemin kullanılması ile oluşturan ders içeriği üzerindeki algılarını ölçmeyi amaçlamaktadır. Çalışma aynı zamanda, araştırmacının bu metotları kullanarak hazırladığı dersler sırasındaki algılarına da ışık tutacaktır. Bu çalışma 25 öğrencinin gönüllü katılımıyla bir lisede gerçekleşmiştir. Katılımcılar olarak seçilen 25 öğrenci seçiminde uygunluk örneklem metodu kullanılmıştır. Araştırma da 4 farklı veri toplama metodu kullanılmıştır. İlk olarak öğrencilere tek gruplu ön test son test ve gecikmiş test uygulanmıştır. Bu şekilde bu iki yöntemin etkinliği araştırılmıştır. Ayrıca öğrencilere süreç bitiminde bir anket uygulanarak yine bu iki öğretim metodunun birlikte

kullanılmasından memnun olup olmadıkları sorulmuştur. Üçüncü olarak, rastgele yöntemle seçilen öğrencilerle yarı yapılandırılmış görüşmeler yapılmış, sürece dahil nitel bir analiz yapılmıştır. Ayrıca, öğretmen araştırmacı olarak sürecin başından beri tuttuğu günlükleri değerlendirerek, bu eğitim sırasında süreci ve kendi gelişimini değerlendirmiştir.

Anahtar kelimeler: Özel Amaçlı İngilizce(ÖAİ), Probleme Dayalı Öğrenme,(PDÖ) Yabancı Dil Olarak İngilizce Öğretimi



ABSTRACT**DESIGNING AN ESP COURSE THROUGH A PBL APPROACH IN AN EFL
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Student-centered and communication-oriented approaches are gaining importance in language teaching studies. Especially with the approaches that enable language learning through mutual communication, many different approaches and methods have been used since the 1970s. In our country, in line with the 2023 Education Vision Document, it is aimed to use language effectively both in and out of the classroom as the first goal among the goals of language education. In this context, this study aims to bring together two approaches that have become increasingly important in the field of language teaching in recent years at the high school level, so that high school students learning English as a foreign language can use the language effectively and actively, solve real-life problems with their language skills, and participate in classes with high motivation while doing so. In this context, the aim of this study is to demonstrate the effectiveness of using Problem-Based Learning (PBL) and English for Specific Purposes (ESP) approaches together to increase high school students' problem-solving skills and English language use skills. The study also aims to measure the effects of using these two approaches together on students' perceptions of the course content created by the use of these two methods. The study will also shed light on the researcher's perceptions during the lessons prepared using these methods. This study was conducted in a high school with the voluntary participation of 25 students. The convenience sampling method was used to select 25 students as participants. Four different data collection methods were used in

the study. First, a one-group pretest posttest and delayed test were applied to the students. In this way, the effectiveness of these two methods was investigated. In addition, a questionnaire was prepared at the end of the process and the students were asked whether they were satisfied with the use of these two teaching methods together. Furthermore, semi-structured interviews were conducted with randomly selected students to provide a qualitative analysis of the process. In addition, the teacher, as a researcher, evaluated the process and his own development during the training by evaluating the diaries he kept since the beginning of the implementation.

Keywords: English for Specific Purposes (ESP), Problem-Based Learning (PBL), Teaching English as a Foreign Language

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To start learning and to learn must be the greatest progress in life. But while doing so, it is certain that we also embark on an inner journey. While writing this thesis, my starting point was how I can help my students and language learners. Moreover, the writing process itself helped me a lot to discover my potential and also drawbacks, therefore, it was an illumination for me.

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LIST OF ABBREVIATIONS

EAP	: English For Academic Purposes
EFL	: English as a Foreign Language
ESP	: English for Specific Purposes
ICAO	: International Civil Aviation Organization
MoNE	: Ministry of National Education
PBL	: Problem-Based Learning
SPSS	: Statistical Package for Social Science



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CHAPTER I

INTRODUCTION

1.1 Background of the Study

The efficacy and efficiency of various methods and approaches in foreign language instruction have consistently been a subject of debate (Prabhu, 1987). In particular, the approaches that came to the fore after the 1970s are still being utilized today. The methods and approaches of teaching language through interaction, which started with communicative teaching, have become more widespread in recent years, and are preferred over grammar-based teaching in more contexts (Hinkel & Fotos, 2001). In this context, efforts to improve language education and training carried out in Türkiye and other developing countries are becoming increasingly important (Kırkgöz, 2007). In particular, with the 2023 Education Vision document, it is aimed that language teaching will cease to be an in-class lesson, and reach a structure where students can express themselves comfortably and use the language (Karakaş, 2021). According to the 2023 Education Vision document, the first purpose of language teaching is determined as “To handle foreign language education with a student-centered approach, using methodologies suitable for students’ cognitive levels” (MoNE 2023 Vision Document).

The main problem that arises here is to choose the correct method for teaching the language to the appropriate age group with specific objectives. Though there have been many factors affecting the success of a language curriculum, the method used to deliver the language seems to be among the most prominent ones (Uden, 2006). Therefore, it is vital to choose the correct methodology both for language use in and out of the classroom and to develop the cognitive level of the learners.

Considering the language teaching methodologies that improve the language skills and cognitive level of the learners, Problem-Based Learning (hereafter PBL) has emerged as a frequently used method in language teaching in recent years (Jaleniauskiene, 2016). PBL is based on problem-solving, which is one of the most advanced levels of cognitive thinking. Analysis, synthesis, and problem-solving steps, which are the top stages of cognitive thinking, are indispensable for students’ cognitive development. Teaching a language with PBL does not only involve using the language but also improves students’

cognitive problem-solving abilities. Accordingly, this study investigates how to improve language learning and problem-solving skills of English as a Foreign Language (EFL) learners at the high school level. In addition to improving problem-solving skills and language use in and out of the classroom, this study aims to adapt the language teaching method to the specific needs of the learners. To achieve this aim, English for Specific Purposes (hereafter ESP) approach will be integrated into the PBL setting. ESP has been a widely used approach since the 1980s and the key element of this approach is that it is shaped based on the needs of the learners.

As noted by Kırkgöz and Dikilitaş “with emerging developments in technology and economics, a new form of learner who had their own specific reasons and motives for learning English came to the fore” (2018, p.2). Students’ lack of motivation has always been a hot topic in the world of language teaching, and for EFL learners at the high school level in Türkiye, the story is the same. Thus, integrating ESP and PBL would be a logical approach to teaching English at this level. Though it might not be a panacea, the study aims to shed light upon the effectiveness of PBL and ESP on the language skills and perceptions of the learners and the teacher when they are integrated into a high school EFL setting. To achieve these aims, a PBL-based ESP course on Aviation English was developed. As an indispensable part of ESP course development, a needs analysis process was conducted before creating PBL-based classes. The problem situations generated are based on the needs analysis.

1.2 Statement of the Problem

It is a fact that in most EFL settings and especially in recent studies conducted in Türkiye, students have problems with motivation to learn English (İlter, 2009). Different approaches have been taken on this issue and many different methods and techniques have been used to increase motivation (e.g. Erkaya, 2013; Peacock, 1997; Pinner, 2013). Although it is known that there are many factors affecting motivation toward language learning, it is a problem frequently encountered in the literature that the lack of motivation, especially in our country, is mostly related to methods and techniques (Harrate & Belloqui, 2015). In addition, the fact that English has become more frequently used in communication in developing countries in recent years has made it necessary to make innovations in teaching methods (Kırkgöz, 2008). As the Communicative Language Teaching approach has started to be preferred over the classical methods, the use of different methods in language education in Türkiye has led the language education system to evolve from “the teacher-centered style of teaching had predominated” to a more student-centered approach (Kırkgöz, 2008, p.311). It has been observed that in the normal curriculum in high schools, students’ motivation often decreases and they cannot use their language skills in and out of the classroom. In particular, it was revealed that students abstained in terms of their English communication skills.

Is it possible for students to be more motivated and actively participate in the educational process, and for what they learn to be more retained for a long time after the education? The main problem in the context of the study was that the students did not have an aim of learning English and therefore they were losing their motivation. Besides, the teaching methods were teacher-centered and students were not progressing in the language learning process, effectively. Thus, students needed a different approach that caters to their needs in terms of the position of the teacher in the classroom and also the aims of learning English.

While it is thought that students would be better motivated towards English with PBL, on the other hand, there needs to be a clear road map on what kind of educational environment should be organized within PBL. For this reason, it was necessary to employ the ESP approach in the high school setting so that the problem situations given to the students were consistent with each other, they were from a field that could interest them, were open to research and development, and could also be written on a problem situation that would require more than one language skill. Although many studies in the literature

blend the ESP approach with PBL (Elizabeth & Zulida, 2012; Kırkgöz, 2015, 2020) there are not many studies at the high school level in language teaching. In addition, most of these studies are in science, maths, and medical education, which is the field where the PBL approach emerged (Cerezo, 2000; Özeke, 2011).

As a result of the reasons explained above, the problem statement of the study is whether a more efficient and effective language education can be provided by combining the strengths of both PBL and ESP approaches in an EFL environment at the high school level. Therefore, the study aimed to design a course for EFL students at the high school level by combining ESP and PBL approaches.

1.3 Purpose of the Study

The main purpose of the study is to shed light on the effectiveness of integrating PBL and ESP approaches in enhancing the language and problem-solving skills of EFL learners in a high school setting. The research also aims to measure students' and the teacher's perceptions of PBL and ESP approaches. By integrating ESP and PBL approaches, the study aims to design a well-organized course for young learners of EFL. Studies involving young adult EFL learners and the combined use of PBL and ESP methods are very rare in the literature (Dağ Akbaş, 2021). In this respect, the study will reveal the effects and perceptions of using these two approaches together on students. Though an ESP course with a PBL orientation is not a new idea, its implementation in a high school setting will be illuminating for the further course and curriculum development stages for high school EFL settings. The research questions of the study:

- 1) Is integrating PBL and ESP approaches effective in the success level of EFL students?
- 2) How do students perceive PBL and ESP-based classes? How do they feel after the implementation? Does it affect their motivation?
- 3) What is the perception of the teacher of PBL and ESP? How does he feel before and after the implementation?
- 4) Is the integration of PBL and ESP approaches effective in the retention of the previously learned topics? If yes, how?

1.4 Significance of the Study

Although PBL is widely used in other fields as a teaching method, its weight in language teaching still remains weak (Kırkgöz, 2020). In addition, in Türkiye, it is seen that the PBL approach is mostly applied in the fields of science, mathematics, and engineering (Coşar, 2013; Özgül, 2020). Although these studies are at different education levels, they are mostly aimed at improving the problem-solving skills of middle school and high school students in science and mathematics lessons (Larsson, 2001). PBL-based studies in the field of language teaching and acquisition mostly focus on the perception and skills of pre-service language teachers (Kırkgöz, 2015). In the literature, there are perception studies on the use of PBL in different areas. On the ESP side, it was seen that the study area was mostly focused on university students and pre-service language teachers (Karakaş, 2021). There are many studies based on ESP in the fields of engineering, aviation, automotive, and economy (Banlı, 2020; Baştürkmen 2022). In addition, there are many studies in the literature that include the views of teachers on the use of ESP. However, the aspects that make this study different and original from other studies;

- 1- ESP and PBL-based studies at the high school level are very scarce in the literature (Dağ Akbaş, 2021; Lambros, 2004; Sabuncuoğlu, 2010).
- 2- By triangulation of the different data collection tools, the study reveals both students' and the teacher perceptions on the implementation.
- 3- The study will be one of the pioneers in the field of PBL and ESP integration at the high school level in Türkiye.

1.5 Assumptions

It is assumed that the participants in the study responded objectively and impartially in both the survey, semi-structured interviews and demographic information section of the survey. In addition, it is assumed that the researcher fully conveys his experience and avoids any bias when writing his own diaries. In addition, one of the assumptions of the study is that the participants did not have any prejudices that may arise from the fact that the researcher was their own teacher during the eight-week training period.

1.6 Limitations

The biggest limitation of the study is the number of participants and the method of participant selection. The convenience sampling method was used to select participants and this could undermine the statistical generalization of the study. In addition, the researcher may have an impact on the participants as he is also the teacher who has implemented the lessons.

In order to minimize the researcher effect, the scoring of the students was completely confidential, and it was clearly stated that participating in the study would not provide any privilege to the students. In addition, semi-structured interviews and questionnaires were conducted after the final grades were announced to the students.

1.7 Definitions

Problem-Based Learning: PBL, or problem-based learning, is a student-centered approach to pedagogy that uses open-ended, real-world issues as a means of teaching students. It encourages active participation in the learning process, rather than just passive acquisition of knowledge (Savery, 2015). Students actively participate in the learning process rather than only absorbing knowledge by:

- a) identifying and evaluating the problem.
- b) locating and studying pertinent information and abilities.
- c) constructing and assessing potential solutions.
- d) defending and presenting their research.

English for Specific Purposes: Belcher (2006) defines ESP as “commitment to the goal of providing language instruction that addresses students’ own specific language learning purposes is what those who take an ESP approach see as distinguishing it from other approaches to English Language Teaching (ELT)” (p.133).

CHAPTER II

REVIEW OF LITERATURE

2.1 Introduction

This chapter examines the PBL and ESP literature reviews and how they fit into the EFL framework. Along with a literature review, it also covers the fundamental ideas. Additionally, this literature review presents the studies conducted both in local and international contexts.

2.2 Problem- Based Learning

PBL has been implemented as an approach in many different disciplines, though first used in medical schools, and had many successful outcomes in terms of instructional purposes (Tan, 2021; Warren, Dondlinger & Barab, 2008; Wood, 2003). Though the origins of PBL date to the 1960s, it was not until the 1980s that it became popular among language learning and teaching professionals (Tan, 2021). After the communicative approaches became prevalent in language teaching, PBL gradually gained importance in the field because, like in communicative approaches, PBL adopts a learner-centered approach to learning (Davidson & Major, 2014; Hung et al., 2008). Besides, Harmer (2015) argues that language cannot only be seen as an inquiry of language, but it also necessitates both critical thinking and problem-solving skills. From this perspective, PBL seems to be a sound approach that can be implemented in language learning and teaching. PBL has an emphasis on the learners' construction of knowledge as a social constructivist approach (Kirkgöz, 2015), and it is a learner-centered approach highlighting contextualized and meaningful learning (Gallagher, 1997; Reynolds, 1997). Though PBL has been utilized as a teaching approach in different disciplines (for science education, e.g., Akçay, 2009; Thoe, 2009; for medicine, e.g., Wood, 2003; Yew & Goh, 2016), has not been sufficiently explored in language teaching. Even though there are ample studies on the use of PBL in higher education (e.g., Jaleniauskienė, 2016; Kirkgöz, 2015; Reynolds, 1997; Savin-Baden, 2000), there is still room for the integration of PBL in young adult learners' language curricula.

