THE IMPACT OF VIRTUAL VIDEO PROJECT ON STUDENTS' ENGLISH LEARNING ENGAGEMENT

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Abstract
This paper examines how Project-Based Learning (PjBL) affects students' engagement in English when taught in a virtual learning environment. The case study was classroom-based and used data collected through interviews with twenty-five participants engaged in a virtual PjBL enactment. The data were analyzed using thematic analysis, while member checking was also used to ensure the data's trustworthiness. The study found that the PjBL enactment had improved students' learning engagement in three ways. First, the cognitive impact was seen in the participants' experiences of a culture of self-directed learning where they were involved in the inquiry process through scaffolding activities. Second, their behavioral engagement was seen in their active involvement in project presentations and their shift in attitude towards the use of technology in virtual PjBL. Finally, their emotional engagement was reflected in the increased personal self-esteem and the change in the lecturer-student interaction. This research suggests that PjBL should be used more extensively in virtual classrooms because it positively impacts the students' learning engagement and boosts their motivation to learn English.

Keywords: impact, project-based learning, student's learning engagement, virtual English learning environment

Introduction
Project-Based Learning (PjBL) has been recognized as one of the holistic approaches in language teaching as it promotes the development of integrated language proficiency and enables learners to communicate in diverse contexts. In English language teaching, a project is defined as an activity that typically integrates the four language skills through various tasks and features (Astawa et al., 2017), including (1) the use of authentic English content, (2) an emphasis on

honesty, (3) student-focused activity, (4) the value of student engagement, and (5) the use of different skills. By working on a meaningful project, students learn to collaborate, foster their critical thinking, and apply their knowledge and skills to authentic contexts (Aghayani & Hajmohammadi, 2019; Almulla, 2020; Hira & Anderson, 2021; Kokotsaki et al., 2016; Mohamed, 2023). In addition, during the process, the students also take ownership of their learning process since they need to form and organize their own groups. These collaborative efforts then help students cultivate social communication skills and gain insights from diverse perspectives (Almulla, 2020; Yuliansyah & Ayu, 2021).

Previous research has shown that doing projects in English as a foreign language (EFL) classrooms helps students to enhance their personal growth and to feel more autonomous in learning (Pham, 2019). In the same vein, McCarthy's (2010) study concluded that after learners were exposed to PjBL, they became more aware of their learning competence. Yuliansyah and Ayu (2021) confirmed, based on their study, that the students in a PjBL class became more autonomous because they select their topics, determine the scope of content, and choose their preferred presentation mode. These activities allowed them to customize their projects to meet their interests and abilities. Kim's (2021) research revealed that the use of PjBL for language teaching not only supported content comprehension but also fostered innovation and creativity and was promising to be implemented in an online setting.

Despite its benefits, PjBL also poses some challenges to its successful implementation. First, it heavily relies on the teachers' pedagogical knowledge of instructional design so they can choose appropriate projects, classroom management, and technology integration (Meng et al., 2023). The transition from traditional teaching methods to PjBL, therefore, may require comprehensive training for teachers and support from the school. The completion of projects frequently takes time, and it may require high operational costs (Noviansyah & Sudira, 2020). Lawless and Gosselin (2023) add that team dynamics can be a problem in PjBL because it is possible that not every member will equally participate during the group work.

Reviewing the benefits and drawbacks of PjBL, it can be said that PjBL offers more advantages than disadvantages, especially related to student engagement. The drawbacks can be minimized by having careful planning, clear guidelines, and considering some contextual suitability (Lawless & Gosselin, 2023). Students' low engagement becomes a serious problem because it is a primary factor leading to students' dissatisfaction, negative experiences, and eventual attrition from school (Abuhmaid, 2020; Morais et al., 2021; Zhao et al., 2023). It has been identified that the monotony of teachers using a single teaching strategy becomes one of the sources of students' low engagement (Calore, 2018). Thus, implementing various teaching strategies, including PjBL, can be an alternative solution to deal with this problem.

Another factor affecting students' engagement is their connection with teachers and other students (Kearsley & Shneiderman, 1998). This factor is frequently absent in online settings, which makes online learning less effective compared to in-person learning (Kristiana et al., 2023). Regarding this issue, the implementation of PjBL has been adapted to the digital age, particularly in the context of virtual learning environments. Virtual PjBL emerged as a significant

innovation, offering the advantages of traditional PjBL and new dimensions of flexibility and accessibility. It features a mix of synchronous and asynchronous elements, such as video calls and messaging, in which these virtual interactions nurture dynamic learning communities.

