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PROBLEM-BASED LEARNING IN DEVELOPING STUDENTS' COMMUNICATIVE SKILLS AND CREATIVITY IN TEACHING ENGLISH FOR SPECIFIC PURPOSES

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Abstract. Tertiary education uses a variety of teaching methods to cater for different learning styles, encourage critical thinking, and prepare students for real-world challenges. Common methods include lectures, seminars, independent study, and collaborative learning. This diversity reflects the complexity of higher education and helps to create a dynamic learning environment that fosters lifelong learning and critical thinking skills. Problem-based learning, a prominent teaching method, focuses students on an inquiry-based approach, presenting them with real-life problems that require the application of knowledge, critical thinking, creative approach, and collaboration. Problem-based learning is very effective in teaching English for specific purposes at tertiary level because it involves students in projects that require the use of the target language, thus enhancing language acquisition and fostering communicative skills. This method benefits students by promoting active learning, improving communication, encouraging creativity, and developing problem-solving skills. A study at Vilnius Gediminas Technical University, Lithuania, involving students from creative and technical fields, found that most students found problem-based learning beneficial, although creativity students were more enthusiastic. The results suggest that while problem-based learning improves understanding of both theoretical and practical aspects of study programmes, technical students are more sceptical about the effectiveness of problem-based learning. Despite some negative attitudes on the part of some students, problem-based learning remains a valuable tool in English for specific purposes education, supporting the development of language and professional skills.

Keywords: communication skills, creativity studies, English for specific purposes, problem-based learning, technical studies, tertiary education.

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1. Introduction

At the tertiary level, education is characterized by the use of a variety of teaching methods that cater for different learning styles, encourage critical thinking, unlock creative vision, promote communicative orientation, and prepare students for the challenges of real life. The choice of teaching methods is often influenced by the discipline, the objectives and outcomes of the course unit, and the needs of the students (Sari et al., 2021; Pangaribuan, 2022). Teaching methods commonly used in higher education include lectures, seminars and tutorials, independent study and research projects, collaborative learning, *etc.* The variety of teaching methods used at tertiary level reflects the complexity and diversity of higher education. By using a variety of methods, teachers can create a rich, engaging, and dynamic learning

environment that not only provides students with knowledge, but also develops their critical thinking skills, stimulates lifelong learning, and encourages them to meet the challenges of the modern world (Rubenstein et al., 2020).

One of the widely and successfully used methods employed by teachers in education at higher levels of instruction is problem-based learning (PBL) method. This method places the learner at the center of an inquiry-based and creative thinking approach. In PBL learners are presented with real-life problems which are designed to be relevant and engaging, calling learners to apply their knowledge, critical thinking, and collaborative skills to solve them (Mohd et al., 2017).

PBL has been used with success in foreign language teaching. It has proved to be particularly effective and practical in teaching a foreign language for specific purposes at tertiary level. The principles of PBL can be applied in English for specific purposes (ESP) by involving students in real-life projects and tasks that require them to use the target language, thus enhancing their language acquisition and proficiency. ESP courses are designed to meet the specific linguistic and communicative needs of students in various fields, such as business, law, engineering, tourism, *etc.* By integrating PBL into ESP, teachers can create context-specific learning experiences that develop students' language proficiency in professional settings (Radcliffe & Kumar, 2016).

Through PBL, students not only acquire subject-specific knowledge or, in the case of ESP, progress in the acquisition of vocational foreign languages, but also develop creative problem-solving skills that are essential for their personal and professional development (Armitage et al., 2015). In addition to fostering learning, PBL also helps students to think creatively in a rapidly changing world. PBL and creativity are closely related because PBL facilitates the development of creative thinking skills. By involving students in real-life problems and their solutions, PBL creates conditions where creativity is not only encouraged but required. In this context, PBL encourages students to think divergently, which means that students learn to explore different perspectives and generate a wide range of possible solutions. Considering different perspectives enhances creativity because it forces students to look beyond conventional solutions and think outside the box (Saputra et al., 2019).

To conclude, the flexibility and effectiveness of PBL in promoting students' learning and developing transferable skills has made it an attractive teaching method widely used at tertiary level (Khoiriyah et al., 2015).

The aim of this paper is to reveal the usefulness of PBL as a teaching method in ESP studies. The object of the research is the evaluation of PBL method among university students. The research attempts to compare the attitudes of students of creativity studies and students of technical studies towards PBL as a method to enhance the development of language and professional skills. The research methods include the review of methodological references, quantitative research, and qualitative data analysis. The paper deals with university students' evaluation of PBL in ESP classes for the development of language skills. The research presents a theoretical background of the benefits of PBL for students; describes the lived experience of the research respondents in a structural way; reveals the benefits of PBL for students as well as the drawbacks of this method.