2.2.1 History and Background of PBL

The first place that PBL was used was in the medical area at Case Western University Medical School in the United States in the 1950s (Kaptan & Korkmaz, 2001). However, it was not until research undertaken at McMaster University's Faculty of Medicine in Canada at the end of the 1960s that it was documented as a learning-teaching strategy in the literature. This study investigated students' reasoning skills and emphasized the differences in learning results for each PBL user. Students were divided into small groups for the first trials, and they had to choose between two situations and an issue (Schmidt, 2012). Every method of teaching and learning has a philosophy and a theory based on it, and Hung (2011) argues that the PBL approach is grounded in John Dewey's theories of learning by doing and living.

2.2.2 PBL as a Teaching Approach

One of the most significant uses of the constructivist learning-teaching approach is PBL (Savery & Dufy, 1995). Constructivist theory is a school of philosophy that explains human comprehension and knowledge. This perspective holds that education should prepare students for life, place the learner at the center, and encourage active effort when faced with challenges (Gallagher, 1997). PBL is founded on a variety of learning theories in addition to the constructivist methodology. Schmidt (1983, 2012) used information processing theory as the foundation for PBL's features. This method holds that learning should be an active process and that pupils should be able to connect new information with prior knowledge. Building knowledge in the face of a genuine problem would help recall in a comparable scenario, according to Barrows, who based the PBL approach on Bruner's idea of learning by discovery (Davidson & Major, 2014).

2.2.3. PBL and Language Teaching

Hung (2006, 2011) states that one of the biggest challenges that a PBL course designer in language teaching may face is the concept of writing an effective problem statement. Larsson (2001) also takes problem writing into the center of PBL by stating that "It is this task of constructing suitable problems that often poses the greatest challenge. It is however imperative that the problems are interesting, challenging and relevant to the students' reality" (p.4)

In language teaching this aspect of PBL becomes more apparent as the problems need to be ill-structured as well as multi-faceted in terms of developing different language

skills. This can be one of the main reasons that PBL's use in the field of language teaching has been neglected until the 2000s and still, there is not relatively enough study when compared to other fields like science and maths teaching (Larsson, 2001). PBL can still offer a lot of advantages in language teaching classes, especially in an EFL setting. PBL offers a significant advantage over traditional methods for enhancing students' communication abilities, which is one of its main advantages. PBL integration encourages students to grow in these domains, which eventually results in increased language competence (Othman & Shah, 2013). It also has a favorable effect on social contact in general, which is one of the main components of successful language acquisition. It should be possible to replicate some of the experiences of language learning "on-site" by structuring a language course around activities that call for interaction and communication amongst students (Larsson, 2001, p.3). This entails learning the language in a nation where it is spoken. In general, language acquisition in an immersive setting like this one is more successful than instruction in a typical classroom.

2.2.4 Use of PBL in Different Settings

As it started in the 1960s as a teaching method used for medicine students at McMaster University in Canada, it is quite natural to have many studies conducted on PBL in this context. However, after Barrows' studies in 1980, which depicted the nature and structure of PBL, other fields like science and maths also started to integrate PBL into their teaching environments (Sungur & Tekkaya, 2006). PBL has been used in fields other than medical schools since 1980, including business, education, law, nursing, and engineering (Massa, 2008). In Türkiye, Korkmaz and Kaptan's (2001) seminal work on using PBL in science education can be accepted as a milestone in using PBL in educational fields. However, though there are ample numbers of studies from the fields of science, math, and computer science teaching, language teaching and PBL still lack enough research (Ayaz, 2015).

2.2.5 PBL in Practice

PBL is a student-centered teaching strategy that fosters successful learning. Learning is the process of applying knowledge to solve or comprehend problems and drawing conclusions from it. In the beginning, students work with the problem (Özgül, 2020). Students in PBL approach adopted classes gradually take on more responsibility for their education. Classrooms that employ the PBL paradigm are provided with textual scenarios, tales, videos, and recordings that depict real-life events (Korkmaz & Hünkar, 2001). These materials facilitate the examination of real problems, which should be chosen from authentic contexts. The optimal class size is limited to a maximum of eight pupils. Following their division into groups, the students convene, on average, twice a week. Students engage in discussions where they address a specific matter and provide details about their previous PBL sessions (Özgül, 2020). The teacher assumes the responsibility of guiding the conversation and providing aid as necessary. Teachers utilize instructional materials to enhance learning by enabling students to contemplate and elucidate issues based on their personal experiences. Teachers aid students in delineating the problem. Furthermore, the teacher actively engages in the learning process with the pupils rather than assuming the role of a traditional instructor. The educator assumes the roles of both a thinker and a pupil. He is the one who motivates pupils to utilize language as a means of expressing their thoughts. Students evaluate the situation and identify their specific educational requirements through analysis and debate (Korkmaz & Hünkar, 2011; Özgül, 2020).

Another crucial component of their learning is the process of searching for answers to problems. The fresh knowledge and experiences cause the student hypotheses to change or be rejected (Korkmaz & Hünkar, 2001; Massa, 2008). Maxwell, Bellisimo, & Mergendoller (2001) list the following as the primary components of PBL:

1. Before they start working, students are given a problem scenario to help them learn. When used for the first time, technical term abbreviations are explained.
2. Students are required to solve the problem in small groups under the guidance of a teacher, and the problem scenario is selected from actual events that they might encounter.
3. The teacher provides support by asking questions and keeping track of the students' progress while they work through the problem on their own.

4. Throughout the process, the subjects that students must learn are identified, and they act as a roadmap for their study sessions.
5. The impact on the problem is then evaluated using the knowledge and abilities that were acquired in steps three and four.
6. The knowledge that the student gains throughout the process reinforces what they already know.

According to Visshers-Pleijers et al. (2006), the PBL approach emphasizes the importance of collaborative learning and fosters the development of teamwork skills by making knowledge more accessible to students through collaborative group work. As a result, PBL helps students develop effective collaboration skills in addition to encouraging them to take ownership of their learning (Hughes & Lucas, 1997).

Furthermore, studies have shown that PBL fosters critical thinking, problem-solving, teamwork, and the ability to apply these skills to new contexts – all of which are essential for lifelong learning (Massa, 2008). Additionally, Hmelo-Silver (2004) argues that PBL improves student performance in promoting the acquisition of new knowledge, enhancing lifelong learning, empowering students to view the world from a wider angle, and strengthening problem-solving skills.

In a similar vein, Coşar (2013) adds that PBL, which allows students to analyze real-world problems and learn independently, improves students' critical thinking and evaluation skills. Moreover, it cultivates the relevant knowledge and skills that students need to solve the challenges they encounter in their lives. With this method, students must develop their own methods for formulating problems, gathering information about their subject areas, evaluating that information, generating theories, and communicating findings to both the facilitator and fellow students. According to Inel (2009), this method encourages self-regulated and metacognitive learning as well.

The aforementioned elements highlight PBL's student-centered methodology. It gives students the chance to learn collaboratively and holds them accountable for one another's education. Learning is improved through the sharing of knowledge. Additionally, the problems are grounded in real-world scenarios, which draws students in and enables them to use the knowledge and skills they have learned in their future endeavors (Dolmans et al., 2016). To summarise, the features of PBL align with the defining features of a potent learning environment. We can conclude that the design of the PBL instructional process bears a significant resemblance to the characteristics of a

powerful learning environment (Dochy et al., 2005).

As the last part of the literature review of PBL, the roles of students and teachers should be revisited. The teacher takes on the role of team leader in the PBL approach. They create problems, manage the procedure, assign students, provide information access hints, decide how much time is needed for problem-solving, and make it easier for students to get the resources they need to find relevant information. Their main duty is to assist students in developing their critical thinking and application skills (Dahlgren et al., 1998). Teachers limit the dominance of specific group members to encourage passive individuals' participation. Additionally, they help students achieve their learning objectives by guiding them toward the subject matter and starting group discussions during the class (Chan, 2008). This helps create a positive learning environment by reducing group conflicts and encouraging communication.

Kaptan and Korkmaz (2001) further explain the roles of teacher and students. In PBL the teacher assumes the role of a facilitator, offering guidance rather than direct instruction. Students, on the other hand, function as problem solvers, engaging with unstructured problems that lack a singular solution. The nature of the problems presented in PBL is characterized by being unstructured and deriving from real-life situations. These problems cannot be easily formulated and serve as a means to reflect the learning process. Students are encouraged to question ideas and structure their knowledge, with an emphasis on taking responsibility for both individual and group activities (Larsson, 2001). Moreover, the problems presented in PBL are designed to be compatible with individual needs and adaptable to various contexts. Therefore, while creating the problems, the teacher's role extends beyond directing the learning process; they actively participate and learn alongside the students (Hung, 2009). Furthermore, the problems aim to ensure active learner participation, foster group dynamics, and stimulate curiosity, all contributing to a more effective and engaging learning environment (Hung, 2009). Overall, this PBL approach encourages a dynamic interplay between teacher, student, and problem, fostering a holistic and collaborative learning experience (Kaptan & Korkmaz, 2001).

2.3 English for Specific Purposes

ESP is a branch of language education that offers customized language training to cater to the particular requirements of learners in professional or academic settings (Dudley-Evans & St John, 1998; Hutchinson & Waters, 1987). The origin of ESP may be attributed to the communicative competence paradigm introduced by Dell Hymes (1972), which underscores the significance of instructing language abilities in genuine and situation-specific settings.

ESP differs from general English language teaching in several key ways. Firstly, ESP courses are needs-based and tailored to the specific vocabulary, grammar, and skills required by the learners (Hutchinson & Waters, 1987). Secondly, ESP courses are content-based and focus on the specific subject area that the learners need the language for, such as business, medicine, or law. Finally, ESP courses are skill-oriented and aim to develop the learners' practical language abilities. ESP courses aim to cultivate learners' specific skills, required for success within their chosen fields, including reading scholarly articles, drafting research papers, and delivering presentations (Stevens, 1988).

2.3.1 ESP and Historical Background

The historical roots of ESP date back to the beginning of the 20th century, which witnessed a surge in demand for English language training tailored to specific occupational needs, following globalisation's rise in trade and commerce (Hutchinson & Waters, 1987). Some important milestones in the development of ESP include the emergence of English for Business courses in the early 1900s to cater to international trade needs. By the 1970s, ESP had become a well-established field with a growing body of research (Paltridge & Starfield, 2013).

In the 1960s, other ESP areas emerged such as English for Science and Technology (EST) and English for Medical Purposes (EMP). The establishment of the Association for Teacher Education in Europe (ATEE) and the International Association for Applied Linguistics (AILA) had a considerable impact on the progression of ESP research and practice (Rahman, 2015). In the 1980s, the focus shifted to needs analysis and learner-centered approaches in ESP. The 1990s witnessed the expansion of ESP into novel domains like English for Tourism and Hospitality and English for Academic Purposes (EAP) (Johns, 2012; Ramirez, 2015). From the 2000s onwards, this trend has continued to evolve. The ongoing expansion and variety of ESP are being enhanced by a focus on technology-assisted learning and globalization (Rahman, 2015).

2.3.2 Theoretical Background of ESP

English for Specific Purposes (ESP) is a distinct field within English Language Teaching (ELT). The field has a strong theoretical foundation that has greatly influenced its development over time. This review provides an analysis of key theoretical perspectives and significant contributions that have shaped the understanding and application of ESP.

The evolution of ESP in the 1960s can be confidently traced back to the research conducted by Hutchinson and Waters (1987). They identified five successive stages, with the first stage being register analysis. This stage focused on identifying language elements that are specific to a particular field, laying the groundwork for tailored syllabus development. During the second phase, the study shifted its focus towards developing meaningful discourse and understanding different genres, as Hutchinson and Waters (1987) stated. Significant advancements were made in the field of ESP, particularly in scientific English, as demonstrated by Swales (1988). Swales (2004) introduced the well-known 'CARS (Create a Research Space)' model, which outlines the necessary processes for efficient academic writing. The communicative functions of texts are emphasized in this text.

The target scenario analysis, which is the third phase in the development of ESP, is based on a scientific foundation that takes into account not only linguistic characteristics but also the motives of students who enroll in ESP courses (Hutchinson & Waters, 1987). This marked a shift towards a thorough understanding of ESP as a discipline that caters to the specific needs of learners in real-life situations. The subsequent phases adopted skill-strategy analysis and a student-centred approach, prioritising the cognitive processes and individualised learning needs of ESP students (Hutchinson & Waters, 1987).

These phases demonstrate a confident and decisive approach to teaching ESP, showcasing expertise and competence in catering to the specific needs of learners. These stages represented a shift away from conventional language teaching approaches and emphasized the significance of comprehending students' cognitive processes and learning styles in ESP environments. In addition, Paltridge and Starfield (2013) offer a thorough examination of ESP in their work "The Handbook of English for Specific Purposes," where they classify its historical development into separate time periods. The authors

underline the geopolitical issues that influenced the early years of ESP, specifically underlining the dominant role of science and technology during the Cold War era (Paltridge & Starfield, 2013).

2.3.3 ESP in Practice

ESP has developed to include different specialized fields, each focusing on the language needs of certain professional areas such as EAP, EMP and various other categories. Every type of ESP combines subject-specific knowledge with language abilities to ensure that learners develop the necessary linguistic skills to excel in their specific areas of study (Dudley-Evans & St John, 1998). In recent years, technology has had a significant impact on ESP education. Computer-assisted language learning (CALL) and online resources provide opportunities for genuine language practice, emulation of professional situations, and cooperative learning encounters. Virtual environments and simulations are increasingly significant in industries such as aviation, health, and business, as they provide learners with authentic language situations (Belcher, 2006).

Although ESP has demonstrated efficacy in numerous situations, there are still existing obstacles. It is important to pay ongoing attention to issues such as identifying learners' individual needs, the dynamic nature of professional language use, and the integration of developing technologies. Additionally, experts in the field continue to debate the issue of striking a balance between overall language ability and specialized abilities (Basturkmen, 2022).

2.3.4 Integration of PBL and ESP

The integration of ESP and PBL approaches will inevitably enable students to use the language in their context (Wilkinson, 2008). Below, the rationales are presented to integrate these two approaches.

PBL approach is highly justified when applied in the context of ESP. Thoe (2009) highlights the significance of developing problem-solving abilities, which is in line with the concepts of PBL that promote critical thinking. The emphasis on collective communication (Warren et al., 2008) reflects the cooperative essence of PBL, which encourages authentic language use. Consistency in using the target language is crucial, as highlighted by Foshay and Kirkley (2003), who consider it a fundamental aspect of ESP, both in and out of the classroom. Rendon's (2021) adoption of a student-centred approach

is in line with the changing dynamics of PBL. Pearson (2005) stresses the importance of motivation through collaborative efforts, which can lead to higher levels of engagement and involvement.