In this study, the term "virtual learning" is an umbrella term used to refer to teaching-learning processes that do not occur in an in-person physical environment. While the term may mean "online," it can also refer to any network that teaches through digital tools and platforms as its media and strategy. In this sense, online learning is only a subset of virtual learning. In virtual PjBL, which is used to teach English as a Foreign Language (EFL), activities involve the completion of a project that requires students to apply their language skills in real-world contexts. They are designed to promote active learning, collaboration, and the integration of language skills.

Furthermore, Yuliansyah and Ayu (2021) suggested that virtual learning platforms can reduce the workload of instructors and enhance teaching and learning experiences both within and beyond traditional classroom settings. They effectively transform face-to-face learning into an online format, granting teachers, students, and parents access to a wealth of resources, communication tools, and information regardless of their location. Kim (2021) supported the idea that the primary distinction between online and offline learning lies in the location requirement. Offline learning necessitates participants' physical presence in a lecture hall or classroom, whereas online learning merely demands internet access from any location globally, be it home or workplace. Another disparity is flexibility. Online learning typically offers a more adaptable timeframe for both instructors and students, whereas offline learning lacks such flexibility. Despite the advantages of flexible time and location in online learning, its principal drawback is the absence of direct communication to foster active student engagement.

With the widespread integration of digital technology, an increasing number of university faculty members are contemplating the transition of some teaching activities to online platforms. Virtual learning has garnered significant attention from educators and academic institutions due to its potential to offer convenient and effective solutions to current educational challenges. Mouffok et al. (2023) have conducted research dealing with students' anxiety in EFL learning environments comparing online versus on-site classrooms. Their study explored the relationship between the learning setting, whether online or in-person and students' emotional state, specifically anxiety. The findings suggest that anxiety manifested among students regardless of the learning environment; some students experienced anxiety in both modes of learning, while others did not feel stressed in either. Therefore, anxiety or disengagement emerges as a consistent psychological factor in both online and traditional foreign language classes, with no discernible difference in anxiety levels between the two settings. Both descriptive statistics and statistical tests demonstrate that online and in-person classes have an equivalent influence on learners' anxiety levels.

Furthermore, Abuhmaid (2020) investigated the implementation of project-based learning within online learning environments. The result indicated as online teaching gains traction in global educational practices, and there is a growing need to scrutinize the efficacy of online teaching and learning methods. Nonetheless, the previous study positioned the in-person classroom environment as more conducive

to nurturing project-based learning. Although students benefit from online interaction via various social media platforms, it appears that the physical presence of students and genuine face-to-face interaction in the classroom yielded greater effectiveness, positively impacting the advancement and quality of student projects.

To sum up, PjBL has been increasingly embraced with the support of research that demonstrates its educational effectiveness. Furthermore, the widespread availability of digital technologies and unexpected disruptions to traditional in-person teaching have expedited the adoption of virtual learning. While project-based learning is not a novel concept, its principles, advocated by figures like John Dewey over a century ago, align with contemporary educational paradigms that emphasize hands-on, experiential learning relevant to students' lives.

However, few researchers have reported the impact of PjBL on students' learning engagement in virtual English classrooms, which is the uniqueness of this research. This research aimed to examine the impact on students' learning engagement after participating in PjBL instruction in their virtual English classrooms. Thus, the research question was: To what extent does virtual PjBL impact students' English learning engagement?

Essential features of PjBL

In education, PjBL stands out as a dynamic approach that not only enriches students' academic experience but also equips them with essential life skills. Previous research has revealed a set of fundamental features that define PjBL and its efficacy. Simpson (2011) highlighted the key features by emphasizing its capacity to engage students in a structured inquiry process within defined timeframes. The next salient feature of PjBL is the cultivation of students' autonomy, which allows them to take charge of planning, executing, and presenting their project work. This autonomy promotes critical thinking as students are required to transfer their knowledge and skills to deal with real-world challenges (Guo et al., 2020).