2. Theoretical background

2.1. The effectiveness of problem-based learning approach

The first mentions of PBL method date back to the late 1960s. PBL was developed and first implemented in 1969 at McMaster University, Canada. The method was introduced by Howard S. Barrows, a medical educator, together with his colleagues (Barrows & Tamblyn, 1980). They developed and formalized PBL, which focused on engaging medical students in active learning by presenting them with real-life clinical cases. Initially used to teach medical students, PBL soon spread to other disciplines, including engineering, law, business, and the social sciences (Marra et al., 2014).

The overview of numerous research on the use of PBL highlights the effectiveness of this method as well as the challenges that it poses in different educational settings. The article further considers some key studies that emphasize integration of language acquisition with professional skill development.

Savery (2006) provides a comprehensive overview of the characteristics and development of PBL, including the role of its impact on student learning. The author describes PBL as "an instructional learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skill to develop a viable solution to a defined problem" (Savery, 2006, p. 12). He explores the advantages of PBL over case-based and project-based learning. In his view, both case-based and project-based learning are valid teaching strategies that promote active learning and engage learners in higher-order thinking such as analysis and synthesis. However, in his view, they tend to diminish the role of the learner in defining the goals and outcomes of the problem because they are usually clearly defined. In the real world, though, it is recognised that the ability to define a problem and develop a solution is also very important, and this process is encouraged by PBL (Maraj et al., 2019).

Johannes Strobel and Angela van Barneveld (2009) focused on the effectiveness of PBL. They conducted several meta-analyses that provided a synthesis of the effects of PBL compared to traditional forms of teaching. Their findings indicated that PBL was superior in terms of long-term retention, skill development, and student and teacher satisfaction. They found that traditional approaches were more effective for short-term retention, as measured by standardised examinations (Strobel & van Barneveld, 2009).

Hasibuan et al. (2015) explore the design of ESP teaching materials based on PBL for software engineering students. The authors conducted a survey among engineering students focusing on the materials available to students in terms of developing their listening, reading, speaking, and writing skills. The authors state that the results of the survey showed that the students' needs were not being met and that the materials presented to the students and the teaching methods used could not achieve the learning outcomes expected by the students. Although the title of the study indicates that PBL will be at the core of this research, the authors do not delve into the specificity of PBL for the development of materials for software engineering students, only mentioning that the PBL strategy would be useful in designing the ESP materials for engineering students.

Another comprehensive study of PBL is presented by Duch et al. (2001). The authors present a case study of institutional change in undergraduate education. They focus on issues such as how to get started with PBL, describe models and assessment strategies for PBL, *etc.* Although the book covers various disciplines, it includes specific examples and strategies for implementing PBL in language courses. The case studies provide insights into how PBL can be adapted for ESP to develop language skills in specific professional contexts.

In science, technology, engineering, and mathematics (STEM) education, PBL has been shown to be effective in developing not only technical skills, but also the 4C skills – critical thinking, creativity, collaboration, and communication. Students are challenged to approach STEM problems creatively, while at the same time working on their collaborative and communicative skills. The study by some authors (Weng et al., 2022) characterises the development of students' 4C skills in the process of problem-based digital making. The authors found that the problem-based digital making environment supported students' development of (a) critical thinking in the form of critical modelling and critical data handling, (b) creativity in the form of creative exploration, creative solutions, and creative expression, (c) communication and collaboration in the form of communicative scaffolding and collaborative debugging (Weng et al., 2022).

The studies mentioned above provide a comprehensive view of how PBL can be used effectively in different disciplines, demonstrating its flexibility and applicability in different professional contexts. The authors of these studies also claim that PBL can be successfully integrated with other teaching methods (Charoensakulchai et al., 2019; Tan, 2021). They analyze collaborative learning – when students work in groups to achieve a common goal; experiential learning – when students learn through direct experience such as fieldwork or hands-on projects; Socratic seminar, which involves structured group discussions based on critical thinking and open-ended questioning; design thinking, which is a creative, solution-focused approach that is particularly suitable for use in the classroom, game-based learning, which introduces challenges, rewards, and a sense of competition into the learning process, motivating students to persevere with difficult problems and making the learning process more enjoyable, and other teaching methods (Bezanilla et al., 2019). The authors note that by combining these methods with PBL, it is easier to create a richer, more dynamic learning environment that not only provides students with new knowledge, but also develops their creativity, social and practical skills.