The role of ESP in a PBL context is similarly crucial. Hutchinson and Waters (1987) emphasize that ESP focuses on meeting the specific linguistic needs of learners through customized education. Katsara (2008) acknowledges the significance of ESP in stimulating learner motivation, which is in line with the learner-centered philosophy of both systems. Kırkgöz (2020) signifies the convergence of PBL and ESP in dealing with practical circumstances, with a focus on integrating language learning within a specific context. Trent (2009) emphasizes the importance of active learner participation, which is in line with the fundamental principles of both ESP and PBL. The integration of ESP with PBL shows potential for enhancing language instruction. Although the rationales given provide some insight into possible advantages, additional research is required to investigate realistic methods of implementation, tackle any obstacles, and evaluate the long-term effects on language ability.

2.4 PBL and ESP Studies in Türkiye and Global Literature

In this part of the literature review, studies on PBL studies in different fields from Türkiye and other countries and their factors such as academic achievement, motivation and problem-solving were analysed. Günay (2019) conducted a quasi-experimental study to investigate the impact of the PBL approach on the academic performance and attitudes of sixth-grade students in a secondary school social sciences course. The study was conducted over a period of 4 weeks, consisting of 12 classes. The experimental group consisted of 23 students, while the control group consisted of 24 students. The study found that students in the experimental group, who were taught using the PBL approach, showed improved academic performance and a positive change in their attitudes towards the course.

Söyleyici (2018) conducted a quasi-experimental study to determine the impact of the PBL approach on seventh-grade students' science process skills, scientific attitudes, academic achievement, and concept knowledge in their science course. The study lasted for 5 weeks and included a total of 82 students, with 42 students in the experimental group and 40 students in the control group. The instructional hours totaled 20. After analysing the study data, it was discovered that the PBL approach had a positive

effect on students' science process abilities, academic achievement, and conceptual knowledge. However, there was no significant difference between the experimental and control groups in terms of scientific attitude.

Taşoğlu (2015) conducted a quasi-experimental study to investigate the impact of the PBL approach on the academic performance, conceptual understanding, critical thinking abilities, and knowledge retention of elementary science students studying magnetism. The study utilized an unmatched control group, with the experimental group consisting of 24 pupils and the control group consisting of 24 individuals. The study period lasted for 22 instructional hours. The experimental group used the PBL methodology, while the control group used the standard teaching style. The study's findings suggest that both the PBL approach and traditional teaching methods had an equal impact on students' academic achievement. However, the PBL approach had a greater influence on students' conceptual understanding and critical thinking skills in relation to magnetism subjects compared to traditional teaching methods.

Özeken (2011) carried out a study to investigate the impact of the PBL approach on students' academic progress, cognitive skills, and attitudes towards chemistry. The study focused specifically on teaching the acid-base subject in the chemistry course of the scientific teaching department. The study employed an embedded design, which is one of the types of mixed-method design. To evaluate the effect of PBL versus traditional techniques on the acid-base subject, we conducted an experimental study with unequal groups using a pretest-posttest control group design. The experimental group consisted of 38 students, while the control group consisted of 48 students. The study lasted for 5 weeks. The research concluded that the PBL strategy was more effective in enhancing the understanding of ideas in the acid-base subject and improving scientific process skills. However, the group that utilized the traditional learning technique showed a more positive attitude towards the chemistry course.

Ünal (2019) investigated the impact of the PBL approach on the academic performance and attitudes of sixth-grade students in a middle school science course. The study employed a quasi-experimental approach with a pre-test and post-test control group. The experimental group ($n = 32$) and control group ($n = 30$) received 12-hour applications over a period of 3 weeks. The study compared the effectiveness of the PBL approach used by the experimental group with the science curriculum followed by the control group. The results showed that the PBL approach was more effective than traditional techniques in enhancing both academic accomplishment and attitude towards the course.

The study conducted by Cerezo (2000) specifically examined the perspectives of female students, as well as their instructors, in middle school mathematics and science classrooms that utilized PBL. The study comprised a sample of 14 females as well as 5 teachers, all of whom were selected from three middle schools located in North Carolina. The study discovered factors associated with students' achievement in PBL and females, such as self-assurance, team dynamics, self-drive, and autonomy. The data-gathering process encompassed interviews with teachers and student surveys conducted structured interviews, and analyzed videos. Both educators and learners acknowledged that PBL facilitated a deeper understanding of subjects, heightened eagerness to attend classes, and acted as a triggering factor for students' motivation and overall achievement. Participants also saw enhanced self-efficacy, favorable alterations in group dynamics, higher self-assurance, and improved study habits.

Though it was noted as scarce in the literature, Hmelo-Silver(2004) examined the impact of PBL in language courses on students' mastery of course material and language fluency. The study had 128 undergraduate students who were divided into experimental and control groups. The results indicated that the group that used problem-based learning PBL had more substantial enhancements in language competency in comparison to the control group, namely in the assessments conducted after writing. The PBL group effectively acquired the course information, even with minimum training. The challenges associated with implementing PBL, such as the need for considerable problem creation and the transition away from traditional teaching approaches, were emphasized. The paper focused on the research gap in the use of PBL in English language teaching. It highlighted the potential of PBL to enhance higher-order thinking skills and provide students with the necessary abilities to tackle real-world challenges. The study proposed that PBL is a highly efficient method for acquiring language skills, while also promoting the development of critical thinking, communication, and collaborative abilities. Despite encountering opposition and facing hurdles, PBL has been determined to have positive effects on students' language acquisition and skill enhancement. This suggests that PBL has the potential to be a valuable teaching approach in language education.

Although there is a limited number of studies that examine the combination of ESP and PBL, a recurring element in these studies is the correlation between participant achievement levels. The study conducted by Elizabeth and Zulida (2012) holds particular importance. The study examines the implementation of PBL in an ESP course at a

university in Malaysia. The project entails a longitudinal, qualitative ethnographic investigation that examines the learning experiences of students in a PBL environment. Initial findings suggest that students encountered difficulties at the outset of the PBL method, but valued the chance to assume accountability for their own educational progress. The qualitative methodology employs several methodologies, including classroom observation, interviews, and reflective diaries, to collect data and offer full depictions of the PBL phenomenon through triangulation. Research has demonstrated that the PBL technique effectively improves linguistic and emotional outcomes, encourages meaningful conversations, and supports independent and self-directed learning. The study also examines the enhancement of students' collaborative skills and the promotion of collective knowledge construction. The study promotes the active engagement of students in language acquisition through PBL. Dağ Akbaş (2019) found that the majority of “post-graduate researchers (81%) chose universities “as their preferred setting for conducting ESP-based research, whereas a smaller percentage (6%) performed their research at high schools” (p. 378). Thus, it is a highly challenging task to locate relevant research. Nevertheless, there are a limited number of studies that combine ESP with PBL in addition to Elizabeth and Zulida(2012), which are outlined below.

Wood and Head (2004) integrated the use of ESP and PBL methodologies in biomedical courses. They claim that it was the inaugural English for Academic Purposes (EAP) and PBL investigation in this domain. This article describes a case study that explores the use of PBL in an English for Biomedical Science course at the University of Brunei Darussalam. The course, tailored for premedical students, combines conventional EAP prerequisites with PBL principles. The writers delineate how this technique fulfills the requirements of the particular cohort of students and cultivates the advancement of learning and study proficiencies that beyond what is conventionally instructed in EAP. The paper describes the obstacles encountered in formulating the course, encompassing the necessity to accommodate the distinct requirements of the premedical students and the constraint of insufficient time to create novel resources. The rationale behind selecting the PBL approach was to create a student-centered and inspiring education. The authors explore the integration of PBL into the course, which exposes students to a dynamic and contextually-oriented learning method, consistent with the problem-based approach frequently employed in medical education. In this particular context, the PBL methodology entails students collaborating in teams to examine and deliberate upon medical issues, so fostering the acquisition of proficiencies in critical

reasoning, verbal expression, scholarly composition, and research aptitude. The article also elaborates on how the students conducted a thorough assessment of each other's oral presentations, report writing, and referencing. This process allowed for a more profound involvement with the topic matter and the methodology employed in their studies. The authors underscore the potential of PBL in EAP and note its advantages in terms of student engagement, improvement of the learning environment, and facilitation of successful cooperation. They assert that this method is not limited to medical EAP but can also be employed in several academic fields, showcasing its potential as a significant instructional and educational framework for EAP.

Kırkgöz (2020) is remarkable due to its successful incorporation of ESP and PBL inside a university environment. A total of 38 students from the Electrical Engineering Department took part in the study. The project aimed to incorporate PBL into an EAP course specifically designed for students in the Engineering Education Department (EED). The objective was to ensure that the course content was pertinent to the academic requirements of the students and enhance their level of enthusiasm. The implementation of PBL involved students collaborating in groups to identify and compose problem/case statements that are pertinent to their field of study. This was followed by the identification of key issues and the undertaking of research beyond the confines of the classroom. Students maintained journals and underwent interviews to investigate their perspectives on PBL. The study revealed that PBL yielded advantages such as the implementation of genuine learning tasks, enhancement of language proficiency and disciplinary expertise, and fostering collaboration among students. Students perceived the tasks as pertinent to their field of study and expressed that PBL projects enhanced their linguistic abilities and disciplinary expertise. Collaborating in groups enhanced their accountability and aptitude for resolving problems. The study emphasized the crucial role of the EAP teacher as a facilitator in the PBL process and their collaboration with topic lecturers, indicating the potential use of PBL in various academic disciplines and EAP settings. The study's findings suggest that the methodologies employed in the course have the potential to provide guidance to EAP educators and course designers in different settings.

In their study, Kaadei et al., (2023) investigate the efficacy of PBL and lecture-based learning methods in instructing postgraduate students on research procedures. The study employs a combination of qualitative and quantitative methodologies, revealing that students in the PBL class outperformed their counterparts in the LBL (Lecture-based Learning) class in terms of academic achievement. The analysis of student interviews

yielded qualitative data indicating that PBL resulted in profound and significant learning outcomes. Specifically, PBL fostered a deeper understanding and improved expertise in the students' respective fields of study. Furthermore, it facilitated a more engaging and participatory learning experience, while also enhancing the students' proficiency in conducting their thesis projects. Additionally, PBL promoted autonomy and independence among the students. The results indicate that PBL is a superior way for instructing research techniques. It provides guidance for educators to include students in authentic research and problem-solving endeavors, foster a collaborative classroom environment, and establish connections between course material and real-world applications. The article emphasizes the capacity of PBL to enhance students' learning experiences in research methodology courses.

Chan (2008) explores the responsibilities and significance of PBL tutors in medical education, with a specific emphasis on the author's personal experiences as a PBL tutor at the University of Hong Kong. The research highlights that the job of a PBL tutor is diverse, encompassing facilitation, coaching, and mentorship to promote self-directed learning and the enhancement of students' skills. The author emphasizes the significance of tutors being well-prepared, setting clear guidelines, and acknowledging the influence of students' learning outside the tutorial environment on group dynamics. The study explores the difficulties associated with managing student and group dynamics, highlighting the significance of tutors comprehending students' existing knowledge and adapting their approach accordingly. In addition, the significance of receiving feedback, preparing cases, and managing challenging students and dysfunctional group dynamics is also emphasized.

The research continues by emphasizing the need to offer assistance to PBL tutors, promoting avenues for exchanging experiences, seeking guidance, and ensuring that faculty and tutors are in agreement when it comes to comprehending and executing PBL principles proficiently. In conclusion, the research highlights the crucial significance of PBL tutors in medical education and emphasizes the necessity of well-designed curricular structures and resources to ensure their effectiveness.

As can be seen in this part of the literature review, there are very few studies combining ESP and PBL approaches in the literature. Except for Kırkgöz (2020) paper and Elizabeth and Zulida's (2012) studies, the other studies are from the fields of medicine, mathematics, and science. Hmelo-Silver (2004) emphasized that these studies should be developed especially in terms of language education and that there is a gap in

this field. In this respect, this thesis is important in helping fill this gap in the literature.



CHAPTER III

METHODOLOGY

3.1 Introduction

This chapter elucidates the approach employed in the investigation. The initial stage of the study involves incorporating the research strategy, setting, and participants. Following that, the data-collecting devices and processes are given.

3.2 Research Design

The objective of this study is to evaluate the effect of designing a PBL-based EFL class on the young adult EFL learners' success level in English and also assess their perspectives regarding the teaching process. The study used explanatory sequential design, which is a subset of mixed-method research design methodologies. The study first utilizes a quasi-experimental design by integrating one group pre-test and post-test. The primary aim of an explanatory research design is to collect qualitative data in order to thoroughly explore a specific instance. In an explanatory sequential design, Creswell and Clark (2011) propose that the researcher initially gathers quantitative data, in this case, pre-post test and questionnaire, which is then followed by the collection of qualitative data. The quantitative data is subsequently assessed and analyzed in combination with the qualitative data. Figure 1 below shows the research design of the study visually to better depict it.

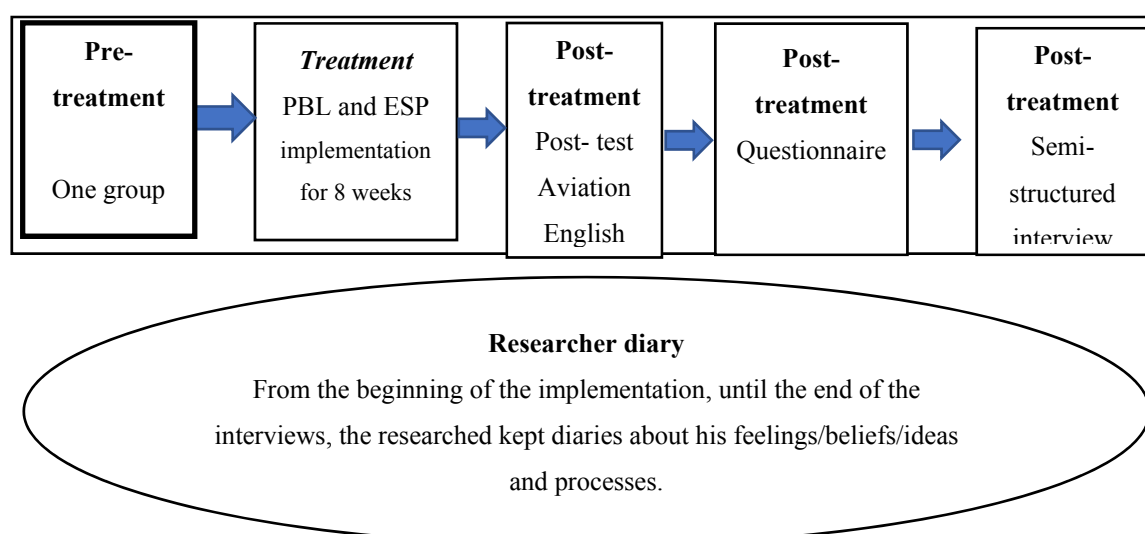


Figure 1. Visual Model of the Data Collection Procedure

Figure 1 shows the data collection procedures during the study. First, at the beginning of the implementation, a pre-test was assigned to the group. After the 8 weeks of implementation period, students took the post-test. After the implementation processes were finalized, students were given a questionnaire and after the questionnaire, semi-structured interviews were conducted with five volunteering students. During the eight weeks, the researcher kept a diary regarding his beliefs, ideas processes, and changes he observed during PBL meetings.