PjBL offers more benefits when it is combined with meaningful activities and tasks. In PjBL class, students commonly were asked to tackle real-world tasks, work in groups, and share final artifacts with society. Those activities help students enhance their collaborative abilities and teach them active citizenship and community engagement (Chandrasekaran et al., 2012; Meyer & Wurdinger, 2016). In addition, when PjBL is implemented in the online environment, it also promotes students to be good digital citizens (Prasetiyo et al., 2023). In summary, PjBL offers a holistic educational experience that prepares students not only for academic success but also for meaningful participation in society. Those skills, eventually, can nurture them to be lifelong learners.

Despite its advantages, PjBL also presents challenges. Collaborative group work poses difficulties for educators when assessing students (Gómez-Pablos et al., 2017). Ngadiso et al. (2021) reported that teachers had problems with the ambiguity surrounding individual contributions within groups. They expressed concerns about grading students' participation equitably, feeling uncertain about how each member contributes to the collective project. Moreover, they observed that certain students, particularly those who are introverted or lack confidence, display reluctance towards PjBL. Encouraging such students to engage with their peers and actively participate in group projects proves to be a daunting task for educators.

Consequently, in order to successfully implement PjBL, educational leaders need to provide solutions to those problems in their planning. These solutions include preparing clear assessment guidelines and rubrics for group work assessment, fostering transparent communication channels, assigning students to individual roles in group work, incorporating peer evaluation so that each student's contribution can be tracked, and providing tailored support and encouragement to empower students who are introverted or lack confidence so that they can actively participate.

Students' learning engagement

Previous research has demonstrated three types of learning engagement: cognitive, behavioral, and emotional. Cognitive engagement is students' active attempts to get as much knowledge as possible, focusing on the lesson in class, frequently asking thoughtful questions, and going beyond what the teachers want them to do. Behavioral engagement refers to student participation in the learning process. They do their best in learning tasks, submit their homework on time, and actively search for the materials they need for their course. In short, excellent behavioral engagement involves students actively participating in class discussions, following directions from the teacher, and consistently giving their best effort. The last type of engagement is emotional. The students indicate positive emotional engagement when they invest in how they treat their teachers and peers. It also reflects how optimistic they are about their academic life. As previously mentioned, in this present study, the researchers used these three types of student engagement to analyze the impact of PjBL implementation in virtual English classrooms on the students' learning engagement.

Related research on PjBL impact

Johnson and Delawsky (2013) pinpointed that the students might be more behaviorally and cognitively active if they were first engaged emotionally, which would make them more likely to be involved behaviorally and cognitively. Thus, it was necessary to engage students in social, behavioral, and cognitive aspects of implementing PjBL in classroom settings. Their study, held in a secondary chemistry class, explored PjBL and behavioral participation in cognitive and emotional interaction. They pointed out that students were not only behaviorally active at school (behavior engagement) but were also interested in their self-control and thought about learning (cognitive involvement) and displayed personal interest and pleasure in what they have learned (emotional engagement).

The selection of a video project was based on research indicating that students find technology appealing and enjoyable (Mufidah, 2017; Warni et al., 2018). Mufidah's (2017) and Warni et al.'s (2018) findings demonstrated the successful integration of PjBL to enhance student engagement in teaching English, achieving the intended objectives. The findings further categorized student engagement into four criteria: responsible learning, strategic learning, collaboration, and enthusiasm for knowledge. Many previous research studies have shown that both teachers and students might benefit from implementing PjBL in their classrooms. Some research results show a positive perception (Del-Moral-Pérez, Villalustre-Martínez, & Neira-Piñeiro, 2019; Ratminingsih, 2015) toward the implementation of PjBL procedures. However, the teacher and students still expressed some disadvantages

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and difficulties after being exposed to this approach. Collier (2017) disclosed that teachers' and students' frustration arose due to heavy project loads and the challenge of getting students to use the target language while working in groups and navigating the project's completion. Moreover, previous researchers have noted several problems encountered while applying PjBL in large classrooms. The students tended to be less motivated to learn the language and behaved inefficiently in joining the cooperative learning activities.

An effective solution to these potential challenges requires a clear understanding of the roles of both teachers and students during the implementation of PjBL. The teacher's primary responsibility is to guide and facilitate the project assignment and to remain actively engaged with the students, including the project completion phase. In online PjBL, teachers can monitor the progress through group chat in the Learning Management System (LMS) or real-time synchronous digital platforms, as demonstrated in Amissah's (2019) study. Teachers need to think critically and design interactive teaching processes that promote engagement. They should also utilize open sessions as a platform for students to express their opinions on various topics, especially in the context of online teaching, as highlighted by Lee and Ogawa (2021) and on using flipped-classroom model (Uran, 2022).

