

Developing 21st-Century Skills through PBL in a Public University

Desarrollando Habilidades del Siglo XXI a través del ABP en una Universidad Pública

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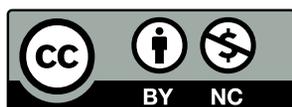
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Abstract

This study aimed to examine the beliefs of students in a public university about the benefits of problem-based learning (PBL) projects in developing 21st-century skills in the EFL classroom. A mixed methodology was applied to a sample of 62 A2 level students in a public university who worked on small PBL projects during the semester, with the teacher as a facilitator. The study aimed to analyze the effects of PBL on students' process and learning outcomes, specifically in terms of attitudes towards collaborative and critical learning in problem-solving. Data was collected through direct observations, surveys, open-ended questionnaires, and semi-structured personal interviews. The study concluded that PBL projects have a positive impact on the process and learning outcomes of students.

Keywords:

21st-century skills, autonomy, critical thinking, English teaching, Project-based learning, public university.

JEL Classification: I23.

Resumen

El presente estudio tuvo como objetivo examinar las creencias de estudiantes de una universidad pública sobre los beneficios de los proyectos de aprendizaje basados en problemas (ABP) para desarrollar habilidades del siglo XXI en el aula de inglés como lengua extranjera. Se utilizó una metodología mixta y se aplicó a una muestra de 62 estudiantes de nivel A2 en una universidad pública, quienes trabajaron en pequeños proyectos de ABP durante el semestre, con el profesor como facilitador. El estudio buscaba analizar los efectos del ABP en el proceso y los resultados de aprendizaje de los estudiantes, específicamente en términos de actitudes hacia el aprendizaje colaborativo y crítico en la resolución de problemas. Los datos se recopilaban mediante observaciones directas, encuestas, cuestionarios de preguntas abiertas y entrevistas semiestructuradas personales. La conclusión del estudio fue que los proyectos de ABP impactan positivamente en el proceso y resultados de aprendizaje de los estudiantes.

Palabras Clave:

Habilidades del siglo XXI, autonomía, pensamiento crítico, enseñanza de inglés, aprendizaje en base a proyectos, universidad pública.

Clasificación JEL: I23.

Introduction

In today's rapidly changing world, learners need to learn critical thinking, problem-solving, and other 21st-century skills to succeed personally and professionally. One pedagogical approach that has shown promise in promoting these skills is problem-based learning (PBL). PBL is a student-centered teaching method that uses real-world problems as a starting point for understanding and encourages learners to work collaboratively to find solutions using skills such as research, critical thinking, communication, and creativity.

Due to limited opportunities for language use in authentic contexts, developing 21st-century skills may be challenging, especially for EFL learners. Several language experts agree that for language learners to develop their language proficiency, they generally need opportunities to use their language in authentic contexts, and for example, Swain and Lapkin (1998) make this argument. Klimas (2019) indicates that EFL teachers think their students must gain 21st-century abilities. Still, they also think EFL students often lack opportunities to apply what they have learned in authentic and relevant ways.

Project-Based Learning (PBL) is one approach that can provide EFL learners with opportunities to apply their language skills in real-world situations, enhancing their motivation and engagement. They are also important because they bring about the conditions to develop learners'

critical thinking and critical thinking skills while working collaboratively with others; at the same time, EFL learners can develop their language skills while gaining valuable experience working with others in a real-world context.

This study aims to explore the beliefs of EFL learners in a public university about the benefits of PBL projects for developing 21st-century skills. Using a mixed-methods approach, including observations, surveys, questionnaires, and interviews with 62 A2-level students, this study will investigate how PBL can help EFL learners develop creative and autonomous skills while improving their oral and written abilities using technology. The theoretical background for this study draws on constructivism and situated learning theories which suggest that learning occurs through active participation in meaningful tasks within social contexts. These theories emphasize the importance of collaboration and interaction among learners in problem-solving activities. This study is significant because it contributes to the ongoing debate about the effectiveness of PBL in promoting 21st-century skill development among EFL learners. The findings from this study will have practical implications for educators looking to integrate 21st-century skill development into their teaching practices.