3.3 The Context and the Participants of the Study

The study comprised a cohort of 25 young adult EFL learners who were enrolled in a high school of Turkish Ministry of National Education in Kayseri, Turkiye, during the academic year 2022-2023. Initially, the group of participants involved in the study was chosen using convenience sampling. The primary factor contributing to this is that the researcher concurrently conducted the study in the school where he is employed. The researcher launched an Aviation English program with a total of 25 participants. The researcher devised an eight-week aviation English curriculum, incorporating PBL and ESP methodologies. Further elaboration on this program will be provided in the design section. The majority of participants were assessed at the A1 and A2 levels, based on the Common European Framework of Reference for Languages (CEFR), using the British Council English Score program. The preparation test conducted prior to the pre-test revealed that none of the participants had prior experience in a program known as aviation English, and possessed minimal understanding on this particular subject. Due to the exclusive inclusion of male participants, there is an absence of gender-related data that may be compared in the study.

Tablo 1
Demographic Information About Students

		f	%
Gender	Male	25	100
Age	14	3	12
	15	10	40
	16	12	48
English Levels	A1	6	24
	A2	12	48
	B1	5	20
	B2	2	8

As seen in Table 1, all of the students are male. According to the British Council English Score application, which measures the entry language skills of the students, 48 % of the participants are at A2 level. This is followed by A1 level with 24% and B1 level with 20%. Only 8% of the participants were at B2 level. The age distribution of the participants shows that 48% of the participants are in the age range of 16, 40 % in the age range of 15 and 12% in the age range of 14.

3.4 Course Design

In this section, the course design processes will be explained. While designing a course in a PBL and ESP environment, it is crucial to conduct a needs analysis. As ESP itself is based on the learners' needs, the participants were asked about their expectations about the course.

3.4.1 Needs Analysis

Needs analysis is the most important pillar of an ESP-based course design. Based on the context of "Tell me what you need English for and I will tell the English that you need" as stated by Hutchinson and Waters (1987), first of all, the students were asked in which field they would like to receive language education and where they would use the English they want to learn. As a result of this survey conducted as part of the needs analysis, as shown in Table 2, Aviation English was the most preferred field (68%, n=17). Therefore, the first area to be studied in the needs analysis part of the study was

determined as Aviation English. Medical English ranked two with 20% and the last choice of the students was Business English with 12%. Thus, the study takes Aviation English as the main field of ESP to design a course related to it.

Tablo 2
Descriptive Statistics Needs Analysis Question 1
In which field would you like to learn English?

	N	Percentage
I want to study Aviation English	17	68
I want to study Business English	3	12
I want to study Medical English	5	20

The second question of the needs analysis based on Question 1 was the sub-field of the chosen field, in this case, Aviation English. Students were given four different sub-fields of Aviation English with their detailed explanations and asked to choose which field they would like to study during the course. In Table 3 below, it can be observed that students mostly preferred Radiotelephony Communications (40%) which is the field related to pilot and air traffic controller communications.

Tablo 3
Descriptive Statistics Needs Analysis Question 2
In which sub-field of Aviation English would you like to study?

	N	Percentage
Radiotelephony Communication	10	40
Aviation Technical English	6	24
Ground Services English	4	16
Cabin Crew Communication	5	20

Radiotelephony Communication pertains to the exchange of information between pilots and air traffic controllers using radiotelephony. Pilots and controllers must employ standardized phraseology and vocabulary to guarantee unambiguous and efficient communication. Aviation Technical English is a course that specifically targets the technical language and terminology employed in aircraft systems, maintenance

procedures, and other engineering areas of aviation. This is of utmost importance for engineers, mechanics, and technicians working in the aviation business. Cabin Crew Communication focuses on the development of communication abilities tailored to the unique requirements of flight attendants and cabin crew personnel. This encompasses passenger communication, emergency protocols, and overall in-flight communication.

Aviation English for ground services is a distinct area of study within the larger field of ESP. It specifically addresses the language abilities and communication needs of individuals working in ground services within the aviation sector. Ground services comprise a diverse array of tasks and individuals, such as ground crew, airport personnel, maintenance staff, and other responsibilities focused on the ground.

40% of the participants showed a clear interest in studying Radiotelephony Communication, while 24% preferred Aviation Technical English. The results indicate a significant level of interest in both sub-fields. 20% of respondents expressed a preference for studying Cabin Crew Communication. This sub-field is positioned between Radiotelephony Communication and Aviation Technical English in terms of its level of appeal. Among the participants, Radiotelephony Communication is the most favored sub-field, with 40% showing a specific interest in studying it. Therefore, based on the needs analysis, the study takes Radiotelephony Communication as its core subject in offering ESP classes.

In the Course Design phase, the 3C3R method introduced by Hung (2006) was used. This method emphasizes the point that the PBL approach should not only give a problem situation at the point of writing and developing problem situations but also how that problem situation should be developed so that students can handle it with different dimensions (Hung, 2006). “The 3C3R components can serve as the conceptual dimensions and criteria for evaluating the effectiveness of PBL problems”(Hung, 2006, p.68). Therefore, while preparing the problem situations these tenets were taken into consideration.

Contextualization (C) refers to presenting the subject inside a relevant situation or real-world context that is directly related to the topic being discussed. Contextualization enhances students' motivation by enabling them to comprehend the practical applications of their learning in real-life scenarios.

Challenge(C): The matter should necessitate collaboration, analytical reasoning, and problem-solving methodologies for its resolution. It should provoke contemplation and inquiry rather than provide a definite resolution.

Collaboration (C): Given PBL's emphasis on collective learning, it is important to design problems that foster collaboration. The tasks should be sufficiently complex to need input from several perspectives, so promoting the growth of collaborative problem-solving skills.

Research(R): Given that PBL involves self-directed learning, it is necessary to investigate the topic. To resolve the problem, it is imperative to motivate students to collect information, assess facts, and implement their findings.

Reflection (R): Is an essential element of PBL. Students should be motivated by challenges to reflect on their application of information, problem-solving strategies, and learning approaches. Reflection enhances metacognition.

Realism (R): The problem should accurately depict real-life situations and challenges that professionals in the industry may encounter. Students can enhance their comprehension of the practicality of their education due to this sense of reality(Hung, 2006).

3.4.2 Implementation of PBL

3.4.2.1 Before the PBL Tutorials

The participants were initially acquainted with the fundamental principles of PBL through a training session that commenced with an introduction to the PBL methodology. A hypothetical problem scenario was examined. Following the completion of the PBL instruction, the class was subsequently partitioned into groups, with each group comprising five people. Then had a question-and-answer session to clarify the concepts and roles in a PBL-based classroom. Figure 3 below shows our cycle of PLB tutorials. The 7 stages shown in Figure 3 were shared with the students before the lessons and lesson plans were prepared for each session with PBL, taking these stages into consideration.

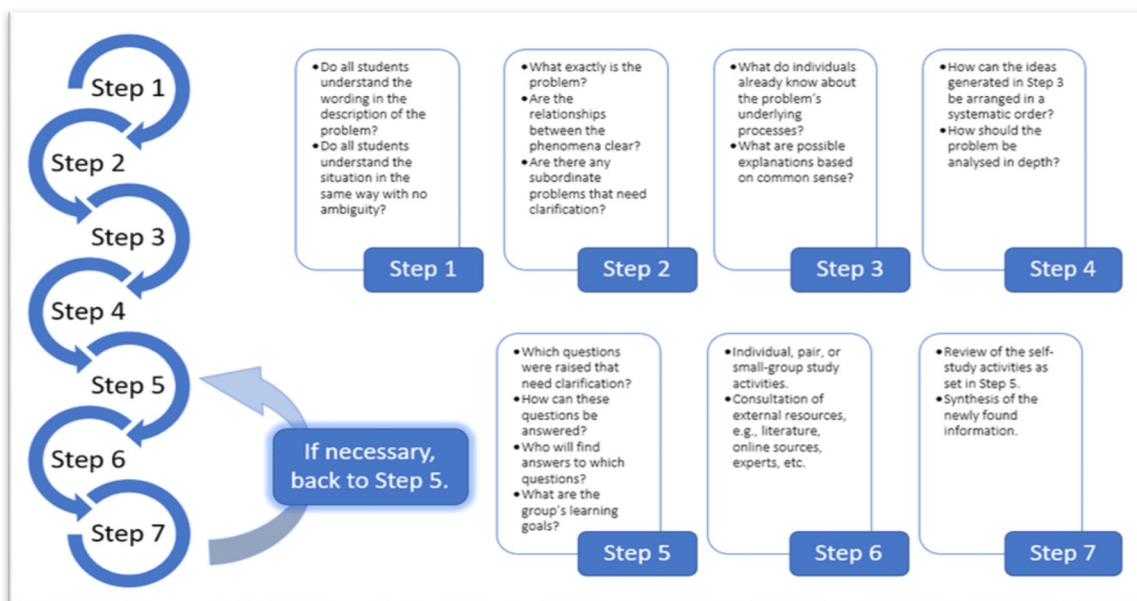


Figure 2. PBL Steps of a Lesson (Amerstorfer, 2020, p.81)

In the tables given afterwards, the problem situation, student roles and course flow chart to be shared with the students during each PBL session are given. The study was carried out by following the lesson plan given here in each session, which lasted 120 minutes. During the sessions, students were divided into five groups. Within these groups, there is a student coordinator, a note taker-organizer and three researchers. What the students should do for each role was introduced to the students in the presentations and video shows made before the sessions, and throughout the process, the research constantly provided the students with the necessary explanations about the requirements of their roles. In the lesson plans, first of all, the first three units of the Flightpath (Shawcross & Day, 2011) textbook were taken into consideration. The problems in the research were written by taking into account the 3C3R model put forward by Hung (2006). Lesson plans also specify in detail what the teacher should do, the materials, and other auxiliary resources to be used. The use of ICT, which has emerged recently in ESP and PBL, has been evaluated here as well, and the course contents have been enriched with the vocabulary learning program called Quizlet. Quizlet is a web-based application that offers learners a visually appealing and user-friendly interface that can improve the experience of traditional paper flashcards (Dizon, 2016).

In Figure 3 above, Amerstorfer (2020) explains the 7 stages followed in the PBL course phase. These 7 stages, together with the order given in Kırkgöz (2015), were utilized during the teaching of the lessons. In Table 4 below, an example PBL course plan was given to better depict the PBL sessions throughout the study.

Tablo 4

Objectives of Week 1-2 Tutorial (120 mins +120 mins.)		
Unit	Language and Communication in Aviation	
Target Vocabulary	Easily Confused Words/ Word Endings	
Target Grammar	Interrogative Words/Phrases	
Speaking	Plain Language and Standard Phraseology	
Pronunciation	American/British English- Minimal Pairs	
Transmission(communication)	Misunderstandings/Types of Transmissions	
Materials (provided by the tutor)	Flight Path Course Book, Quizlet Vocab Set 1-2, ATC and Pilot Communication Videos and Transcripts	
Problem Scenario for Week 1-2 25 Students- 5 Groups	Students' Roles	Tutor's Role
You are an inexperienced air traffic control officer (ATCO) who has just started working at the Istanbul airport. Misunderstandings that may occur during your work make you a little worried. That day is very foggy and you have trouble seeing the landing path. Although the radar systems of the pilots are helpful, your support is needed more than ever, especially during takeoff and landing. The pilot of the flight with the code TK2017, which made the flight between New York and Istanbul that day, states that the radar systems were not working and he requested urgent permission to land. However, the fog on the track has increased a lot and you suspect that the ground is now a bit slippery. You need to keep in touch with the pilot and ensure that the passengers land safely. Come up with some possible Pilot and Atco conversations that may lead to a safe landing.	Coordinator ❖ Lead the group through the process ❖ Encourage all the members to participate in discussions ❖ Maintain group dynamics ❖ Ensure the organizer is making an accurate record ❖ Present the solutions of their group to the classroom. Researcher (3 Students) ❖ Participate in the discussions ❖ Listens to others' contributions and makes comments on them ❖ Ask open questions ❖ Research the learning objectives ❖ Share information with others	❖ Encourage all group members to participate ❖ Assist the Coordinators with group dynamics and keeping to time ❖ Check organizer keeps an accurate record ❖ Ensures groups achieve appropriate learning objectives ❖ Check understanding ❖ Assess performance

	Organizer-Note Taker ❖ Record points made by the group ❖ Help the group order their thoughts ❖ Participate in discussion ❖ Record resources used by the group	
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In Table 4, the course plan for the weeks 1-2 is given. The other course plans and problem scenarios are presented in Appendix 1. While the pre-lesson design was provided with the steps mentioned in Amerstorfer (2020), the following flow list created by Kırkgöz (2015) was used as a lesson processing program during the PBL sessions. Since Kırkgöz (2015) was prepared for pre-service teacher education, some flow points were changed according to the setting of this study. For example, the students' application of the solution of the problem was changed to only the presentation of the solution.

1. Defining the problem
2. Writing a list of what you know about the problem (learning issues)
3. Identifying what you should do in order to bring solution to the problem
4. Doing research to solve the problem
5. Reading the relevant literature
6. Writing solution to the problem
7. Writing a project
8. Oral presentation of the project
9. Reflection of one's learning in the PBL process (Kırkgöz, 2015, p. 231)

Within each group, the members engaged in a collaborative process of generating ideas to address the problem. They each composed an initial analysis of the problem, deliberated on these unique analyses, and formulated the learning concerns they planned to examine. Subsequently, they presented a report regarding their proposed issue. According to Hmelo-Silver (2004), PBL-based courses generally involve students working in groups and solving issues with the supervision of teachers. Similarly, in my

role as the course instructor, I assessed the situation and elucidated the students' understanding and gaps in knowledge pertaining to the subject. Each member of the group independently addressed various aspects of the learning challenges outside of the designated class time, and subsequently shared their findings during class discussions.

As mentioned earlier in the literature review section, the key point in PBL is to write the problem and the problem should be complex enough and at a level that will mobilize different thinking skills and critical thinking (Neville & Britt, 2007; Özgül, 2020). While creating the problem situation, the researcher utilized the textbooks written in the field of Aviation English in terms of subject matter. The purpose of using these textbooks is to write materials suitable for the ESP format for aviation English for many years. In addition, the main purpose of the study is to create a new course design by blending ESP and PBL methods. The book used in this context (Flightpath) is the ICAO4-level book of Cambridge publications (Shawcross & Day, 2011).