Numerous frameworks have been created to analyze PjBL, yet much remains to be explored, particularly regarding the integration of technology into projects. To date, one of the few studies with this purpose is Zachoval's (2011) quasi-experimental doctoral thesis. In his research, he investigated the effects of a semester-long reading project in a third-semester Russian classroom and discovered that students' perception of reading improved, positively impacting their reading habits. Therefore, it is crucial to conduct additional research to investigate various aspects of integrating project-based learning with technology utilization.

Integrating technology into PjBL can enhance language learning, making both teachers and students feel more confident. For example, Hoe et al. (2019) assigned a digital video project to students. They found that the students showed a positive response to the project of creating the video and realized that this would also support their use of technology in their daily lives. Thus, this result recommended that digital video projects motivated the students and promoted positive attitudes.

Concerning the impact of PjBL integration with technology, Salam et al. (2016) examined the impact of project-based learning methods on students' participation in information technology classrooms (ICTs) in the Kerian district of Malaysia. The research investigated aspects, namely project-based learning and current practices. The findings showed significant variations in the participation of students. These results demonstrated that project-based learning promoted student learning in ICT by raising the degree of involvement between them. In Nigeria, Belagra and Draoui (2018) investigated the effect of project-based learning integrated into information and communication technologies on student motivation. The research included two second-year electrical engineering courses at the Tahri Mohamed University in Be'char, Algeria. The experiment contrasted two classes, one of which was taught without ICT use, and the other type was tutored with the PjBL instruction incorporated with a technical tool. In that experimental design, the researcher administered a questionnaire to collect data on students' motivation. The results showed that combining tutorial sessions with project-based instruction

sessions would likely increase student motivation to learn and master electronics learning material fast. These studies suggest that integrating technology with PjBL can significantly enhance student engagement and motivation, which is directly relevant to the research question regarding the impact of virtual PjBL on the students' English learning engagement.

Method

Since this study investigated the implementation of PjBL instruction in a virtual classroom setting, a classroom-based study was considered to meet the research objective. Yin (2018) points out that classroom-based study provides opportunities for researchers to dig deeper into the meaning, processes, and implications of a situation. In addition, using a classroom-based study allowed the researchers to focus and gather any information related to the situation studied (Lodico et al., 2006). The PjBL was implemented through a 12-week compulsory intensive English course in a fully online format, using both synchronous and asynchronous modes. In synchronous mode, the students discussed the project work through Zoom and Google Meet in real-time online platforms. Meanwhile, in asynchronous mode, the students had mentoring sessions with the lecturers through WhatsApp and Google Classroom forums.

Twenty-five undergraduate students from two different class types at a State Islamic University in Banjarmasin were invited for this study. These classes included English for Islamic Studies (EIS) and Language Development Unit (LDU) classes, with 160 students in total. The students' ages ranged from 20 to 21 years. Since we used convenience sampling, only those who agreed to join were included in the study. Prior to the commencement of the research, all selected students provided their informed consent to participate in the study. These students were taught by three experienced English lecturers who had been using the PjBL method for a significant period. Following this, the researchers conducted in-depth interviews with the student participants to gather insights relevant to the research inquiry.

After conducting the interviews, the researchers reviewed the recorded conversations and transcribed them. To ensure the participants' perspectives were accurately represented in the transcripts, they checked the transcripts with the participants. It is a member-checking process that aims to confirm and check data accuracy (Charmaz, 2006; Harvey, 2015; Simpson & Quigley, 2016). By seeking feedback from the participants themselves, the researchers were able to validate the data and ensure that their interpretations aligned with the original voices of the speakers (Richards et al., 2001). This practical step helped to enhance the credibility and reliability of the research findings.

The data were in the form of detailed descriptions of participants' experiences after they had participated in virtual PjBL. These were classified into relevant themes. After that, the researchers used thematic analysis (Braun & Clarke, 2012; Braun et al., 2019) by extracting qualitative data to search for themes, constructs, and an index, which consisted of central themes and subthemes. Furthermore, the researchers interpreted and made sense of the participants' shared or collective intentions and experiences in this research.