2.2. Problem-based learning as a tool for effective English for specific purposes instruction in universities

The review of academic research shows that PBL is an effective means of teaching ESP at tertiary level because it fits well with the aim of preparing students to use English effectively in real-life professional situations (Hursen, 2019). The starting point for teachers designing ESP programmes for students is the domain relevant to the students' field of study and future profession. In ESP materials, this domain should be authentic scenarios that professionals in the field might encounter (Sardar Ali, 2019). For example, in ESP for business students, the learning materials could relate to developing a marketing strategy for a new product launch,

requiring them to carry out market research, design promotional materials, and present their findings to a mock board of directors. In ESP for engineering students, the learning materials could deal with the development of the project focusing on the sustainable construction or new engineering solution, the use of artificial intelligence in solving different problems, using appropriate technical language (Li, 2018). Students in the programmes where creativity is the main focus in their ESP classes could be assigned to create a documentary film, including the presentation of the idea, the process and schedule of filming the documentary, the challenges and rewards of the filming process.

The use of PBL in ESP naturally involves the four main language skills – reading, writing, listening and speaking – in the learning process. Students are required to read and analyse relevant texts, where they both gain the information and understand the professional context. Students are involved in a variety of writing tasks, such as academic articles, industry reports, professional documents, case studies, *etc.* (Dawilai et al., 2018). The tasks used improve students' ability to communicate in written English. Listening skills are developed through activities such as watching video presentations, listening to podcasts, *etc.* Speaking skills are developed by involving students in discussions, debates, presentations, and role-plays.

By solving open-ended, genuine scenarios, PBL is particularly effective in developing students' creativity and communication skills. These skills are developed through the collaborative, out of the box and inquiry-based nature. Moreover, there is a synergy between creativity and the development of communication skills. Creativity does not happen in isolation. In PBL, students complement each other's ideas, so the whole process stimulates collaborative creativity. Students are immersed in authentic scenarios that stimulate their creative thinking (Gallagher, 2015). Communication skills are essential to this process as students need to use the right vocabulary to express their ideas clearly, listen to others, and work together to find the solution. Students are placed in collaborative, dialogue-rich environments as they need to explain their reasoning and findings to their peers and teachers.

While PBL offers many benefits, it also presents some challenges. Some of the benefits cited by researchers include promoting active learning, enhancing critical thinking and creative problem solving, fostering collaboration and teamwork, *etc.* (Tadjer et al., 2022). However, the implementation of PBL is very time-consuming for researchers. The design of tasks and assignments in PBL requires careful planning, choice and selection of resources, and a commitment to active facilitation. However, researchers agree that the advantages of using PBL outweigh the disadvantages. It is consistent with educational objectives and meets the needs of students (Wilder, 2015).

The following is the analysis of the students' approach to PBL, their understanding of PBL, and the advantages and disadvantages of PBL as they see it in learning ESP.

3. Research methodology

The questionnaire was conducted among first- and second-year bachelor students of Vilnius Gediminas Technical University (VGTU), Faculty of Creative Industries on the one hand (referred to as creativity students) and Faculties of Fundamental Sciences, Mechanics, Environmental Engineering, and Business Management on the other hand (referred to as technical

students). A total of 212 respondents participated in the survey (73 creativity students and 139 technical students). 29% were female and 71% were male students. They were given a questionnaire to complete anonymously online. The survey included statements related to their attitudes towards the advantages and disadvantages of PBL in ESP classrooms, with which the respondents had to either agree or disagree. In addition, the respondents were given a few open-ended questions about their likes and dislikes considering PBL in ESP classroom. The methods of mathematical calculation and questionnaire survey were used to compare the information about the attitudes towards PBL in an ESP classroom among students of creativity studies and students of technical studies at VGTU. The analytical method was used to analyse and interpret the results of the survey.

4. Research results

The results of the questionnaire survey indicate that the majority of respondents, representing approximately 65% of both categories, expressed agreement with the assertion that PBL has facilitated the acquisition of knowledge and the enhancement of English language proficiency within the context of their academic programmes. Additionally, approximately 22% of respondents indicated a strong level of agreement with this assertion. A relatively low proportion of students (11%) indicated that they were uncertain about the benefits of PBL. The responses of those engaged in creative and technical fields of study were found to be indistinguishable. This question was posed in order to ascertain whether students perceive PBL to be advantageous for their ESP studies.