Literature Review

The relevance given to collaboration, critical thinking, autonomy, and engagement in the present study is

justified due to their significance to 21st-century skills, their close connection to language proficiency enhancement, their practical applications, their alignment with a learner-centered approach, and the existing research and emphasis on these skills in the field of education. Hattie (2012) emphasizes the significance of collaboration, critical thinking, and engagement in his study because of their positive impact on student achievement and learning outcomes. This assumption is far from being recent, and back in his day, Gardner (1983) acknowledged the importance of different forms of intelligence, including interpersonal and intrapersonal intelligence, that align with collaboration and autonomy, respectively.

Chomsky (1995) tells us that we are born with an innate ability to learn the language. Children learn most effectively when given a chance to participate in worthwhile activities and work collaboratively with others. These ideas align with the constructivism, critical thinking, autonomy, engagement, and collaboration tenets of PBL. We could also interpret Chomsky's idea of the "language acquisition device" as a forerunner of the PBL idea of the "learning cycle." PBL teachers may foster a learning environment conducive to in-depth learning and critical thinking by incorporating Chomsky's theories and ideas into their practice.

Doing so may be necessary since technological advancements like artificial intelligence have challenged traditional language learning paradigms,

and pedagogical changes have emphasized the need for students to acquire practical language abilities that will help them succeed in everyday situations. Educators then use task-based strategies like PBL, which Heick (2021) envisions as a learning process that implies project design, development, and completion. Before him, Boss (2011) defined PBL as a student-centered pedagogy that allows students to acquire a more profound knowledge by actively exploring real-world challenges and problems. Regarding the nature of PBL and how it functions, Moss (1998) says it can be defined as a learner-centered approach in which, with a series of instructions, learners are exposed to problems and solve them as well as they can.

Students learning by becoming responsible for their learning is not new. PBL, as we know it, began taking shape in the early 20th century with the "Dalton Plan," a student-centered method that let students choose their projects and work in groups (Blumenfeld et al., 1991). Then in the 1960s, PBL was used in the health sciences when it appeared to help med students in developing a better way for their clinical problem-solving skills (Savery, 2015). From then on, PBL became common in vocational and technical education, especially in engineering and construction, and it was called "problem-based learning" as it aimed to prepare students for real-world problems in their careers.

PBL has grown in popularity since it fosters the development of content

knowledge and 21st-century skills in students. Along with improving their academic performance, students also improve their ability to communicate their ideas, work well in teams, and come up with original solutions to problems. Additionally, PBL is seen as a "transformative teaching method for engaging all students in meaningful learning and developing the 21st-century competencies of critical/problem solving, collaboration, creativity, and communication" (Couto-Cantero & Bobadilla-Pérez, 2015, p.2).

For Strobel and Van Barneveld (2009), PBL is probably more effective than traditional learning because it makes students feel more fulfilled, helps them retain what they learn for a longer time, and helps them develop their language and technological skills more regularly and authentically. Regarding critical thinking in this context, Paul & Elder (2013) define it as the "disciplined art" of making sure you always think as well as you can get under all conditions, one that gives you the mental tools you need to think through everything that calls for thought-in school and life. According to Singh (2022), there are several advantages to the use of critical thinking, and one of them is that you can use critical thinking outside of the classroom and in a workplace that is changing quickly; a worker with good critical thinking abilities will always be valued.

Regarding engagement and autonomy, PBL is also a learner-centered approach where students face problems that teachers know they can afford and

solve. Thomas (2000) claims that when students have any voice and choice during their learning process, they care and can work autonomously. Consequently, there are higher achievements in this process, with one being having more autonomous students willing to learn by themselves. This behavior creates and reinforces a profile of responsibility for their learning that could be considered the starting point of permanent use of 21st-Century Skills.

We could safely claim that the benefits of PBL are many. However, there are also challenges in its implementation, which among others, include the need for adequate resources and support, the need for skilled facilitators, and the difficulty in assessing the learning outcomes (Thomas, 2000). Still, an increasing number of teachers use devices such as computers and tablets to enhance their lessons because they believe that technology provides students with more interactive learning experiences. For example, Bruff (2013) states that technology, such as classroom response systems, can help students better keep and apply what they learn by providing immediate feedback and facilitating active learning.