Findings and Discussion
Findings
        The analysis of the data led the researchers to draw three significant themes dealing with the impact of PjBL on students' learning engagement: (a) cognitive engagement, (b) behavioral engagement, and (c) emotional engagement (Fredricks, 2014). The following Figure 1 best describes the emergent themes of the PBL impact.
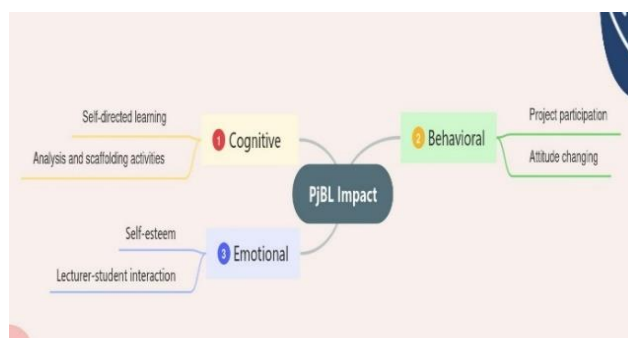

Figure 1. PjBL impact

        The detailed explanation of each theme in Figure 1 is as follows:

Impact on students' cognitive learning engagement
Fostering a culture of self-directed learning
        The interviews demonstrated that PjBL instruction in the virtual English classroom empowered the students to self-directed learning to some extent. Most interviewees claimed that it has made them feel very responsible for their roles in the project. They were firmly committed to the project and wanted to give their very best effort. Mina, a student from class B IRED, admitted that virtual PjBL gave her an individual learning experience. She said:

> *I try to do my best in completing the project. This is a project work, but my friend and I work independently at home. We want to create the best project presentation.* (Mina, script 4, line 111, interview data)

        Another student named Rudi from class 2 LDU also admitted that he gained self-learning experience while being engaged with this type of PjBL instruction. He noted:

> *The lecturer keeps on monitoring our progress. We are free to ask about our duties and responsibilities. I try to work my part myself and submit it to my group on time.* (Rudi, script 5, line 149, interview data)

        The students additionally expressed that they applied the "learning by doing" approach during the project. They gained an understanding of Islamic concepts by engaging in video-making projects centered around the Prophet topic. Additionally, as highlighted by participants, PjBL facilitated the cultivation of learning strategies such as self-guidance, planning, and in-depth analysis. It guided self-directed learning, leading to a notable enhancement in critical thinking among students

employing the PjBL approach. Throughout problem-solving activities, students considered potential learning strategies, which in turn prompted them to structure their approaches to English learning, enabling deeper engagement with their college English coursework.

Providing analysis and scaffolding activities

The second impact of PJBL on students' cognitive development emerged from scaffolding activities. By doing the project, whether working individually or engaging in group discussion, the students did the analysis stage and scaffolded the project. They discussed the project and the procedure step by step. They employed their background knowledge and worked collaboratively. Yudi and Rukayah described their level of involvement:

> *We discuss the project work and analyze it properly. We discuss the steps of completing the project.* (Yudi, script 6, line 43, interview data)
> *We discuss the project via WhatsApp video call. One of the students took note of what we should do in this assignment.* (Ahmad, script 7, line 40, interview data)

After doing the analysis, the students worked in groups to scaffold or build the task's procedure. They usually used the model given by the lecturer. Gazali mentioned:

> *We follow the sample provided by the lecturer in the first meeting. It helps us much in understanding the assignment and dividing our roles.* (Gazali, script 5, line 214, interview data)

Those statements indicate that the lecturer's model facilitated both comprehension of the assignment and also delegation of responsibilities within the group.

Impact on students' behavioral learning engagement
Participating in project presentation

Similar to the application of PjBL in an offline setting, the project presentation was also the final stage of PjBL in virtual English classroom implementation. The lecturers assigned each group to prepare the final presentation and encouraged them to give it their best shot. The students assigned each member of the group a role based on the type of the final product. Most of them commented that they shared similar primary steps in preparing the presentation. Dina, a student from class 23 LDU, and Ihda from class E IRED practiced a lot prior to presentation time. They addressed:

> *We agree to share roles and responsibility in preparing the presentation. We also practice every day and discuss our preparation through Google Meet media.* (Dina, script 7, line 154, interview data)
> *Because we cannot conduct an offline meeting, so we discuss and prepare our presentation through WhatsApp video call. We practice independently at home based on our roles.* (Ihda, script 6, line 137, interview data)

Every group member participated in the presentation stage, and the lecturers made sure that they had already understood their responsibility. The lecturers did not assign roles; the students did it themselves. It involved their behavioral engagement by taking part in the presentation instead of being outsiders.