With regard to the subsequent statement, 28% of students pursuing creative studies and 23% of those engaged in technical studies indicated a strong agreement that PBL facilitated their comprehension of theoretical knowledge. 60% of students in the creative field and 55% of those in the technical field concurred with this assertion. A mere 13% of the students in the creative field and 16% of those in the technical field indicated uncertainty.

Upon inquiry as to whether PBL had facilitated a more profound comprehension of the practical elements inherent to the study programme, 37% of respondents from the creativity studies and 30% of respondents from the technical studies cohort expressed a resounding affirmation. A majority of students in both the creativity studies (48%) and technical studies (53%) programmes indicated that they believe PBL helps them understand the practical aspects of their course of study. However, approximately 12% of respondents in both categories expressed uncertainty about this assertion. A small number of students in both groups also indicated that they do not believe PBL helps them understand the practical aspects of their course.

A significant proportion of students in both the creativity (30%) and technical (25%) streams concur with the assertion that PBL fosters an enhanced sense of confidence and capability in navigating authentic scenarios. 43% of students pursuing creative studies and 47% of those engaged in technical studies agree that PBL enhances their self-confidence and capacity to navigate real-world scenarios. 18% of students in creative studies and 21% of those in technical studies remain uncertain about this assertion (see Figure 1).

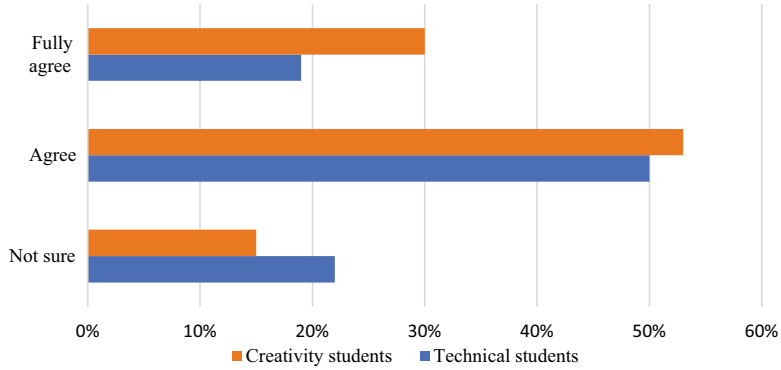

Figure 1. Confidence and ability to solve real life situations in English for specific purposes classroom (source: created by authors)

In response to the survey question regarding the perception of real situations and reflection of practical situations in PBL, a third of the creativity respondents and 19% of the technical students indicated a strong agreement. Half of the respondents (53% and 50% respectively) expressed a view that PBL reflects typical practical situations, while 15% of the creativity students and 22% of the technical students indicated uncertainty.

The students were then questioned as to whether they felt that PBL had assisted them in developing enhanced communication skills and the capacity to collaborate effectively in groups. 40% of the creativity students and only 25% of the technical students strongly agreed with this statement. An additional 40% of the creativity students and 42% of the technical students agreed that PBL had helped them to work in groups, while 12% of the creativity students and 24% of the technical students were uncertain. Only 7% of both groups disagreed (see Figure 2).

This was followed by a further question asking respondents whether they thought PBL should remain part of the curriculum. A third of students in both categories expressed a strong agreement with the proposition that PBL should remain part of their curriculum. Specifically, 58% of those in the creativity category and 54% of those in the technical category

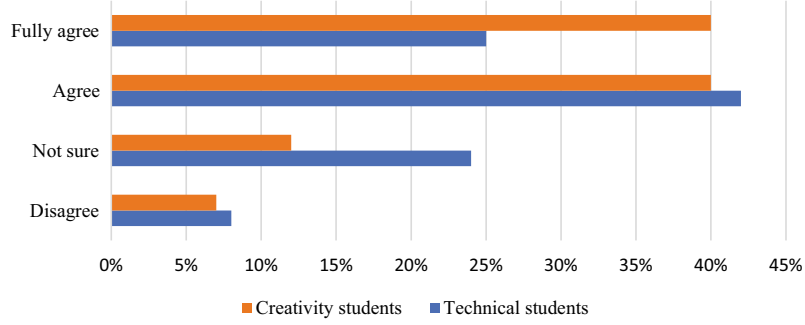

Figure 2. Groupwork in problem-based learning in English for specific purposes classroom (source: created by authors)