Despite several obstacles, including the need for resources and support and the difficulty of evaluating outcomes, PBL has advantages that cannot be overstated. Finding valuable information about PBL is not an obstacle but an additional difficulty that can be overcome with effort and perseverance. As technology usage in classrooms grows

tremendously, it will be intriguing to see how it may be further incorporated with PBL to enhance student learning results.

Methodology

As indicated in the previous section, this study employed mixed methods and action research to address a specific educational problem: the need for professionals to possess new skills and competencies. The researchers used action research as its primary research methodology and a mixed-methods approach that combines qualitative and quantitative techniques to provide a more thorough knowledge of the research phenomena. Because action research enables a collaborative and iterative approach to examining and improving educational practices, it was selected as the best methodology for this study (McNiff & Whitehead, 2009). Action research also enables teachers and students to collaborate in finding and resolving the difficulties and opportunities of PBL as the study seeks to improve PBL implementation in the EFL classroom. The participants of this study were given the freedom to develop projects of their choice and were, from such perspective, considered active co-researchers and co-implementers. Therefore, this study aims to produce both rich and rigorous data and contribute to the development of effective PBL practices in EFL instruction by integrating mixed-methodology and action research.

Below there is a list of reasons to explain further why the study used mixed

methods and action research:

- **Complete understanding:** The study used quantitative and qualitative data to better understand the research problem. This way, the study could see how PBL affected students' learning outcomes and perceptions more fully.
- **Solving a specific problem:** The study used action research to solve a specific problem or issue in a particular context. The study used action research to create and use PBL projects that met students' needs.
- **Flexibility:** The study could change the research methods as needed during the research process. This was important because the study could change the PBL projects based on what the students said and did.
- **Transferability:** The PBL projects that the study could also be used with other groups of EFL students. This means that the research tools could be used in different situations.

The 62 female university students that made up the sample population for this study ranged in age from 20 to 35. The participants were enrolled in a degree program to train aspiring teachers to work with Ecuadorian kindergarten-aged children. Since many participants were working parents, the study was carried out at night. The participant's level of English proficiency was determined to be A2. A random selection technique was used to provide a diverse representation of the community under research.

In the planning stage of this project, the researchers consulted several sources for ideas to use or adapt as PBL projects. For example, Hmelo-Silver (2004) provides examples of PBL projects used in research, as well as a close look at the theory and practice of PBL or The Buck Institute for Education (BIE): BIE is a leading organization in the field of PBL and has developed a variety of PBL projects for K-12 education. Their website provides access to free resources and PBL project ideas that have been used successfully in classrooms worldwide.

Here are some examples of PBL projects that were implemented in this intervention and could be used with other EFL groups:

1. Design an app: Students learn about the different components of an app, such as the user interface, functionality, and data storage. They also learn about programming languages and how to use them to create an app.

2. Student farm: Students learn about agriculture and how to grow crops. They will also learn about animal husbandry and how to care for animals.

3. Geocaching: This project involves students using GPS technology to find hidden caches around their community.

4. Negativity in the media: This project involves students researching negative news stories in the media. Students will learn about media literacy

and how to analyze news stories critically.

5. Write to the president: This project involves students writing letters to their president. Students will learn about civic engagement and how they can voice their voices in government.

6. Travel Blog: In this project, students could create a travel blog that showcases different aspects of a particular city or country.

7. Debate: Students could debate a controversial topic related to the target language and culture. The debate could be conducted in groups, each taking a different position on the topic.

8. Cultural Comparison: In this project, students could compare and contrast different aspects of their culture with that of the target language and culture. This could include exploring food, music, customs, and traditions differences.

9. Film Project: Students could create a short film in the target language that tells a story or explores a theme related to the culture.

10. Service Learning: Students could engage in a service-learning project that involves volunteering in the local community or a community in the target culture.

All of them were put under the participants' consideration as they were free to choose the project they wanted to

develop, as they were also free to adapt the project considering the potential constraints posed by time and money (not every student in an Ecuadorian public university has permanent access to technology). The participants completed two of the projects over 10 weeks (out of a total of 16 weeks in the semester). For each project, they had to:

1. Brainstorm ideas for the project: Participants had to develop ideas related to the project topic. They could do this individually or in groups and use various methods such as mind mapping or free writing.