3.5. Data Collection Tools

Four different data collection tools were used in the study. Firstly, the pre-test, post-test, and delayed-post test constitute the first quantitative data part of the study. The second data collection tool is a semi-structured interview with five students who were voluntarily selected among the participants. The third quantitative data collection tool is a Likert-type questionnaire taken from Azman & Shin (2012). The fourth and final data collection tool was the diaries kept by the researcher after each PBL session. questionnaire and a structured interview were used as the two data collection instruments of this research.

3.5.1. Pre-Test/Post-Test/Delayed Post-Test

Dugard and Todman (1995) reveal that pre-test and post-test design is highly adapted to investigating the effects of educational advances and are common in educational research. The pre-test post-test and delayed post-test design, which constitutes one of the quantitative bases of the study, is based on the system of retesting the students at the beginning and end of the PBL training and again after a three-week period to measure the retention rate. The test used in the study was prepared by the researcher with 15 questions based on ICAO sample test (See Appendix 2). Pre-test and post-test achievement tests were developed by the researcher in order to measure the

academic achievement levels of the students at the end of the training they received in aviation English. The questions were multiple-choice questions with four items each. In addition, the exam questions, which were examined by two of the other English teachers at the school, were revised and finalized in line with the opinions and suggestions of the relevant teachers. In this part of the study, a one-group pretest-posttest design was used.

3.5.2. Questionnaire

Questionnaire surveys are an effective method for rapidly collecting data from a large number of participants in studies (Creswell, 2017). One of the important points of the study is to reveal the students' approaches, perceptions, and thoughts about this new course design which was created by combining PBL and ESP approaches. In this context, a 22-question Likert scale questionnaire adapted from Azman and Shin (2012) was applied to the students (see Appendix 3). The first 10 questions of the questionnaire were designed to measure students' perceptions about PBL. Within these 10 questions, students completed the questionnaire in a way that 1= Strongly Disagree 5= Strongly Agree. In the second part of the questionnaire, students answered 12 questions on a Likert scale ranging from 1=(very low impact) to 10= (very high impact) about the impact of this course design on their language skills (Azman & Shin, 2012, p. 116).

3.5.3. Semi-Structured Interview

According to Schmidt (2004), semi-structured interviews are one of the approaches to get the real views of the participants about a process and to make more inferences by going deeper into the research. The main reason for using semi-structured interviews in this study is that the students' responses to the questionnaire questions were incorrect (researcher effect) or the reverse scoring questionnaire, which should have been included in the questionnaire, was not available in the source I received the reverse scoring questionnaire and this was considered as a deficiency in the research and was considered as a complementary data collection method. Although Likert-scale questionnaires are widely used, it is necessary for both reliability and more detailed research to be supported in a qualitative way (Adejimi et al., 2010). Therefore, in this study, a semi-structured interview was conducted with 5 students who participated in the study on a voluntary basis. Semi-structured interview questions were prepared by considering the results of the questionnaire. Semi-structured interview questions are

given below.

- 1- How do you think the use of PBL and Aviation English methods affected your interest and motivation towards English?
- 2- Do you think you are more successful or unsuccessful with the use of these two methods together?
- 3- How did the course differentiation and the roles you assumed contribute or not?
- 4- Do you think using these methods together is more tiring?
- 5- Would you like to attend different courses employing these methods and strategies? Why or Why not?

3.5.4. Researcher Diary

The researcher's diary is presented as an effective method for examining a phenomenon in more detail and content. In this method, the researcher can bring a different perspective to the studies by keeping diaries reflecting his/her own views and insights in a certain systematic (temporal or structural) way (Ross et al., 1994). One of the reasons for the use of teacher-researcher diaries in this study is that the researcher is also in a teaching position and his own insights can be seen as a participant in that sense. At the end of every eight PBL sessions, twice a week, the researcher kept a log of the course processing, students' reactions, the methods they used, and the differences they felt, without using any framework.

3.6. Data Analysis

Data analysis is divided into quantitative and qualitative phases respectively. Firstly the data gathered from the test scores were analyzed by using SPSS 28. Then, the data collected through questionnaires was analyzed. Finally, the content analysis was conducted both on the semi-structured interview and researcher diaries. The results of the students' pre-test post-test and delayed-post tests were first analyzed in accordance with the rules of explanatory research quantitative data, followed by questionnaire analyses on a Likert scale. Subsequently, the results of semi-structured interviews and the teacher diaries were analyzed based on content analysis.

3.6.1. Quantitative Data Analysis

Before starting the pre-test- post-test and delayed post-test analyses, the

distribution of the participants' scores in these tests was examined with SPSS 28, and it was decided whether the test to be used would be parametric or non-parametric. It is also presented below in the distribution histograms generated with SPSS 28. Descriptive statistics for test results are shown in Table 5.

Tablo 5

Descriptive Statistics Derived from SPSS 28 on Pre-Post and Delayed Tests

Descriptive Statistics

Descriptive Statistics						
		N	Min.	Max.	Mean	Std. Deviation
Pretest Results	25	5.00	40.00	18.0000	8.89757	
Posttest Results	25	25.00	70.00	49.6000	13.68698	
Delayed Test	25	20.00	65.00	45.2000	10.35616	
Valid N (listwise)	25					

The descriptive analysis performed on the results of the pretest, posttest, and delayed posttest, which consists of 15 questions and each question is evaluated out of 5 points, is presented in Table 4. Accordingly, the minimum score in the pretest was 5 and the maximum score was 40, in the post-test it was 25 and 70, respectively, and finally in the delayed post-test, it was 20 and 65. While the pretest mean score was 18, the post-test mean score was 49.6 and the delayed post-test mean score was 45.2.

Another test that was conducted to measure the normality of the data was frequency analysis. In the analysis, Skewness and Kurtosis values were also taken into account to better grasp the idea of normality. In Table 6 below it can be contended that data is normally distributed as Bryne (2010) posited that data is deemed to be normal if its skewness falls within the range of -2 to +2 and its kurtosis falls within the range of -7 to +7.

Tablo 6

Skewness and Kurtosis Analysis for Normality

Frequencies

		Pretest	Posttest	Delayed
N	Valid	25	25	25
	Missing	0	0	0
Mean		18.0000	49.6000	45.2000
Median		20.0000	50.0000	45.0000
Mode		20.00	45.00	45.00
Skewness		.473	-.240	-.425
Kurtosis		.068	-.938	.480

The analysis of skewness and kurtosis provides insights into the distributional properties of three datasets: pre-test, post-test, and delayed. The pre-test data exhibit a modest positive skewness, indicating a distribution with a right tail. In contrast, both the post-test and delayed post-test data demonstrate negative skewness, suggesting left tails. Skewness provides insights into the level of symmetry in the data distributions. Additionally, the kurtosis values enhance our comprehension of the datasets. The Pre-test and Delayed datasets show kurtosis values that deviate somewhat from the normal distribution. The delayed post-test data displays a positive kurtosis, indicating heavier tails and a sharper peak. In contrast, the post-test dataset demonstrates a negative kurtosis, indicating thinner tails and a less pronounced peak. However, the distribution based on Bryne (2010) can be accepted as normal.

3.6.2. Qualitative Data Analysis

The content analysis method was used to analyze qualitative data. Harwood and Gary (2003) use the definition of reiteration when defining content analysis. What is meant by this definition is that the qualitative data collected is evaluated again and again until it gains a quantitative depth and forms a unity around the themes (Vaismoradi & Snelgrove, 2019). The qualitative data collected with this method are analyzed repeatedly over a certain period of time and themes are extracted. Themes were resolved using a total of 16 days of content analysis. In this study, these approaches were used in the analysis of semi-structured interviews and researcher diaries. In semi-structured interview content analysis, another teacher working in the same institution as the researcher was asked to do the same analysis, and the results were compared and themes were created. Likewise, when analyzing the researcher diaries, the member check method was applied with another teacher from the same institution. The qualitative data of the students were

transcribed after the semi-structured interview and anonymity was ensured by giving pseudonyms to the students.

In conclusion, this chapter has presented details pertaining to the technique employed in the current investigation. It has provided a clear depiction of the research design, participants, study setting, data collecting techniques, and data analysis methodologies. The data obtained from the paired sample t-test, questionnaire, semi-structured interview and diaries will be examined in the subsequent chapter.



CHAPTER IV

FINDINGS

4.1. Introduction

In this part of the thesis, quantitative and qualitative findings will be analyzed first. Four different research questions of the study will be answered by quoting the findings under different headings. In addition, exceptions from the qualitative findings will be presented and interpreted.

4.2. Effectiveness of Integrating PBL and ESP and Retention Skills

In order to answer this question, the results of the pre-test/post-test/ and delayed post-test conducted with the students during the process were analyzed. In the analysis of the results, a paired samples t-test was used through the SPSS 28 program and the results were shared in tables with comments.

Tablo 7

Paired Sample t-test Analysis between Pre-Test and Post-Test

Paired Samples Statistics							
		Mean	N	Std. Deviation	Std. Error Mean		
Pair 1	pre-test	18.0000	25	8.89757	1.77951		
	post-test	49.6000	25	13.68698	2.73740		
Paired Samples Test							
		Paired Differences		t	df	Significance	
		Mean	Std. Deviation			One-Sided p	Two-Sided p
Pair 1	pre-test - post-test	-31.60000	12.47664	-12.664	24	<.001	<.001

As can be seen in Table 7, according to the findings obtained by the t-test on the scores of the students in the tests applied as pretest and posttest, it was found that there was a significant difference in the Aviation English Test [$t=12.664$; $p<0.05$]. When the averages are analyzed, the test difference between the posttest ($x = 18$), which has a higher mean compared to the pretest ($x=49.6$) in favor of the PBL environment. It was found that ESP courses designed for high school students in a PBL environment were in favor of students' achievement.

Tablo 8

Paired Sample t-test Analysis between Post-Test and Delayed Post-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Paired Sample 1	post-test	49.6000	25	13.68698	2.73740
	delayed	45.2000	25	10.35616	2.07123

Paired Samples Test

		Paired Differences		t	df	Significance	
		Mean	Std. Deviation			One-Sided p	Two-Sided p
Paired Sample 1	post-test - delayed	4.40000	10.23882	2.149	24	.021	.042

First of all, when the mean is evaluated, it is noticeable that the mean of the post-test scores ($x=49.6$) is larger than the mean of the delayed post-test scores ($x=45.2$). According to the results of the paired samples t-test, there was no statistically significant difference between the post-test and delayed post-test results ($p=0.21$).

Tablo 9
Paired Sample T-Test Analysis between Pre-Test and Delayed Post-Test
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean		
Pair 1	Pre-test	18.0000	25	8.89757	1.77951		
	delayed	45.2000	25	10.35616	2.07123		
<i>Paired Samples Test</i>							
		Paired Differences		t	df	Significance	
		Mean	Std. Deviation			One-Sided p	Two-Sided p
Pair 1	pre-test	27.2000	12.08305	-	24	<.001	<.001
	- delayed			11.255			

When we compare the pre-test and delayed- post-test results, there is a statistically significant difference ($t=11.25$, $p<0.01$). It is seen that students' learning in a PBL-based learning environment is permanent, even if for a long time, and that the course design created contributes positively to students' recall and retention skills.

4.3. Findings on Students' Perceptions of PBL

In order to answer the second research question, the analysis of the answers to the Likert-type questionnaire we conducted during the research period is presented. Since the questionnaire was prepared according to the Likert scale, descriptive statistics were given item mean scores were taken and standard deviation was calculated.

Tablo 10
Students' Perception of PBL

	Description	MEAN	SD	Interpretation
1	The problems allowed application of learning to real world situations.	4.34	0.34	Strongly Agree
2	The problems promoted working with others.	4.21	0.45	Strongly Agree
3	The problems stimulated continuous acquisition of new and relevant knowledge.	4.24	0.52	Strongly Agree
4	Overall, I am satisfied with the programme.	4.35	0.64	Strongly Agree
5	Overall, my learning experience was stimulating.	4.54	0.40	Strongly Agree
6	I participated actively in my group meetings.	4.6	0.72	Strongly Agree
7	I was motivated to learn and use the English language throughout the process of problem-solving.	4.28	0.72	Strongly Agree
8	I could find the learning resources for the problem.	4.02	0.80	Agree
9	I was motivated to manage the problem.	3.98	0.54	Agree
	I had sufficient time to manage the problem.	3.94	0.55	Agree
	Average	4.35	0.50	Strongly Agree

The first part of the questionnaire, which asked in the first part of the questionnaire about how the students see a PBL-based course design, was found to be highly approved by the students with a general average of ($x=4.35$). In the answers given to Item 1, students had a high mean score ($x=4.34$) that the problems were from real life. It can be said that the students' perception of Item 1, which is one of the most important points of the research, about the correct design of the problem and being from real life, is high and success has been achieved in this regard.

In the second item where collaborative learning, which is one of the features of PBL classes, is investigated, there is unanimity of opinion on the point that the problem situations that constitute the majority of the students ($x=4.21$) require working together. In this data, again, it is seen that the problem writing stage was successful and according

to the students' observations, this situation prepared an environment for them to work together.

In general, it can be observed that students are satisfied with PBL-based ESP course design and their motivation towards English increases as a result of such an education (Item, 7). Looking at items 8, 9, and 10, which scored relatively lower than the other items and remained in the "agree" section, it may be necessary to review the course design in terms of time management. With item 10 ($x=3,94$), it can be observed that time management during implementation scored relatively lower than the other items.

Item 5 with ($x=4.54$) shows that students are eager to learn and that a PBL environment supported by ESP has offered this opportunity to students. The realization of the training in Aviation English, which is a subject that the students are interested in with the needs analysis conducted before starting the study, may have caused an increase in both motivation and students' motivation to act together in problem-solving situations.

The participants were also requested to assess the perceived influence of PBL on their language proficiency subsequent to the completion of their PBL courses. Participants were requested to rate the extent to which PBL has influenced their learning and language skill development on a scale of ten, ranging from 1 (indicating very little impact) to -10 (indicating very strong impact).