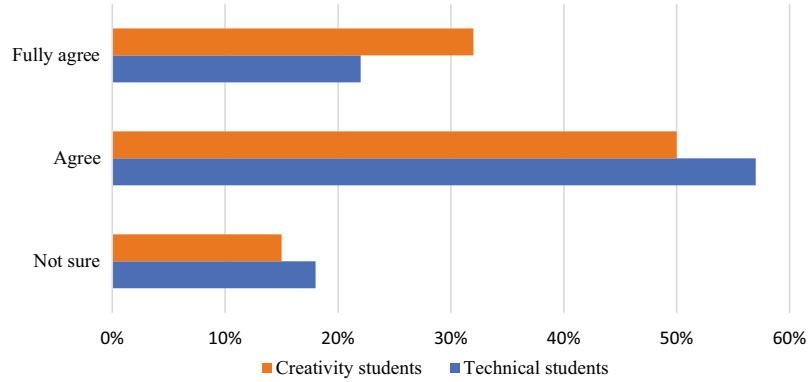

Figure 3. Organization and effectiveness of problem-based learning in English for specific purposes classroom (source: created by authors)

indicated their support for the continued inclusion of PBL in their respective programmes of study. 10% of creativity students and 13% of technical students were not sure, while a few respondents disagreed.

The next question was whether PBL is well organised and effective. 32% of creativity students and 22% of technical students strongly agreed, while another 50% of creativity students and 57% of technical students agreed that PBL is well organised and effective. 15% of creativity students and 18% of technical students were not sure, while a couple of students disagreed (see Figure 3).

A further point for consideration was whether PBL encourages students to summarise what they have learned in their own words. A third (30–32%) of respondents in both categories indicated that they strongly agreed with this statement, while approximately 53% agreed that PBL encourages them to summarise what they have learned in their own words. However, around 10% were uncertain about this, and a few students expressed disagreement.

Additionally, respondents were posed a few open-ended questions regarding their most and least preferred aspects of PBL. The following section presents a selection of pupils' responses regarding their positive perceptions of PBL (see Table 1).

As can be seen in Table 1, the responses demonstrating positive attitude towards PBL were divided into five sub-topics, which covered the factors influencing students' attitudes: "Giving a chance to work in groups", "Applying theory to practical real-life situations", "Improving language skills", "Building self-confidence", and "Fostering critical thinking".

The results show that the participants appreciated the opportunity to work collaboratively in groups which implies that this kind of activities can develop teamwork, communicative, and critical thinking skills. The respondents found PBL to be relevant and applicable to real-world scenarios what increases students' engagement and motivation. The participants also reported improvements in their language skills and self-confidence as a result of PBL. This suggests that PBL approach made grammar more accessible and improved overall language comprehension. Students' positive attitude was also noticed in groupwork when all the problems were solved only in the English language. It highlights the immersive nature of the PBL,

Table 1. The expression of positive attitude towards problem-based learning (source: created by authors)

Topic	Subtopic	Meaning unit
Positive attitude towards problem-based learning	Giving a chance to work in groups	"[...] It helps me understand more information, helps with studying in groups"; "[...] Because I like to work in groups, I enjoy discussing the problems and finding the solutions. And I became confident in using English to express myself"; "[...] Interactions with other students, hearing their opinions, discussing in English".
	Applying theory to practical real-life situations	"I can feel it even in everyday life situations that problem-based learning helped me to deal with professional situation in English [...]"; "[...] That there are realistic situations and we can think about them and come up with ideas how to prevent them"; "These exercises can help students to better understand their profession. Also solutions that we think of could be useful in real life situations, which in my opinion is quite a fun thing [...]"; "It's a great way to connect your studies to real life scenarios [...]".
	Improving language skills Building self-confidence	"I liked my professor's learning method. I learn so much more and all grammar is way more understandable [...]"; "[...] Work in groups, problem solving and not a word in Lithuanian. Everything's only in English"; "The fact that each person can contribute and express his own feelings and knowledge and I understood that I can do that in English [...]". "I became more socialized because of problem-based learning [...]"; "I started to express my ideas in English more freely [...]".
	Fostering critical thinking	"It is really helpful because we talk about social problems that are really happening in our world and we can better understand what the problem is and maybe in the future it could help us [...]"; "It forces us to think about real-life problems and use our English knowledge to make up possible solutions".

forcing students to use English consistently within the learning environment. The respondents indicated that PBL method encouraged active language use and improved students' ability to communicate effectively in English.