2. Research information related to the project: Participants had to find information related to their topic. This could include using the Internet, books, or other resources.

3. Create a plan or outline for the project: Participants also had to create a plan or outline for their project. This could include deciding on the project format (such as a presentation or written report), dividing the work into sections, and setting deadlines.

4. Assigning roles and responsibilities to group members: Participants had to assign roles and responsibilities within the group. This could include tasks such as researching a specific aspect of the project, creating visual aids, or presenting the project.

5. Set deadlines for each stage of the project: Participants knew the time assigned to this project, but they had to

set their own deadlines for each stage. This could include deadlines for research, creating an outline, completing a rough draft, and finalizing the project.

6. Collaborate with group members to complete the project: Participants worked collaboratively with their group members to complete the project. This could include sharing ideas, giving feedback, and helping each other with tasks.

7. Present the project to the class or other audience: Participants had to present their completed project to the class or other audience (they only presented to the class because of time constrictions). This could include creating visual aids such as slideshows or posters and answering questions from the audience.

The participants worked collaboratively and cooperatively in groups of no more than five members. They practiced the four basic skills and utilized various resources such as technology, internet research, and meetings to complete their projects. The students were not only given autonomy to choose their projects, but also to devise their own research methods and creatively present their final product. They interacted with each other in the classroom to organize ideas and reach a consensus. The process was closely observed, and feedback was provided to the students to ensure progress and learning.

After the projects, the students were asked to complete an open-ended

questionnaire to gather their insights on the use of PBL (see Annex 1). The questionnaire was initially administered in Spanish in consideration of the English level of the participants (A2 according to the CEFR), that may not have allowed them to express themselves with more confidence. Some of the answers can be seen in English in Annex 2.

They also completed a closed-ended survey using a five-point Likert scale to assess their level of engagement in four vital 21st-century skills: critical thinking, collaboration, autonomy, and engagement (see Annex 3). In addition, 15 students were randomly selected for semi-structured interviews to provide further insight into the study's outcomes. The interviews were conducted through the Zoom platform. There were three sessions with five different participants in each, and each one took place on a schedule that did not interfere with their other class hours. See Annex 4 for a sample of the material used to conduct the interviews. By conducting these personalized interviews, the researchers intended to gather more detailed and nuanced data about the participants' perspectives, attitudes, and beliefs regarding the effectiveness of PBL activities for language learning purposes. The answers provided by two participants can be seen in Annex 5.

Results

At the beginning of the study, several learners expressed skepticism towards working on tasks outside of the classroom, grappling with new grammar

and vocabulary concepts, and conducting research in a foreign language. However, by the end of the semester, between 70 and 90% of learners agreed or strongly agreed that PBL had helped them develop crucial skills such as autonomy, critical thinking, collaboration, and engagement. The study participants were all in level A2 of the CEFR (Common European Framework of Reference for Languages), which is a guideline used to describe the achievements of learners of foreign languages across Europe and other countries. The CEFR describes language proficiency on a six-level scale: A1-A2 (Basic User), B1-B2 (Independent User), and C1-C2 (Proficient User).

An overwhelming majority of the student participants, precisely 84%, exhibited a high level of agreement or strong agreement regarding the perceived increased value of their contributions to their respective teams facilitated by the project-based learning approach. Students attributed this outcome to allocating specific roles such as secretary, speaker, and leader, which gave them a heightened sense of accountability and ownership in the group decision-making processes.

This study explored how students perceive collaboration when working on small projects in the EFL classroom. The results indicate that most of the participants, 57%, strongly agreed or agreed that collaborating with their peers on small projects in the EFL classroom is beneficial. This finding suggests that students recognize the value of collaborative work and are willing to

engage in it. On the other hand, a small % of the participants, 16%, expressed disagreement or strong disagreement, indicating that some students may not be fully convinced of the benefits of collaboration in the EFL classroom. It is worth noting that almost a third of the participants were neutral, which could imply a lack of understanding or ambiguity regarding the nature and purpose of collaboration. Future research may explore the reasons behind students' perceptions and attitudes toward collaboration in the EFL classroom, which can inform instructional practices and strategies to enhance collaborative learning experiences.