Tablo 11
Students' Perceived Impact of PBL on Language Skills

N	Description	MEAN	SD	Interpretation
1	Self-confidence in using the language	8.64	1.48	Very High
2	Presentation skills	7.89	1.84	High
3	Communicating with peers (Communication skills)	9.12	1.91	Very High
4	Problem-solving skills	7.43	1.75	High
5	Reading skills	9.76	1.93	Very High
6	Speaking skills	8.02	1.62	High
7	Critical thinking skills	8.94	1.55	High
8	Vocabulary	9.23	1.65	Very High
9	Inquiry skills	6.82	1.34	High
1	Listening skills	8.17	1.78	High
1	Writing skills	7.14	1.65	Moderate
1	Grammar	6.94	1.78	Moderate
	Average	8.34	1.65	High

The fact that the language skill with the highest mean score was reading ($x=9.76$) may be due to the fact that the students read the problem together in order to do new research on aviation English, to read the chapters in the textbook, and most importantly to understand it. Then, the reason for the relatively high Vocabulary ($x=9.23$) may be the Quizlet application prepared by the researcher and shared with the students during the PBL sessions. With this application, students can learn with gamification, and with a digital vocabulary list, students can study anytime and anywhere. Therefore, the perception of success in vocabulary learning may have been higher. In addition, another language skill that draws attention here is communication skills, which has a very high average of ($x=9.12$). The reason for this is that in a PBL-designed course environment, the students both understand the problem with each other and then solve and report the problem. In the in-depth analysis of the statistics given above it can be observed that The participants demonstrated a significant degree of self-assurance in their language skills, as seen by an average score of 8.64 ($SD=1.48$), indicating a classification of "Very High" for this attribute. This demonstrates a high degree of proficiency and confidence in using the language.

The mean score for presenting skills was 7.89, with a standard deviation of 1.84, suggesting a significant level of ability. Participants exhibit remarkable proficiency in conveying information, while their degree of confidence is slightly lower than their language abilities. Interpersonal communication skills obtained an average score of 9.12 (with a standard deviation of 1.91), categorizing it as "Very High." This indicates a notable proficiency in effective interpersonal communication among the participants of the study. Participants demonstrated a significant degree of competence in problem-solving, as evidenced by an average score of 7.43 (SD=1.75), classifying this skill as "High". The reading skills attained an average score of 9.76 (SD=1.93), which categorizes this aspect as "Very High." Participants exhibit remarkable proficiency in comprehending and analyzing written material. The mean score for speaking skills was 8.02, with a standard deviation of 1.62. This suggests that the level of confidence and proficiency in verbal communication was remarkably high. The average score for critical thinking skills was 8.94, with a standard deviation of 1.55. This indicates a high degree of proficiency in this feature. Participants had a strong capacity for analytical and evaluative thinking. The average score for vocabulary skills was 9.23 (SD= 1.65), indicating that this component is classified as "Very High". This indicates a notable level of proficiency in vocabulary among the study participants. The findings suggest that the participants perceive an achievement of high proficiency in language abilities, particularly in the areas of communication and language usage, as evidenced by their scores falling within the "Very High" range. The students indicated a perceived impact of 6.82 (SD = 1.34) on their inquiry skills, classifying the influence of PBL as "High." This indicates that PBL has a beneficial impact on cultivating students' capacity to actively participate in inquiry-based learning and exploration. Students reported a significant positive influence of PBL on their listening abilities, with an average score of 8.17 (SD = 1.78). This suggests that PBL plays a substantial role in improving students' ability to understand and interpret auditory information.

The impact of writing skills was considered modest, with an average score of 7.14 (SD = 1.65). This suggests that although PBL has an effect on students' writing skills, the extent of this impact is not as significant as it is for skills classified as "High." Likewise, the influence of grammatical skills was considered to be moderate, with an average score of 6.94 (SD = 1.78). These findings indicate that PBL has a moderate impact on enhancing students' grammar skills. The mean perceived impact across all

language skills is 8.34 (SD = 1.65), indicating a "High" cumulative impact of PBL on language abilities. This average considers the individual skill evaluations and demonstrates an overall beneficial impact of PBL on the different language competencies evaluated. Ultimately, the research underscores the efficacy of PBL in significantly enhancing various linguistic abilities, particularly demonstrating substantial reported benefits in listening and inquiry skills. Although writing and grammar abilities were considered to have a minor effect, the overall average indicates a predominantly positive and heightened impact of PBL on students' language ability. These findings add to the increasing amount of research that supports the educational advantages of integrating PBL into language education.

To shed light more on Research Question 2, the findings of the semi-structured interview were analyzed. As with the diary analysis, the main themes of the semi-structured interviews were extracted. The extracted themes were then presented in Table 12 by scanning the transcribed data and determining the frequency of their occurrence. The analysis data was obtained through face-to-face semi-structured interviews with five voluntary students out of a total of 25. The transcribed interviews were then analyzed to extract the main themes. The researcher performed a frequency analysis on the main themes and sub-categories, which were identified through the member check method with the participants. The themes were confirmed to align with the students' intended meanings. Table 12 analyzes the findings of semi-structured interviews to better grasp the perceptions of the students of PBL instruction. Content analysis of the interviews revealed four main themes: group dynamics, motivation, developing skills, and changing roles, along with their respective subcategories and frequency of occurrence. The theme of group dynamics was divided into three subcategories: working together, time management, and presentations, with each subcategory having a frequency of 2. The analysis showed that students value group work and support each other in this regard, expressing a desire for more group work in their lessons. The theme of motivation included subcategories; group success, individual success, and aviation, with corresponding frequencies. The theme of developing skills encompassed subcategories like speaking skills, writing skills, critical thinking, and problem-solving. Lastly, the theme of changing roles included subcategories related to the role of the student, teacher, and classroom. Overall, the findings provide insight into students' perspectives on group dynamics, motivation, developing skills, and changing roles, as well as their preferences for group work and support in the learning environment.

Tablo 12
Content Analysis of the Semi-Structured Interviews

Themes	Subcategories	<i>n</i>
Group Dynamics	• Working Together	2
	• Time Management	2
	• Presentations	2
	•	•
Motivation	• Group Success	4
	• Individual Success	2
	• Aviation	4
Developing Skills	• Speaking Skills	9
	• Writing Skills	4
	• Critical Thinking	6
	• Problem-Solving	5
Changing Roles	•	5
	• Role of The Student	4
	• Role of The Teacher	4
	• Role of The Classroom	4

Within the domain of group dynamics, students often engage in discussions regarding the obstacles and achievements associated with collaborative endeavors. The theme "Working Together" was reiterated twice, emphasizing the significance of efficient collaboration. Time management has emerged as an additional crucial factor, as students recognize the challenges yet report improvement in handling project deadlines. Furthermore, the group placed considerable emphasis on presentations, as seen by two instances, highlighting the importance of enhancing communication abilities in a collective environment.

The motivation theme explored achievements at both the individual and group levels, with a particular focus on aviation-related elements. The presence of "Group Success" was emphasized four times, highlighting the shared determination to accomplish mutual goals. At the same time, the concept of "Individual Success" was mentioned twice, highlighting the significance of personal achievements in contributing to the overall success of the group. The repeated mention of aviation four times suggests a significant

motivating force stemming from the integration of aviation concepts into their efforts.

The concept of skills development was approached from various angles. The text highlights that speaking skills were the primary area of focus, explicitly cited nine times, suggesting a significant emphasis on enhancing verbal communication abilities. The importance of both writing skills and critical thinking was emphasized, demonstrating a harmonious focus on improving both oral and written communication. Moreover, the topic of problem-solving skills was addressed on five occasions, indicating the iterative process of skill enhancement by confronting obstacles inside the group projects.

Exploration of changing roles within the group dynamic focused on the roles of students, teachers, and the classroom environment. The student's function was deliberated upon five times, signifying a recurring motif of adjusting to varied obligations within the collective. The teacher's role was referenced on four occasions, highlighting their function as a guide rather than giving explicit solutions. Furthermore, the classroom, which was mentioned four times, was depicted as a dynamic environment that fosters collaborative learning beyond traditional limits.

The first theme, group dynamics, was divided into three subcategories: working together, time management, and presentations. The students emphasized these points in that order, with each subcategory having a frequency of 2. The Working Together subcategory revealed that students value group work and support each other in this regard. Additionally, they expressed a desire for more group work in their lessons. This section presents the students' statements regarding the situation at hand.

S4: "I like working as a group. I wish we had more classes with group work."

One of the main criticisms of PBL by students is related to time management. The average response to the 10th question(I had sufficient time to manage the problem) in the first questionnaire was $X=3.94$, which was below the average for other items. In the semi-structured interview, students expressed concerns about time management, particularly the need for more time for research and problem-solving. They stated that they spent more time on Aviation, where they sometimes felt lacking in terminology.

S3: "My biggest problem was time. Because I am preparing for University Entry Exam and I should not stay below my daily question solving limit. For this reason, sometimes I could not focus enough while doing research. I also think that there should be a little more time for discussion after distributing roles with my friends during the lesson."

S1: After listening to the solution proposals of other groups, there was not enough

time to ask questions. Actually, I think this part was important.

S2: When we were going to do research, I came across a lot of terms that I did not understand in the aviation sites I looked at other than the textbook, and it took me a lot of time to understand these terms.

The researcher observed that students struggled with terminology and finding word meanings. To address this, vocabulary lists were created on the Quizlet program for words encountered in the Flightpath book and shared with the students during PBL sessions. However, during their research on the given problem situations and while producing their own solutions, the students encountered unfamiliar terms. This required them to spend extra time understanding the terminology. One of the most prominent points in both the questionnaire analysis and the semistructured interview was the students' success in communication skills, especially in presentation and speaking skills. As can be understood from the following statement, it is seen that the students had difficulties while making presentations, but at the same time they agreed that it contributed positively to their development.

S4: "Although giving presentations was stressful, it significantly enhanced our communication skills."

The researcher's diaries in the 'Flow of the course' section of the Diary analysis also reflected this situation. In the 'Technical vocabulary' section, the researcher noted that the students had difficulty pronouncing and understanding technical words when encountering them for the first time. The findings from both the semi-structured interviews and diary analysis indicate that the researcher and students share the same perception on this issue. An excerpt related to most frequent sub-categories is given and interpreted below.

Working Together: S1. *"Throughout our project, we had to determine the most effective way to collaborate. it was difficult but we managed"* Effective collaboration is essential in a PBL environment. The statement highlights the difficulties and achievements related to group dynamics, a fundamental component of PBL in which students collaborate to solve practical problems. S5. *"Enhancing my spoken communication abilities was of utmost importance. Engaging in group debates and presentations enhanced my esteem"* Efficient communication is a fundamental aspect of PBL. The focus on speaking skills corresponds to the requirement for students to effectively communicate and clarify their thoughts in a cohesive manner within a collaborative problem-solving environment.

S4. *"We developed a strong aptitude for problem-solving and critical thinking. Each difficulty presented an opportunity to cultivate and enhance these skills."*

S3. *"Our project(classes) involved continuous problem-solving." It was gratifying to witness the diverse range of perspectives that each individual brought forth in order to discover solutions."*

The purpose of PBL is to foster the development of analytical reasoning skills. The statement is in line with this objective, demonstrating how problem-solving tasks within the group setting promoted the development of critical thinking abilities among the pupils. PBL is centered around the fundamental concept of problem-solving. The statement emphasizes the cyclical process of skill enhancement by confronting difficulties, a core element of PBL teaching methodology.

4.4. Findings Based on the Researcher Diaries

One of the qualitative data collection methods of the study was the diaries kept by the researcher after each PBL session. The main purpose of the diaries was to analyze the researcher's own attitudes and behaviors in the lessons he taught with PBL and ESP approaches in this process, which was his first experience as a teacher, and to write his own opinions about how this process was seen by the students. The 16 diaries written at the end of the process were content analyzed. As a result of the content analysis, the following main themes and sub-themes were extracted from the diaries. The analysis identifies several key themes and subcategories based on the researcher's experiences. One of the main themes identified is "Students' Roles," which includes subcategories such as active participation, using L2 (second language), and problem-solving skills. Another theme is "Group Work and Roles," which encompasses collaboration, creating a positive atmosphere, and utilizing the four language skills. The "Flow of the Course" theme addresses the students' experiences with the course structure, including aspects such as solution and presentation, critical thinking, time management, and technical vocabulary. Additionally, the theme of "Teacher's Role" highlights the researcher's perception of the lack of practice, tutoring, directions, and clarification, and the use of English as a communicator rather than the subject matter. Furthermore, the study delves into the theme of "Presentation," which includes a change in assessment methods and the development of oral skills and problem-solving abilities.

Tablo 13
Content Analysis of the Diaries

Themes	Subcategories	<i>n</i>
Students' Roles	• Active Participation	4
	• Using L2	3
	• Problem-Solving Skills	1
	•	•
Group Work and Roles	• Collaboration	4
	• Positive Atmosphere	3
	• Using Four Skills	6
Flow of the Course	• Solution and Presentation	8
	• Critical Thinking	5
	• Time Management	5
	• Technical Vocabulary	4
Teacher Role	• Lack of Practice	6
	• Tutoring	2
	• Directions and Clarification	3
	• English as a Communicator rather than the Subject Matter	3
		2
Presentation	• A Change in the Assessment	5
	• Oral Skills and Problem Solving	5

According to the results of the content analysis, the first category identified was student roles. Unlike the researcher's own language teaching methods, the first difference that emerged after the combination of PBL and ESP was seen to be in student roles. The following excerpts from the diaries about active participation and second language use defined under this category are noteworthy.

Diary Entry 1: "I was surprised by how much the students got into the roles right away. It was as if they were actually waiting for the opportunity to work together."

Diary Entry 5: "The fact that we have switched to speaking completely in English in the classes and that the students have prepared themselves for this completely new subject and come and try to say something in English to the partner is a part that makes me happy and sad at the same time. Because I'm beginning to understand why they

couldn't communicate like this before, why they would give me feedback in Turkish even if I asked them. In fact, they probably didn't know why they had to speak English either. Or it didn't make sense. With PBL, I guess when they learned aviation English, English seemed like a natural obligation to them.”

Diary Entry 8: “Today I am holding the last session for my students. In fact, the best thing I see is that my students look for different ways to solve a problem and while doing this, they communicate very well with each other. If someone had told me that there would be such a difference before training with PBL, I wouldn't have believed it. The sense of curiosity arising from the nature of the problem and different solutions has always been a driving force in the class. Also, with the Aviation English they choose, I actually get the feeling that my students know themselves better than I do”.

It is clearly seen in the quotes above that the researcher says that the development of his students, especially the change in student roles that came with PBL, surprised him as well. This particularly coincides with the "lack of experience" that the researcher said on his behalf in the teacher roles section of the thematic analysis. “Active participation” theme can be clearly observed in the reactions of his students.

The second category of content analysis is related to “Group work and roles.” Sub category. Fonteijn and Dolmans (2019) revealed that group work efforts and collaboration are prominent factors in PBL. In this respect, the researcher's observations, especially in the classroom, are significant for evaluating the group work and positive atmosphere environment. It has also been found that group work in PBL can sometimes cause problems (Ahmed, 2014; Dolmans et al., 2016). It has been determined that situations such as disharmony within the group, students who do not do their jobs, and silent students reduce the effectiveness of learning (Ahmed, 2014). In this respect, it is planned to increase the effectiveness of PBL by including an approach such as ESP in this process. Since a priority needs analysis is made in a design where ESP and PBL approaches are considered together, issues that students may experience possible problems can be predicted with the needs analysis (Banlı, 2020).