Changing the students' attitude toward technology use
The enactment of PjBL in virtual English classrooms impacts students' technological behavior. They changed their attitude and view regarding technology use. Sultan asserted:

> *My frequency in surfing on internet is increased after being assigned an online project work. I search the information and samples from the internet.* (Sultan, script 4, line 181, interview data)

PjBL in virtual English classrooms also contributed to improving the students' abilities to employ various digital tools, as Ina said:

> *I make significant progress in using technology to facilitate my learning. I love being engaged with digital technology in completing the project.* (Ina, script 5, line 259, interview data)

The participants' statements underscore the increased enthusiasm that students developed within the virtual classroom setting of a PjBL project.

Impact on students' emotional learning engagement
Increasing personal self-esteem
The students were emotionally engaged with the project. They claimed that the PjBL project had boosted their self-esteem in learning English and that making a video and posting it online gradually increased their self-confidence. Hafiz, Indra, and Sita representatively confirmed this:

> *I gained my self-confidence by talking and explaining the material through video-making activities.* (Hafiz, script 6, line 170, interview data)
> *People address me as a shy person, but I feel that I increase my self-esteem by making a video and posting it on YouTube.* (Indra, script 4, line 196, interview data)
> *My family saw my presentation as the final project. I was ashamed, but they said it was good. I gained my confidence through this project.* (Sita, script 7, line 186, interview data)

Engaging in collaborative project work clearly increased students' motivation, built their self-confidence, and helped students with low self-esteem; their friends would motivate them to be confident in performing their roles in the project.

Changing the lecturer-student interaction
The consultation process in a previous offline project work was usually done in class during school time. In contrast, the lecturers offered the students online asynchronous consultation, either via WhatsApp or LMS, during the virtual project.

This was interesting since the students could actively discuss hints and progress. The interactions happened in various ways on both platforms, not only in the classroom. Hana and Indra admitted:

> *The lecturer allows us to chat with him every time. We are free to ask anything related to our project work. It makes me feel secure and positive toward the project.* (Hana, script 5, line 349, interview data)
> *We may ask the lecturer if we get problem in doing the project work. We do not have to wait until school time to do online consultation.* (Indra, script 4, line 292, interview data)

These accounts underscore the enhanced accessibility and flexibility in lecturer-student interaction facilitated by PjBL in the virtual classroom setting.

Discussion
Cognitive impact

Project-based learning complements modern curricula, characterized by independent study modules that incorporate performance-based assessments alongside traditional content memorization, thereby evaluating tasks as well as knowledge acquisition (Abuhmaid, 2020). It has a long relationship with autonomous learning strategies, as students direct themselves to complete the project. The lecturers assign project tasks to students in order to boost their level of confidence and to help them to be aware of their learning capabilities. The students reflected through the interviews that they tried to do their best to finish the project and prepare for the presentation. They examined samples given by the lecturers and started to discuss the next step, shared duties and responsibilities, fostered an individual learning program, worked independently at home, and shared their progress with their peers and lecturers. This evidence highlights the transformative impact of project-based learning, wherein students, driven by their intrinsic motivation, embark on a journey of self-directed inquiry and collaboration.

However, Morais et al. (2021) and Ngadiso (2021) reported challenges in the efficacy of the peer review process within project-based learning. Their findings reveal a gap between expected and actual outcomes, citing factors such as students' immaturity in applying evaluation criteria, reluctance to engage in peer assessment, and logistical challenges with group dynamics. This critique indicates the complex nature of project-based learning and the potential for ongoing improvement in its implementation.

Medeiros et al. (2017) have researched the students' experience with PjBL combined with blended learning in Brazil. The result also showed that the student participants reported that they learned by doing projects and were free to learn outside of school time. Exposing students to virtual PjBL had a significant impact on their cognitive engagement, particularly in the development of cognitive structures for making connections and identifying optimal patterns in project completion. Next, PjBL encourages inquiry-based exploration to comprehend lessons because it requires students to pay attention to tackle complex problems (Zen et al., 2022). In addition, student active involvement in learning, supported through PjBL and social media, highlights the notion that captivating learning experiences generate increased student participation. This dynamic environment

enhances students' focus in completing all synchronous and asynchronous exercises provided by the instructor. Such levels of student engagement are poised to positively improve their learning outcomes.