The main goals of collaboration, according to NCLD (2021), the National Center for Learning Disabilities, include finding and sharing successful academic, behavioral, and social - emotional instructional practices. On its website, the NCLD states that collaboration ensures that practices are uniform across all providers and that the students gain from them since good communication skills are necessary for productive collaboration. The results on perceptions of teamwork when working on small projects in the EFL classroom range from 7% to 30%, with 7% being strongly disagreed and 30% being strongly agreed with. The center 50% of responses fell between the Agree and Neutral categories, with an interquartile range (IQR) of 18%. However, most replies (27%) in the Neutral group may indicate that some participants were unsure about how they felt about teamwork. Overall, the study of dispersion reveals a moderate degree of

diversity in the participants' opinions of collaboration, with a sizable number of participants expressing neutral views.

Participants generally think collaboration is advantageous, with 30% strongly agreeing and 27% agreeing. However, a sizable minority of participants (30%) either agree, strongly agree, or disagree, which raises the possibility that not all participants value collaboration equally. The mean response is 2.47, which is somewhat more inclined toward agree than neutral, and the median response is neutral, indicating that it is the most often selected response category. The absence of a mode suggests that no response group is notably more prevalent than the others. The range of replies is 15, which is a comparatively large number and shows that participants had a wide range of opinions. This hypothesis is supported by the variance of 3.66 and standard deviation of 1.91, which point to a considerable degree of response variability.

These findings imply that although participants generally agree that collaboration is advantageous, there is also a sizable range of opinions on the subject. This could be a sign that more research is needed to determine the advantages and disadvantages of collaboration in the setting of the EFL classroom, as well as the need for potential efforts to allay any worries or doubts that sure participants may have.

Furthermore, 72% of participants thought they were more critical, especially when they had to give opinions

in groups to make decisions on how to solve problems or provide solutions to them, which is not done in regular language classes. Learners explained that they had the opportunity to identify a problem and solution, reason, judge classmates' arguments, and ask questions to clarify doubts. They stipulated that they were more creative when finding solutions or presenting their final products. They became more curious and asked about details of the context they were researching.

The results range from 13% for strongly disagree to 32% for strongly agree, for 45% of the data. The center 50% of responses fell between the Agree and Neutral categories, with an interquartile range (IQR) of 16%. However, the large proportion of Neutral (16%) and Disagree (15%) replies indicates that some participants may not have been fully engaged or had difficulty using critical thinking during the little assignments. The examination of dispersion reveals a moderate degree of dispersion overall.

The median response was 2.63, which indicates that most participants' opinions fell between "Agree" and "Strongly Agree." However, the median value of "Agree" and "Neutral" shows that half of the replies dropped below "Agree," and half fell above it. The absence of a mode means that no one response category is most frequently chosen, with a sizeable percentage of participants choosing each response group. The range of 12 denotes a difference of 12 points between the highest and lowest response categories.

This indicates that various opinions were expressed, and some participants vehemently disagreed with the thesis. Finally, the variance of 4.14 and standard deviation of 2.04 indicate that the replies were significantly dispersed, with a significant amount of variability between participants' responses.

Nunan (2013) argues that project-based learning can help learners develop autonomy and independence. He also believes that Critical Thinking can help learners to develop their language skills by encouraging them to think more deeply about the language they are learning. This is consistent with the observation that participants remained autonomous during the learning process through these small projects. Additionally, 72% of them considered that they began to be more independent and noted that they also progressed in developing their oral skills.

One insightful study found that EFL learners' language learning strategies and autonomous learning are important predictors of L2 skills. However, the same study found that autonomous learning better predicts L2 skills than language learning strategies (Zaker, 2015). The range of the data for the perceptions of Autonomy when working on small projects in the EFL classroom is 47%, with the lowest percentage of 6% Strongly Disagree and the highest percentage of 53% for Strongly Agree. The interquartile range (IQR) is 34%, with the middle 50% of responses falling between the Strongly Agree and Neutral categories. The relatively small

percentage of responses in the Disagree and Strongly Disagree categories (totaling 16%) suggests that most participants perceived a high level of autonomy when working on small projects. Overall, the dispersion analysis shows a moderate degree of variation in the perceptions of autonomy among the participants, with a significant number of participants expressing strong agreement.

Please note that the median and mode values are given as "Strongly Agree" since this was the median value and the response with the highest frequency, respectively.