However, as can be seen in the following quotes from the diaries, the researcher had a positive atmosphere, and the collaboration was also above his expectations. The most important reason here may be that the researcher's participants have previously participated in group studies in the same classroom in the same school environment. However, after the needs analysis regarding ESP, it was observed that choosing the subject as Aviation English made the students more motivated during the sessions and

increased their desire to work together. However, the researcher also stated that he experienced a few problems due to his own lack of experience.

Diary Entry 3: "I was as objective as I could when dividing the students into groups. However, at the end of today's session, I noticed that some students were trying to act more effectively in the group. In fact, these were my students who had previously insisted that they wanted to become a pilot as their future goal. Even though the cooperation in group work was at the level I wanted, these students' efforts to show off more put me in a difficult situation today. In particular, my student named S1, who constantly spoke in his group and in class about his extreme interest in unmanned aerial vehicles and drones, negatively affected the other students and especially me. I alleviated the situation by making a mini task change in that group between sessions and assigning S1 to the note taking task."

This situation, also suggested as "unpredictability caused by PBL" (Ribeiro, 2011, p.48) was also experienced by the researcher. While the researcher saw the advantages of using PBL, he could not foresee some points due to lack of experience, in which case it was seen that the sharing and balance in the groups were not acted more consistently. However, the students also stated that group work was beneficial, as was discussed in the semi-structured interview section.

S1: "Group work increased responsibility"

S2: "Group roles develop me in four areas and have (sic) made a good contribution."

The students' opinions on this issue can also be seen in the teacher's diaries. As a result, it was seen that group work and roles increased students' interdependence with each other and, as a result, had a positive effect.

Diary Entry 2: "I can't say that I really did not have any idea what to comment on the first solution suggestions made by the students. I think that was the most unusual feature of PBL. While writing the problem situation, I only predicted what solutions there might be, but the students' interest in this subject is far beyond my field knowledge."

In the excerpt above, which is in line with the content analysis "Flow of the course", the researcher shares experiences regarding the students' performance above his expectations.

Diary Entry 1: "Although giving my students the word lists I had previously

prepared, especially those with terminological meanings, in the Quizlet programme made their work easier, the presence of new words and the students' need for extra support in pronunciation made me feel that I was lacking in this regard."

As a result of the diary analysis, it can be contended that the researcher observed some positive advancement in his students' academic development, and also some drawbacks in the application of the processes. For a successful PBL implementation, it is crucial to have enough expertise and also time management skills which are the most troublesome areas for the researcher. From the students' perspective, the learning paradigm changes drastically with the integration of PBL. Their utterances show the great shift from traditional ways of learning to becoming active participants.

Diary Entry 8: "When I first saw Student A, while presenting his team solution to the whole class, I was more excited. He had prepared all the visuals and his friends' eagerness to ask questions to him was an unexpected result for me. I believe PBL itself created this curiosity in my students"

As can be seen in this entry, it is seen that in PBL the teacher is actually in the role of a facilitator and when students take responsibility for learning, the classroom environment turns into a completely different learning environment. The increase in the desire to learn and the radical change of learning environments with PBL, which was put forward by Hmelo-Silver (2004), can be observed in this entry. As Wood and Head (2004) also show, teaching lessons in which students are responsible for their own learning is also effective on critical thinking and verbal expression skills.

CHAPTER V

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter presents a comprehensive overview of the entire study. Furthermore, the study's findings are analyzed in relation to the research questions. The findings of this study are analyzed and compared with the relevant studies in the literature review. Following that, proposals are offered, and suggestions are provided for prospective investigations.

5.2 Summary of the Study

This study is based on the question of how to design a more effective English lesson with young adult EFL learners using PBL and ESP approaches. In order to answer this question, the designed course content was applied to 25 high school students for 8 weeks and their achievement was measured through pre- and post-tests. In addition, the students' perspectives on this process were determined with a questionnaire. In order to shed more light on the process, semi-structured interviews were conducted with 5 randomly selected students, and as a result of these interviews, the students' perspectives on PBL and ESP were again discussed in depth. In addition, the diaries kept by the researcher provided an evaluation of the process from a teacher's perspective.

The study utilized a mixed-method research approach. The data collection procedure involved first collecting quantitative data, followed by collecting qualitative data. The quantitative data analysis involved the utilization of SPSS software for statistical analysis of the questionnaire. Descriptive statistics were employed to determine the average and variability of the Likert-scale questionnaire items, namely through the calculation of mean and standard deviation scores. Content analysis was employed to assess the data obtained from the structured interview questions.

The results revealed that the integration of PBL and ESP approaches increased students' course achievement, improved their motivation toward English and enhanced their problem-solving skills. It was also found that students benefited more from group work. The content analysis of the diaries shows that the researcher also observed a significant increase in students' communicative and oral presentation skills.

5.3 Discussion of the Findings with Reference to Research Questions

5.3.1 Research Question 1: Is integrating PBL and ESP approaches effective in the success level of EFL students?

The provided data in the findings section under RQ1 represents the results of a paired-sample t-test comparing pre-test and post-test scores. The mean pre-test score is 18.0000 with a standard deviation of 8.89757, while the mean post-test score is 49.6000 with a standard deviation of 13.68698. This indicates a substantial increase in the mean score from the pre-test to the post-test. The paired differences (pretest-posttest) have a mean of 31.60000, indicating a significant decrease in scores from the pre-test to the post-test. The t-value of -12.664 with 24 degrees of freedom suggests that this decrease is highly unlikely to be due to random chance alone. The two-sided p-value is less than 0.001, further supporting the significance of the difference. The paired-sample t-test indicates a statistically significant difference between pre-test and post-test scores. The positive mean of the paired differences suggests an overall improvement or increase in scores from the pre-test to the post-test. These findings are in accordance with Özeken(2011) and Ünal (2019) as they both proved that the use of PBL in their context increased the academic achievement of their learners. Özeken's (2011) study is important in terms of showing students' academic development, cognitive skills, and attitudes towards Chemistry course. In this study, as in the thesis, the mixed model design was used in the study which made it suitable for examining the students from different angles. However, unlike the other studies, Özeken (2011) claims that the traditional group in the study showed a better attitude toward chemistry. This result contradicts the findings of the current study especially with Questionnaire item 7 (*I was motivated to learn and use the English language throughout the process of problem-solving*) which has a very high mean of 4.28 meaning a very strong agreement. While in this study, the students' attitude was strongly positive towards PBL, in Özeken (2011) a traditional method had a higher score of positive attitude towards Chemistry. In Ünal's (2019) study, the effect of a PBL approach on 6th-grade students' science lessons was investigated. A pre-test and post-test were applied to the experimental group and the control group using the quasi-experimental approach. As a result of the tests applied, it was determined that the experimental group was more successful than the control group, and it was revealed that the PBL approach contributed more to students' academic achievement and attitudes

towards the course than the traditional approach. With this result, the study conducted by Ünal (2019) is consistent with the results of this current study.

Another quasi-experimental study conducted by Günay (2019) also shows that the achievement of 6th-grade students in the social sciences course increased. Günay(2019) observed that the students in the experimental group in this study both improved their academic performance and changed their attitudes toward the course. Günay 's(2019) study is also consistent with the results of this study in terms of academic achievement and attitude. When evaluating the aforementioned studies in response to research question 1, it was found that the PBL approach led to an increase in students' academic achievement and test success, which is consistent with most of the literature. However, Özeken's (2011) study reported that students' attitudes did not change, and even the attitudes of students in the class taught with the classical method were more positive. This finding contradicts the data of the current study.

5.3.2 Research Question 2: How do students perceive PBL and ESP-based classes?

How do they feel after the implementation?

The findings from Tables 10 and 11 collectively underscore the positive impact of PBL on students' perceptions and language skills within the educational context. These results provide valuable insights into both the subjective experiences and objective skill development of students engaged in a PBL-based language learning program. Table 10 outlines students' perceptions of PBL, revealing a strong consensus among participants regarding the effectiveness and positive aspects of the approach. The majority of students expressed a high level of agreement with statements indicating that PBL allowed the practical application of learning, encouraged collaboration, stimulated continuous knowledge acquisition, and contributed to overall satisfaction and stimulating learning experiences. These positive perceptions align with Kaadei et al., (2023), emphasizing real-world problem-solving, collaboration, and learner-centeredness.

Impact of PBL on Language Skills

Table 11 delves into the perceived impact of PBL on specific language skills. The mean scores suggest that PBL has a notably positive influence on a range of language competencies, with particularly high ratings for skills such as communicating with peers, reading, vocabulary, critical thinking, and listening. These findings are consistent with

the literature on PBL (Hmelo-Silver, 2004), which posits that the method enhances language skills through active engagement, context-rich learning, and the integration of language use in authentic, problem-solving scenarios. In their study, Wood and Head (2004) showed that problem-based learning improved students' critical thinking skills, verbal expressions, writing skills and research. these findings also match the parts of Table 11 in our study, which are the areas in which students think they have improved. The results of Wood and Head (2004) overlap with the results of the current study.

The high mean scores in Tables 10 and 11 collectively suggest a positive correlation between students' positive perceptions of PBL and their perceived development of language skills. For instance, the very high mean scores in communicating with peers, reading skills, vocabulary, and critical thinking skills align with students' strong agreement that PBL allows the application of learning to real-world situations and promotes working with others. Similarly, the high mean scores in self-confidence, presentation skills, and speaking skills resonate with students' perceptions of active participation and motivation to use the English language throughout the problem-solving process.

While the overall perception and impact of PBL are highly positive, it is noteworthy that some skills, such as inquiry skills, writing skills, and grammar, received slightly lower mean scores or fell into the "moderate" category. This indicates areas where further attention and refinement may be beneficial in optimizing the learning experience. Future iterations of PBL programs could focus on strategies to enhance these specific skills, ensuring a more comprehensive and balanced development of language competencies.

In conclusion, the amalgamation of positive perceptions and demonstrated improvements in language skills underscores the efficacy of the PBL approach in language education. The study affirms the value of PBL in fostering not only linguistic competence but also holistic skills such as critical thinking, collaboration, and self-confidence. The findings provide a foundation for educators and curriculum designers to continue refining PBL methodologies and adapting them to the evolving needs of language learners, ultimately contributing to more effective and engaging language education practices. So, it can be contended that these findings are in a similar vein to those of Kırkgöz (2020).

Kırkgöz (2020) can be considered a seminal work, as it is one of the few studies combining ESP and PBL approaches. Although the participants of the study are

university students, the data collection method of the study and other methods used in the study are similar to this thesis. For this reason, the outcomes are very important. When we look at the results of the study, it is seen that the success of the students increased, they were able to produce original works, and cooperation among the students improved. The study also has very important outcomes for teachers working in the field of ESP, which is also related to research question 3 of this study and will be evaluated there. The outcomes of Kırkgöz (2020) overlap with this study in terms of improvement in problem-solving skills, increased group work, and creating original work.

The semi-structured interview explores the dynamics of group collaboration within a student environment. It emphasizes the significance of efficient collaboration, time management, and presentations in group projects. Motivation and skill development, particularly in communication and problem-solving, were highlighted as crucial elements in achieving success at both individual and group levels. The analysis also explores the challenges students face in terms of time management, language barriers, and the impact of aviation-related concepts on their efforts. The roles of students, teachers, and the classroom environment in fostering collaborative learning were also discussed. Furthermore, it showcases students' feedback on the significance of group work and their struggles with time management and unfamiliar technical terminology. The semi-structured interview emphasizes the importance and challenges of effective communication and problem-solving within a collaborative learning environment. The findings of the semi-structured interview also confirm the findings of Elizabeth and Zulida (2012).

5.3.3 Research Question 3: What is the perception of the teacher of PBL and ESP?

How does he feel before and after the implementation?

As shown in Table 13, the researcher's diaries aim to demonstrate the researcher's insights during the process of PBL. With the content analysis of diaries, it investigates student roles, group collaboration, and the progression of the course. The researcher saw a change in student involvement and language usage in the first student roles category, which was linked to the incorporation of PBL and ESP. This finding confirms the findings of Hmelo-Silver (2004) and Kırkgöz (2020). The second category centers around group work and roles, emphasizing the favorable ambiance and cooperation among pupils.

Kaadei et al. also signify the point of cooperation and in their study, the students showed more interest in group work. This finding also overlaps with Kaadei et al. (2020).

Nevertheless, the researcher faced difficulties in effectively handling group dynamics, namely with students who exhibited attention-seeking behavior and disrupted the overall equilibrium of the group. Chan (2008) discusses his own perspectives of being a PBL tutor. Chan (2008) also addresses the difficulty of forming groups and the balance between high achievers and low achievers. Chan's (2008) findings about the group dynamics also conform the findings of the current study. The researcher saw the unpredictability resulting from PBL and acknowledged its advantages, but also stated that certain aspects were not consistently addressed due to a lack of experience. Chan (2008) also addresses lack of experience as a critical factor in the success of PBL.

Notwithstanding these difficulties, students conveyed that engaging in group work and assuming certain roles enhanced their reliance on one another and yielded a beneficial outcome. Finally, the researcher highlighted the progression of the course, acknowledging that the students' performance was above his initial expectations. He also emphasized the necessity for extra assistance in specific aspects, such as pronunciation. The results highlight the impact of combining PBL and ESP on student roles, group work dynamics, and the overall progression of the course. This sheds light on the advantages and difficulties of integrating these techniques.

5.3.4 Research Question 4: Is the integration of PBL and ESP approaches effective in the retention of the previously learned topics? If yes, how?

When Table 9 is analyzed, it can be contended that the paired differences (pretest - delayed) have a mean of 27.20000, indicating a substantial increase in scores from the pretest to the delayed post-test. The t-value of 11.255 with 24 degrees of freedom suggests that this decrease is highly statistically significant. The two-sided p-value is less than 0.001, indicating a highly significant difference between pretest and delayed post-test scores which shows that the students did not forget the content after the implementation. Wood and Head (2004) also highlight the effectiveness of PBL in the long-term success of the students. From this perspective, their study is in line with the findings of the Research Question 4. Cerezo (2000) also highlights that the use of PBL with low achievers proved to be a very consistent method in the long run. His findings are also in inline with the findings of the current study.

5.4 Implications

According to the results of this study, the following recommendations can be proposed. PBL, a proven effective method, can assist language teachers in establishing a classroom environment that prioritizes student-centered learning. Teachers can employ PBL in conjunction with ESP to cultivate the mentality of students who have difficulties with language skills especially with speaking and listening. PBL training can facilitate the cultivation of students' attitudes toward language learning, enabling teachers to enhance their development.