By enhanced self-expression and increased socialization the students boosted their self-confidence. This demonstrates that the PBL approach provided a safe and supportive environment for students to share their thoughts and ideas in English, boosting their confidence in their language abilities. The increased socialization suggests that the collaborative nature of PBL fostered social interaction and communication skills, leading to an increase in self-assurance in social settings.

Table 2. The expression of negative attitude towards problem-based learning (source: created by authors)

Topic	Subtopic	Meaning unit
Negative attitude towards problem-based learning	Solving unrealistic or difficult situations	"[...] some situations were not realistic"; "It is difficult to imagine yourself in that kind of situation [...]".
	Facing limited language skills	"I'm too anxious to talk out loud and especially when I have to speak English which is not my native language [...]"; "[...] There may be potential inequality between those who speak a lot and can use their English better and those who tend to avoid speaking very often because they are afraid to speak English"; "It can be hard to think of solutions for the problem in English [...]".
	Having no experience to handle given situations	"Sometimes problems are hard to solve because I haven't been in this type of situation [...]"; "[...] Sometimes I'm not sure if solution that I prepared can be right".

The respondents believed that PBL helped them develop critical thinking skills what is especially helpful and important in order to analyse complex problems, evaluate information, and generate creative solutions.

Below you can see the factors that provoked the respondents' negative attitude towards PBL application in ESP classroom (see Table 2).

The analysis indicates that a number of factors contribute to the formation of negative attitudes towards PBL among participants. The scenarios presented in PBL may lack sufficient relevance or appeal for participants. The presence of language barriers can act as a significant barrier to participation, leading to feelings of incompetence and inadequacy. Such statements as *e.g.* "There may be potential inequality between those who speak a lot and can use their English better and those who tend to avoid speaking very often because they are afraid to speak English" clearly demonstrate that the level of communicative competence strongly influences not only students' passive engagement in lectures, but also their attitudes towards the use of language acquisition methods, in this particular case PBL in ESP classroom. The analysis also showed that a lack of personal experience can lead to difficulties in applying problem-solving skills, and thus to negative attitudes towards PBL.

To sum up, this suggests that participants may struggle to engage with the material if they do not find it relevant or applicable to their own experiences. Language barriers can create feelings of inadequacy and may prevent participants from fully contributing to group discussions and problem-solving. Participants may feel unprepared to deal with some of the scenarios presented in PBL due to lack of personal experience, so ESP teachers should take this into account when preparing tasks for students. Situations should be realistic so that students can relate to them, and teachers should control the discussion and give equal attention to all students to meet the needs of students with lower level language skills.

5. Discussion and conclusions

PBL is a method that fosters active and collaborative learning through the encouragement of group work, problem-solving, and idea sharing among students. It facilitates a transformation in students from a passive receptivity to knowledge to an active engagement with it, thereby developing essential skills such as communicative, critical thinking, and teamwork. PBL facilitates not only a deeper comprehension of the subject matter and of the target language, but also an enhancement of social and interpersonal skills. The benefits of PBL in language learning are considerable. It encourages active participation, provides a lot of opportunities to develop communicative and listening skills, and improves students' ability to solve real-life problems, engage creativity and formulate their thoughts in the language of instruction. Furthermore, PBL develops interpersonal skills such as teamwork and respect for different opinions.

The results show that students have a positive attitude towards PBL, as it helps them to improve both their linguistic and problem-solving skills. The study indicates that PBL is particularly efficient in developing students' linguistic and social competencies. Students who like creativity tend to be more enthusiastic about PBL, while those who like technical activities tend to be more sceptical about its benefits. Those pursuing technical studies express uncertainty regarding the impact of PBL on their theoretical understanding, practical knowledge, and confidence in solving real-world problems. Furthermore, they question whether PBL accurately reflects practical situations and whether it is effective in improving communicative skills and group work. This may be due to the fact that technical students are used to solving job-related problems that lead to rigorous solutions using algorithms and formulae, whereas the PBL method calls for creativity where creative solutions can vary and be debated. Despite these reservations, both groups agree that PBL is a valuable tool for developing the language skills and should remain part of their study programmes. Although PBL has its drawbacks, such as its difficulty in solving complex problems and its dependence on group dynamics, it remains a valuable method for teaching foreign languages and for developing essential skills in ESP classes. The students' responses strongly indicate that PBL method had a positive impact on their language skills and self-confidence. By creating an immersive and collaborative learning environment, the method encouraged active language use, improved comprehension, and fostered a sense of self-efficacy in communication.

To gain a deeper understanding of the students' experiences, further analysis could include quantitative data, that is collecting data on students' language proficiency levels before and after the PBL intervention.

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