The mean perception of autonomy among the participants is 2.85, with a median of Strongly Agree and a mode of Strongly Agree. The responses range 29, indicating a significant degree of variation in the perceptions. The standard deviation of 2.45 indicates that the responses are relatively spread out from the mean.

Moreover, about Engagement, the final 21st-Century skill, 46% of the participants felt more engaged in activities where they were allowed to make decisions instead of being passively instructed. The data on the perceptions of engagement when working on small projects in the EFL classroom ranges from 11% for agree to 46% for Highly Agree, with an average of 35%. The center 50% of responses fell between the Agree and Disagree categories, with an interquartile range (IQR) of 24%. Most replies (30%) fell into the Disagree and Strongly Disagree categories, indicating

that many participants did not think there was much engagement when working on small tasks. The dispersion analysis reveals that there is generally a substantial amount of diversity in the perceptions of engagement among the participants, with several participants expressing opposing views.

The mean is 2.92, indicating respondents generally lean toward the positive end of the response scale, according to the statistics provided. The median is neutral because there are equal numbers of replies on either side of the neutral category. The absence of a mode suggests that the replies are distributed evenly throughout the categories because no response group had the highest frequency. The wide range suggests a significant variation in replies among the participants which shows that the respondents may have a wide range of viewpoints or experiences. Additional proof of the dispersion of responses is provided by the variance of 5.54 and standard deviation of 2.35, with a comparatively high level of data variability. This implies that respondents have various perspectives or experiences, with no apparent agreement or predominant response category.

The participants said that they interacted with partners all the time, working in groups, respecting others' points of view, and trusting each group member. They also learned how to accomplish different tasks in a period and became more "time-aware". Some students even expressed their desire to have more activities like that next

semester because “they were a refreshing change of sorts” and some others though not as enthusiastic, claimed that “they would not mind being part of a similar project in the future as long as they keep the same decision power they were given in this specific occasion.”

As mentioned, the participants also answered an open-ended questionnaire (see annexes 1 and 2). The purpose was to allow students to express their insights about the whole experience rather than more specific points since the survey had already covered that.

This feedback from the students shows the benefits of project-based learning for individual learners and the team. One of those benefits is the level of engagement that students experience as a natural response to the innate human necessity of being part of something greater. Krashen addresses this in his theory of language acquisition, highlighting the importance of engagement and motivation in the learning process (Krashen, 1982). In the open-ended questionnaire, respondents indicated general satisfaction and gratitude for the activities, praising their creativity and level of engagement. Group activity was seen favorably since it increased enjoyment and aided vocabulary development. Participants also emphasized the advantages of the exercises, such as learning new terms and getting to work in groups, which they thought were realistic and practical.

When students are given specific roles and responsibilities within a group

project, they become more invested in the success of the project and take ownership of their contributions, which means that having a specific role within a group project can also help students develop essential skills such as leadership, communication, and decision-making. By taking on the role of a leader, for example, students can develop their ability to delegate tasks, manage conflicts, and motivate team members; also, by taking on the role of a speaker, they can improve their communication and presentation skills. In summary, PBL encouraged the development of leadership, communication, and decision-making abilities in the participants of this project and significantly increased student involvement.

Discussion

At the beginning of the study period, several participants hesitated about working on tasks outside class and dealing with new grammar and vocabulary concepts while researching a foreign language. Chomsky's theory of language acquisition emphasizes the innate ability of humans to acquire language. It suggests that learners need to be provided with opportunities to use language in meaningful contexts (Chomsky, 1957), and that was precisely one of the objectives of this intervention: to provide the participants with those opportunities Chomsky referred to by using PBL as a tool.

By the end of that semester, more than 80% of students agreed or strongly agreed that PBL had helped them develop

essential skills such as autonomy, critical thinking, collaboration, and engagement. A vast majority (84%) also showed high levels of agreement or strong agreement regarding their perceived increased value to their respective teams facilitated by PBL. Students attributed this outcome to specific roles assigned to them, such as secretary, speaker, and leader, which gave them a heightened sense of accountability and ownership in group decision-making processes. Engaging students in the learning process has been shown to boost their attention and focus, inspire them to exercise higher-level critical thinking abilities, and generate meaningful learning experiences. Instructors who adopt a student-centered approach to instruction increase student engagement opportunities, which helps everyone more successfully achieve their instructional goals. According to Chomsky, we all are born with a universal grammar that contains the basic principles and parameters of all languages, which is why learners need to be exposed to language input that triggers their innate linguistic knowledge and allows them to discover the rules and structures of the target language as PBL does turning the spotlight, not on the teacher but the student.