A study conducted by Rasikawati et al. (2024) yielded similar findings regarding students' cognitive involvement in online learning. Using the Community of Inquiry (CoI) framework as a scaffold, this research delved into how Indonesia's cultural context influences the implementation and customization of CoI components in online English education. Instructors' practices fostered critical thinking and constructed meaning among students within the virtual learning sphere. Rasikawati et al. (2024) further highlighted that cognitive presence was not merely a theoretical concept but a tangible experience for instructors in their investigation. Their progression from initial obstacles to successful adaptation exemplified the dynamic nature of online instruction and the ongoing evolution required to ensure optimal student engagement and educational outcomes. While the transcriptions illustrated the exploration, integration, and resolution phases of cognitive presence within the CoI framework, the triggering event appeared less conspicuous in instructors' experiences.

Thus, the research literature regarding PjBL indicates significant positive student participation in the learning process. Based on those findings, the use of PjBL could increase cognitive involvement; therefore, schools or universities are encouraged to implement PjBL to enhance students' cognitive engagement. This fact, in turn, would boost the academic performance of students.

Behavioral impact
The presentation is the last stage of the project in both offline and online settings. The lecturers encourage their students to give their best effort in the presentation. The students held online group discussions to share roles and responsibilities to prepare for this stage in which they shared similar primary steps. Interviews with the selected respondents have shown that the student participants discussed their presentation plan in an online forum and practiced independently in their own homes. Roles were assigned to the students by the students themselves without any interference from the lecturers. In this way, the students participated fully and developed a positive behavioral attitude. They became involved, did their assigned roles, and actively engaged with their own project work. Khalek et al. (2015) mentioned that students' PjBL involvement developed their presentation skills by actively participating in the presentation. These students, who studied at a federal higher institution in the Middle East, showed a positive attitude before and during the project presentation stage, which was in line with the theme of this present research.

Nevertheless, Kim (2021) highlighted that virtual PjBL heavily relies on technology. Instructors and students alike are compelled to embrace the digital academic environment of virtual classes. His research showed the reluctance of participants to engage in online PjBL due to technological issues. In contrast, however, digital technology was successfully applied in this present research, and the students responded very positively to digital integration. They highlighted that their internet surfing frequency significantly increased during the project. The lecturers asked them to search for information as much as possible, including on the internet. Bouhafa and Hochberg (2022) asserted that online resources had a

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positive effect on building students' metacognitive skills, which is consistent with the results of the present study. We found that the majority of the students changed their views on technology use. They felt that integrating the learning process was a brilliant idea. They also stated that they have improved their personal ability to use various digital tools through the project. This positive behavioral response is in line with a research result conducted by O'Sullivan et al. (2017), which combined technology in project management systems in Austria. The students there showed an outstanding record of technology use after being engaged with PjBL. They also indicated a high level of development of their collaborative skills during the technology-based PjBL project.

Emotional impact

The interactions that were previously offline in the classroom setting changed into any-time online consultation. This change improved the interaction between lecturers and students, which at the same time made the relationship closer. In virtual PjBL, the students did not hesitate to contact the lecturers. It had a positive impact on the students' emotional engagement. Lecturers learned to pass knowledge to their students by allowing learning by doing. Moreover, skills like problem-solving, critical thinking, teamwork, and presentation of ideas are influential in today's society (Wilcox et al., 2017). With an internet connection, instructors and students had the flexibility to communicate at any time and from any location, facilitating the lecturer's endeavors to enhance students' comprehension of the course material. Lecturers could promptly address student inquiries through digital platforms like Zoom Meeting or WhatsApp social media. Increased student interaction and queries outside of class demonstrate their heightened engagement in independent learning from home, a phenomenon not typically observed in traditional classroom settings. This responsiveness stems from the lecturers' approachable, courteous, and prompt provision of assistance when students posed questions through social media channels (Zen et al., 2022). Moreover, the use of technology or mobile learning has the potential to greatly influence the performance of learners in English language acquisition. It represents a modern instructional approach that leverages mobile devices for accessing educational materials and participating in active learning (Assapari & Hidayati, 2023).