If a student is encountering difficulties with comprehending language learning, employing PBL and ESP techniques for teaching the procedure can aid in their academic progress. Teachers can utilize PBL training to facilitate the continued growth and development of students who already possess a high level of proficiency in the language. Students with intermediate levels of academic performance might derive advantages from a blend of ESP and PBL approaches, which can contribute to enhancing their attitudes. When working with students who are low achievers, teachers have the option to utilize PBL and ESP to enhance their students' attitudes toward learning. PBL training can be advantageous for students who have a moderate level of academic performance, as it can enhance greatly their language proficiencies. Teachers might employ PBL, specifically emphasizing games, to facilitate the enhancement of process abilities in male students.

When instructed through PBL, students who possess favorable attitudes see enhancements in their proficiency. Through engaging in PBL problems, students have the opportunity to purposefully interact with this activity within a classroom environment specifically built for PBL learning. Language teachers and textbook authors can utilize PBL to enhance students' problem solving skills. In order to actively involve students in the PBL session, teachers or textbook authors have the option to integrate Aviation occurrences into the scenarios. In order to captivate students' attention during the class, additional directives can incorporate Aviation like engineering and material science. Conveying the same subject within a specific time frame poses a challenge when employing both traditional and PBL teaching approaches. Hence, while determining the content and extent of material to incorporate into the curriculum, curriculum designers should take into account this matter, particularly if they intend to emphasize PBL and ESP.

Teachers seeking to enhance their students' acquisition of diverse skills can include PBL in their instructional approach. This method proves beneficial as it enables even students who may not excel in a specific subject area to effectively grasp the information. PBL possesses the capacity to cultivate a diverse array of student aptitudes. Instead of employing traditional methods such as core grammar teaching or vocabulary memorization, the Ministry of Education has the option to create a PBL-based curriculum that prioritizes the enhancement of students' skills.

5.5 Suggestions for Further Research

Firstly, a longitudinal study can be conducted without the time problem, which is one of the limitations of the study. In addition, the number of participants and participant selection methods were among the limitations of this study. Therefore, in future studies, a larger study group can be recruited by random sampling. A new study can be conducted using a larger sample size in terms of generalizing the results. Instead of the pretest-posttest method used in the study, a study that will give more reliable results with variance analysis by creating PBL and control groups with a quasi-experimental experimental environment can be done. The questionnaire used in the study can be further developed and applied to a larger group. A second group can be added to the study to calculate the reliability score of the questionnaire. It was mentioned that there are very few studies in the literature that address ESP and PBL approaches at high school level (young learners). For this reason, this gap in the literature can be filled by combining ESP with PBL studies.

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APPENDICES

Appendix 1. Course Design Plans

Objectives of Week 3-4 Tutorial	
Unit	Ground Movements
Target Vocabulary	Numerals/Adverbs/Abbreviations/ Incident Vocabulary
Target Grammar	Interrogative Words/Phrases
Speaking	Plain Language and Standard Phraseology
Pronunciation	Word endings, minimal pairs,
Transmissions	Failure to acknowledge correctly, confirming, clarifying, requesting confirmation
Materials (provided by tutor)	Flight Path Course Book, Quizlet Vocab Set 3-4, ATC and Pilot Communication Videos and Transcripts

Problem Scenario for Week 3-4 25 Students- 5 Groups	Students' Roles	Tutor's Role
You are the pilot of flight TK198, which makes the flight from Istanbul to Tokyo. Close to landing, you are notified by the cabin crew that a passenger has become ill and his condition has deteriorated. You actually think you can land at the closer airport, Osaka, even though you're at an altitude of 40 minutes from Tokyo. You assess the situation with the Osaka Air control officer and find out that this airport has lost marks and signs and is mostly suitable for small aircraft. Where and how do you land by evaluating the current situation? Create solutions that include discussions with Tokyo airport and Osaka airport controllers.	Coordinator ❖ Lead the group through the process ❖ Encourage all the members to participate in discussions ❖ Maintain group dynamics ❖ Ensure the organizer is making an accurate record ❖ Present the solutions of their group to the classroom. Researcher (3 Students) ❖ Participate in the discussions ❖ Listens to others' contributions and makes comments on them ❖ Ask open questions ❖ Research the learning objectives ❖ Share information with others Organizer-Note Taker ❖ Record points made by the group ❖ Help the group order their thoughts ❖ Participate in discussion ❖ Record resources used by the group	❖ Encourage all group members to participate ❖ Assist the Coordinators with group dynamics and keeping to time ❖ Check organizer keeps an accurate record ❖ Ensures groups achieve appropriate learning objectives ❖ Check understanding ❖ Assess performance
Objectives of Week 5-6 Tutorial		
Unit	Communication on the Ground	
Target Vocabulary	Ground Equipment Vocabulary	
Target Grammar	Ing: Current actions and Functions / Having smt done	
Speaking	Describing what you think is happening	
Pronunciation	Word endings with ing	

Transmissions	Expressing Compliance, Responding to problems, asking for clarification	
Materials (provided by tutor)	Flight Path Course Book, Quizlet Vocab Set 5-6, ATC and Pilot Communication Videos and Transcripts	
Problem Scenario for Week 5-6 25 Students- 5 Groups	Students' Roles	Tutor's Role
You are the captain pilot in charge of the Istanbul Prague expedition. You prepare your plane for takeoff, do the final checks, and get the latest information from the air traffic control officer. Just as you start to exit the apron, you are informed that one of the passengers on your plane has taken another passenger hostage. You contact the air traffic controller and report the situation. You are told to bring the plane back to the apron, but you receive information that the hostage is injured. What path would you follow? Find a solution that includes talking to the air traffic controller.	Coordinator ❖ Lead the group through the process ❖ Encourage all the members to participate in discussions ❖ Maintain group dynamics ❖ Ensure the organizer is making an accurate record ❖ Present the solutions of their group to the classroom. Researcher (3 Students) ❖ Participate in the discussions ❖ Listens to others' contributions and makes comments on them ❖ Ask open questions ❖ Research the learning objectives ❖ Share information with others Organizer-Note Taker ❖ Record points made by the group ❖ Help the group order their thoughts ❖ Participate in discussion ❖ Record resources used by the group	❖ Encourage all group members to participate ❖ Assist the Coordinators with group dynamics and keeping to time ❖ Check organizer keeps an accurate record ❖ Ensures groups achieve appropriate learning objectives ❖ Check understanding ❖ Assess performance

Appendix 2. Aviation English Test

Aviation English Test

Choose the best answer for each question

1. What is the part of the aircraft that controls its yaw?

- A. Rudder
- B. Elevator
- C. Aileron
- D. Horizontal stabilizer

2. What is the organization responsible for controlling air traffic?

- A. Air traffic control
- B. Federal Aviation Administration
- C. International Civil Aviation Organization
- D. Aircraft Owners and Pilots Association

3. the maximum altitude at which an aircraft can operate at its full potential. It is the altitude at which the aircraft can maintain a certain rate of climb, as well as maintain a certain airspeed and stability.

- A. Ceiling
- B. Service ceiling
- C. Absolute ceiling
- D. Pressure altitude

4. What is the force that attracts objects towards the center of the Earth?

- A. Gravity
- B. Lift
- C. Weight
- D. Thrust

5. What is the force that propels an aircraft forward?

- A. Thrust
- B. Lift
- C. Drag
- D. Weight

6. The speed of an aircraft relative to the surface of the earth?

- A. Velocity
- B. Groundspeed
- C. Airspeed
- D. Mach number

7. What is the device that converts rotational energy into thrust?

- A. Propeller
- B. Turbine
- C. Fan
- D. Compressor

8. What is the disturbance in the air caused by the movement of aircraft?

- A. Service turbulence
- B. Turbulence
- C. Clear air turbulence
- D. Mountain wave turbulence

9. What is the phase of flight between takeoff and landing?

- A. En-route
- B. Departure
- C. Approach
- D. Taxi

10. What is the instrument that measures the altitude of an aircraft?

- A. Altimeter
- B. Airspeed indicator
- C. Attitude indicator
- D. Directional gyro

11. What is the instrument that measures the heading of an aircraft?

- A. Compass
- B. Directional gyro
- C. Attitude indicator
- D. Turn coordinator

12. What is the instrument that measures the airspeed of an aircraft?

- (A) Attitude indicator
- (B) Altimeter
- (C) Airspeed indicator
- (D) Turn coordinator

13. What is the instrument that measures the vertical speed of an aircraft?

- A. Turn coordinator
- B. Altimeter
- C. Attitude indicator
- D. Vertical speed indicator

14. What is the instrument that measures the attitude of an aircraft?

- A. Airspeed indicator
- B. Attitude indicator
- C. Altimeter
- D. Turn coordinator

15. What is the instrument that measures the engine RPM of an aircraft?

- A. Tachometer
- B. Pyrometer
- C. Oil pressure gauge
- D. Fuel pressure gauge

Appendix 3. The Questionnaire Used in the Study- Students' Perceptions of PBL

Dear students,

This thesis questionnaire is conducted by Baki Dursun within the framework of Çukurova University English Language Teaching Master's Degree Program. The purpose of this questionnaire is to examine the effectiveness of the PBL education that you have participated during the summer term of 2023-2024 educational year. Your answers to the items in the questionnaire will be kept confidential and will not be shared with anyone or any institution other than the researchers. It is of great importance that you respond to all the questionnaire items and make sure that your answers are correct to ensure that the findings of the study are consistent and valid. I sincerely thank you in advance for your valuable time and attention. By participating in this questionnaire you declare that you consent to take part in this study.

Respectfully,

Baki Dursun

1. Age:

()14 ()15 ()16 ()17 and more

2. Type of School You Came from:

☐ Private School ☐ Imam-Hatip Middle School ☐ State School

3. Please, remark your level of agreement with each of the following statements on the effectiveness of PBL implementation.

	LEVEL OF AGREEMENT				
	1 S <u>trongly</u> <u>Disagree</u>	2 D <u>isagree</u>	3 N <u>either</u> <u>Agree nor</u> <u>Disagree</u>	4 A <u>gree</u>	5 S <u>trongly</u> <u>Agree</u>
1. The problems allowed application of learning to real world situations.					
2. The problems promoted working with others.					
3. The problems stimulated continuous acquisition of new and relevant knowledge.					
4. Overall, I am satisfied with the programme.					
5. Overall, my learning experience was stimulating.					
6. I participated actively in my group meetings.					
7. I was motivated to learn and use the English language throughout the process of problem- solving.					
8. I could find the learning resources for the problem.					
9. I was motivated to manage the problem.					
10. I had sufficient time to manage the problem.					

The questionnaire is over. Thank you for your time and consideration. We would like to conduct a face to face to obtain more detailed information about PBL classes from you. Participation in the interview is voluntary; please state your preference below.

I would like to give more details about PBL classes in the face to face interview. ()
Yes () No

Appendix 4. Çalışmada Kullanılan Anket-Öğrencilerin PTÖ'ye İlişkin Algıları

Sevgili öğrenciler,

Bu tez anketi Çukurova Üniversitesi İngilizce Öğretmenliği Yüksek Lisans Programı çerçevesinde Baki Dursun tarafından hazırlanmıştır. Bu anketin amacı, 2023-2024 eğitim-öğretim yılı yaz döneminde katıldığınız PTÖ eğitiminin etkililiğini incelemektir. Ankette yer alan maddelere vereceğiniz cevaplar gizli tutulacak ve araştırmacılar dışında hiç kimse ya da hiçbir kurumla paylaşılmayacaktır. Tüm anket maddelerine yanıt vermeniz ve yanıtlarınızın doğruluğundan emin olmanız, araştırmanın bulgularının tutarlı ve geçerli olması açısından büyük önem taşımaktadır. Değerli zamanınız ve ilginiz için şimdiden içtenlikle teşekkür ederim. Bu ankete katılarak bu çalışmada yer almayı kabul ettiğinizi beyan etmiş oluyorsunuz.

Saygılarımla,

Baki Dursun

1. Yaş:

() 14 () 15 () 16 () 17 ve üzeri

2. Geldiğiniz Okul Türü:

() Özel Okul () İmam-Hatip Ortaokulu () Devlet Okulu

3. Lütfen, PTÖ uygulamasının etkililiğine ilişkin aşağıdaki ifadelerin her birine katılma düzeyinizi belirtiniz.

	KATILMA DÜZEYİ				
	1	2	3	4	5
	<u>Kesinlikle</u> <u>Katılmıyo</u> <u>rum</u>	<u>Katılmıyo</u> <u>rum</u>	<u>Kararsız</u> <u>ım</u>	<u>Katılıyor</u> <u>um</u>	<u>Kesinlikle</u> <u>Katılıyor</u> <u>m</u>
1. Problemler, öğrenilenlerin gerçek dünya durumlarına uygulanmasına olanak sağlamıştır.					
2. Problemler başkalarıyla birlikte çalışmayı teşvik etmiştir.					
3. Problemler başkalarıyla birlikte çalışmayı teşvik etmiştir.					
4. Genel olarak programdan memnunum.					
5. Genel olarak, öğrenme deneyimim teşvik					

ediciydi.					
6. Grup toplantılarıma aktif olarak katıldım					
7. Problem çözme süreci boyunca İngilizce dilini öğrenmek ve kullanmak için motive oldum.					
8. Problem için öğrenme kaynaklarını bulabildim.					
9. Problemi yönetmek için motive oldum.					
10. Problemi yönetmek için yeterli zamanım vardı.					

4. Lütfen, PTÖ'nün aşağıdaki alanlar üzerinde algıladığınız etkisine ilişkin aşağıdaki ifadelerin her birine katılım düzeyinizi belirtiniz.

		BAŞARI DÜZEYİ									
		1 Çok düşük	2 Düşük			Orta				Yüksek	1 Çok Yüksek
1.	Dili kullanma özgüven										
2.	Sunum becerileri										
3.	Akranlarla iletişim kurma (İletişim becerileri)										
4.	Problem çözme becerileri										
5.	Okuma becerileri										
6.	Konuşma becerileri										
7.	Eleştirel düşünme becerileri										
8.	Kelime dağarcığı										
9.	Sorgulama becerileri										
10.	Dinleme becerileri										
11.	Yazma becerileri										
12.	Dilbilgisi										

Anket sona ermiştir. Zaman ayırdığınız ve değerlendirdiğiniz için teşekkür

ederiz. PTÖ sınıfları hakkında sizden daha ayrıntılı bilgi almak için yüz yüze bir görüşme yapmak istiyoruz. Görüşmeye katılım gönüllülük esasına dayanmaktadır; lütfen tercihinizi aşağıda belirtiniz.

Yüz yüze görüşmede PTÖ dersleri hakkında daha fazla ayrıntı vermek istiyorum.

☐ Evet ☐ Hayır