The participant's responses to the questionnaire indicate that participating in PBL activities was a good experience overall. The exercises were enjoyable and thought-provoking, and although they first presented a challenge, the participants finally realized what they needed to do. They also believed that they had become more comfortable using

English and that their English language abilities had improved. They also talked about their difficulties with staying organized and acquiring a new language not covered in the textbook while working on the PBL projects.

The feedback from the open-ended questionnaire shed light on the participants' group work and collaboration, another crucial aspect of PBL activities. Their comments might reveal the participants' opinions on how the PBL activities compare to more conventional language learning techniques and whether they believed their English language abilities had improved because of participation in the PBL activities. Insights that may help plan and implement PBL activities to learn English can be gained from this, which can create a more comprehensive picture of the participants' experiences with and impressions of using PBL activities.

The semi-structured interviews also provided valuable information. This smaller group of participants emphasized the challenges' applicability to real-world situations, and they also reported gains in language proficiency, especially in speaking, writing, and vocabulary development. It was appreciated how cooperative the exercises were because they encouraged teamwork and communication while time management and the grasp of specific language were highlighted as difficulties.

The findings of this study are consistent with several theories regarding

the learning and acquisition of second languages presented (Krashen, 1982; Nunan, 1989). The study found that students perceived themselves as more autonomous during the learning process through these small projects. They reported feeling more independent, developing their oral skills, and feeling more engaged in activities where they could make decisions instead of being passively instructed. This suggests that PBL projects can foster learners' autonomy, a key 21st-century skill. TBLT is an approach that aims to give students opportunities to use language to complete tasks in the real world and develop their language skills in context. PBL projects are a task-based activity that can be used to implement the TBLT strategy in the classroom.

Moreover, the study's discoveries also adjust with constructivist learning theories, emphasizing the significance of learner-centered approaches to instruction (Bruner, 1961; Piaget, 1970). In constructivist learning, learners effectively build their information through intelligence with the environment and social intuition with others. PBL ventures are learner-centered as they permit understudies to require possession of their learning, work collaboratively with peers, and build information through significant errands. The study's discoveries on students' discernments of their expanded independence, engagement, and basic considering abilities illustrate the potential of PBL ventures to advance constructivist learning.

The study concluded that PBL

projects positively impact students' learning process and outcomes, as evidenced by the students' increased engagement, collaboration, and critical thinking skills. In addition, the study found that small PBL projects in the EFL classroom could facilitate collaboration among students, with most participants recognizing the value of collaborative work. However, a small percentage of participants expressed or strongly disagreed, indicating a need for further exploration of students' perceptions and attitudes toward collaboration in the EFL classroom.

Conclusions

The results of this study indicate that students perceive Problem-Based Learning (PBL) as a strategy that promotes collaborative group work and partnership, allowing them to develop critical thinking skills, propose creative solutions, and apply knowledge to real-life issues. PBL allows students to practice thinking skills and self-direct their learning, which in turn, enhances motivation to complete their projects. The collaborative nature of PBL projects enables students to construct new knowledge instead of simply sharing information.

In the current dynamic and globalized economy, employers increasingly demand individuals who possess technical proficiency and soft skills such as critical thinking, creativity, and collaboration. By demonstrating the efficacy of PBL projects in enhancing these skills, this project contributes to the

larger discourse on preparing students for success in the 21st-century workforce. Nevertheless, there is also one other consideration that we, as educators, should not neglect, one that was greatly evidenced by the sudden emergence of the COVID-19 pandemic that highlighted the problem of unequal access to technology. Without access to technology, students at public universities in Ecuador and other developing countries may find it challenging to compete in the global economy and miss out on opportunities to develop the skills and knowledge needed to succeed in the 21st century, and that is why tackling this problem requires a multifaceted approach that includes infrastructure investments, policy changes, and partnerships between government, academia, and the private sector.