PjBL in the virtual English classroom also affects the students' emotional engagement, especially in increasing their self-esteem. The students commented that the projects had boosted their self-confidence by presenting the material in English and posting it online. Their posted projects (videos and posters) attracted many viewers, and the constructive comments given by the viewers have made them proud of their achievements. This was not an easy project, nor an easy learning pathway since it is conducted entirely online, but the students felt at ease in the end and happy with their effort and involvement. De Hei et al. (2015) asserted that research conducted by her team to investigate lecturers' practices and beliefs of collaborative learning indicated that collaborative learning has also successfully increased the students' motivation and learning outcomes. It is in line with this research finding that the students are emotionally engaged in this PjBL instruction in the way they share problems and work collaboratively. While finishing the project, they helped and motivated each other. Finally, it increased individual self-

esteem in fulfilling their roles and presenting their final project. Zen et al. (2022) further addressed that another aspect of emotional engagement effectiveness is the sense of comfort and enjoyment experienced by students, particularly when they work on assigned projects either individually or in groups from their homes. Engaging in solitary practice fosters feelings of self-assurance, accountability, and emerging leadership skills among students. Instructors assess students' performance to obtain feedback on their project outcomes. If errors are identified, instructors offer additional guidance to facilitate the revision of their digital assignments.

One fundamental difference between offline and virtual PjBL instruction is the online consultation, both synchronous and asynchronous. The advantage of virtual PjBL is that the students do not have to wait until school time to interact with the lecturers since they may chat directly with them any time they need to share their difficulties related to the project, eventually making the lecturer-student interaction closer. In line with this finding, Wahyuningsih et al. (2023) mentioned that the rapid and widespread adoption of technology has caused online learning as a critical solution to mitigate constraints on in-person social interactions. Both educators and students found themselves compelled to swiftly adapt and make full use of all accessible resources to facilitate the continuation of the learning experience.

In this present research, the students finally engaged cognitively, behaviorally, and emotionally with the lecturers and their peers during this virtual PjBL. It has shown that PjBL instruction in virtual English classrooms has positively impacted the students' engagement in English learning. Carrió-Pastor et al. (2016) and Gunawan et al. (2017) also addressed the need for teachers to check collaborative learning through online chat discussions and develop students' critical thinking skills. The students' shared opinion is expressed clearly in the chat, and teachers may decide on the necessary advice to facilitate the students' problem in completing the project work. Lecturers go through the responsibility to learn and pass knowledge to their students by allowing learning by doing. Moreover, skills like problem-solving, critical thinking, teamwork, and presentation of ideas are influential in today's society (Wilcox et al., 2017). Last, clear communication and effective presentation of solutions are pivotal for the success of virtual PjBL classes, directly influencing students' learning outcomes. Leveraging technology makes project presentations notably easier and more impactful, especially with the integration of visual aids.

Conclusion

The impact of PjBL extends beyond mere academic engagement, impacting cognitive, behavioral, and emotional dimensions of learning. The pedagogical implication derived from this investigation advocates for the widespread implementation of PjBL instruction within virtual classrooms. The results suggest a significant enhancement in students' learning engagement and motivation. This study recommends the inclusion of virtual PjBL into higher education curricula, especially in EFL settings, since language learning requires more exposure for students to learn. By implementing PjBL, EFL students have the freedom to learn outside of classrooms. The use of social media and inquiry-based exploration can enhance students' cognitive engagement in virtual PjBL lessons. As learning

extends beyond the classroom, social media facilitates continuous interaction among students and between students and teachers. Group assignments, along with project examples, offer guided learning experiences, providing scaffolding to prevent confusion during project completion.

This study has several limitations. First, it relied on data from a limited sample, potentially constraining the generalizability of its findings. Future research could benefit from utilizing more extensive and diverse datasets to yield more generalizable outcomes. Second, the study employed qualitative data, indicating a potential avenue for further investigation through the integration of quantitative data. A mixed approach may offer greater validity and depth to the analysis. Next, the present study focuses on fully online classes, which may overlook potential nuances that could arise in a blended learning environment. Exploring PjBL in varied educational settings could provide a more comprehensive understanding of its efficacy.

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