It is recommended that at least one or two small PBL projects be conducted during every English course in public universities to promote 21st-century skills. The study also suggests that engagement and autonomy are positively correlated; thus, more research is suggested to gain further insight into the relationship between these variables. One final recommendation made by the authors of this study should be for all those in power positions to encourage and facilitate future research and assist pre-service and in-service teachers in designing practical projects that same as PBL, truly foster 21st-century skills for the collective benefit of our students.

Authors' Contributions

L.I.M.T. Literature Review,

Methodology, Data Analysis, Conclusion.

M.A.C.N. Literature Review, Methodology, Data Analysis.

L.H.B.R. Introduction, Methodology, Conclusion, References.

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Anexo 1

PBL questionnaire

1. What did you think of the PBL activities you participated in?
2. Did you enjoy working on PBL projects? Why or why not?
3. What did you learn from working on PBL projects?
4. Did you feel that working on PBL projects helped you improve your English language skills? If so, how?
5. What challenges did you face while working on PBL projects? How did you overcome them?
6. Do you think PBL activities are a good way to learn English? Why or why not?
7. Would you like to participate in more PBL activities in the future? Why or why not?
8. Do you have any other comments or feedback about PBL?

Anexo 2

Participants' answers

- Q1 "I really enjoyed the activities", "I thought they were quite original", "It was hard at first, but then I understood what we had to do..."
- Q2 "Yes, definitely.", "I enjoyed them because I was in a group.", "Yes, I liked them. We learned new words because we had to."
- Q3 "New words", "I'd say new words, also to work in teams.", "I used English more realistically."
- Q4 "Of course!", "Certainly, it like...gave me more confidence." "I feel English now is not so difficult."

Q5 "We had to learn new vocabulary that is not in the textbook", "We had to get organized."

Q6 "I think so, yes", "It really works", "I don't know, but it was change."

Q7 "Of course, maybe in other areas as well, not just English", "For sure! It's a non-traditional method!"

Q8 "It is an interesting way to learn", "I would like to have more time if we repeat the experience."

Anexo 3

Close-ended survey questions

- a. Can you describe your experience of participating in the PBL activities?
- b. What did you enjoy most about the PBL activities?
- c. What did you find challenging about the PBL activities?
- d. How did you and your group members collaborate and work together during the PBL activities?
- e. What did you learn from participating in the PBL activities?

Anexo 4

Sample material for one of the semi-structured interviews

Interviewer: Welcome and thank you for agreeing to participate in the interview. The purpose of the interview is to gather more in-depth insights about your experience with the activities. First, I will ask you some information like your name and age. Can you describe your experience with the activities? Did you enjoy them?

What stood out to you the most about the activities?

What improvements did you observe in your language level because of these activities?

Were there any challenges or difficulties faced by you during the activities?

How do you think these activities contributed to your language development?

Do you think the activities enhanced your vocabulary acquisition or improve your language skills in any specific areas?

Thank you for your time!

Anexo 5

Transcript of two of the fifteen interviewees' answers

Respondent 1:

A: My name is Yamilé, and I am 20 years old.

A: I really enjoyed the activities. They were different from the usual classwork.

A: What stood out to me the most was the activities, I think. It felt like we were really using our English.

A: I observed improvements, especially in speaking and communication. I am more confident.

A: One challenge was understanding the words, the new words and concepts. I had to look up words or ask for clarification.

A: The activities contributed. They gave me opportunities to practice speaking, listening, and writing in a more authentic way.

A: Yes, I believe these activities enhanced my vocabulary. I know more words now.

A: Personally, I wouldn't change much about the activities. They were nice,

beneficial.

Respondent 2:

A: My name is Sheyla, and I am 19 years old.

A: I enjoyed the activities, some more than others. They were a refreshing, yes.

A: What stood out to me was that it was like real life. We did many things ourselves.

A: I noticed improvements in my writing skills. In my project, we had to write many times.

A: One challenge was the time. Sometimes, there was not much time.

A: These activities contributed to my English. I practiced speaking and writing in English.

A: Yes, I believe my vocabulary is better, now. Working on the PBL projects exposed me to new words and phrases.

A: Change? I don't know. It was good. No need to change anything.