



IMPROVING STUDENTS' SPEAKING AND NURTURING 4CS SKILLS THROUGH PROJECT-BASED LEARNING WITH ICT: A CONCEPTUAL FRAMEWORK

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Abstract

This conceptual framework delves into the pivotal role of project-based learning integrated with information and communication technology in improving speaking and nurturing the 4Cs skills such as critical thinking, creativity, collaboration, and communication in the English learning. The paper highlights the significance of speaking skills in English proficiency and the challenges students encounter in developing communication and collaborative skills. It explores the potential of project-based learning with ICT to enhance students' speaking abilities and 4Cs skills. This study integrates various theories by conducting a thorough literature review on project-based learning, ICT, speaking, and the 4Cs skills. Utilizing reputable databases, the review encompasses electronic publications from 2016 to global studies conducted up to 2023. The limitations arise from database constraints and the omission of specific disciplines and focus in EFL classrooms. The conceptual framework addresses issues of motivation, fear, time constraints, and collaboration, resulting in an enriched learning environment where students not only improve their speaking skills but also develop essential 4C skills required for success in a rapidly changing global landscape. This study presents a conceptual framework that provides a comprehensive solution to the identified problems in improving students' speaking and 4C skills. The findings suggest that PjBL and ICT integration can be an effective learning model for developing speaking performance and the 4Cs skills, offering students opportunities to collaborate, communicate, and think critically and creatively.

Keywords: 4Cs Skills, ICT, Project-based learning Speaking

Introduction

Mastering speaking English fluently has become one of the hallmarks of students' English proficiency (Pervaiz et al., 2022). Speaking skills are the



ability to effectively convey information to the speaking partners using varied expressions. As productive skills, Speaking requires two critical components: accuracy and fluency (Nawshin, 2009). Accuracy in speaking refers to how students can speak the language accurately without mistakes such as grammar and pronunciation (Wahyuningsih & Afandi, 2020). Fluency refers to how appropriate and confident students are in utilizing the language. Fluent students will speak without hesitation, awkward pauses, false starts, or word searching (Koizumi, 2005). In addition, the ability to fulfill pragmatic goals is also the yardstick of successful speaking mastery (Brown, 2001). However, despite the emphasis on mastering speaking skills, students often encounter challenges in working collaboratively and may struggle to effectively develop their collaborative skills, hindering their overall proficiency in spoken English (Pervaiz et al., 2022). Emotional barriers during speaking practice hinder students' fluency and pronunciation, affecting teamwork, communication, and overall development. Lack of training and collaboration also contributes.

The 4Cs (communication, collaboration, critical thinking, and creativity) skills have been indicated as key skills for 21st-century skills that have become primarily focused on preparing students for learning and innovation success (Erdogan, 2019), and facing challenges and problems in the 21st-century world (Rati et al., 2023). First, Fisher and Fery (2007) defined critical thinking as essential for discerning reliable sources and making informed decisions. Creativity is regarded as creative thinking interpreted as a thought pattern or an idea appearing spontaneously and imaginatively, looking for new inventions and creations (Machali et al., 2021; Sudjarwo et al., 2019). Effective communication fosters understanding, promotes collaboration, and facilitates the exchange of ideas (Vlachopoulos & Makri, 2019). Finally, Child and Shaw (2018) explain that collaboration is a process that focuses on the quality of student interactions, and it can promote social interdependence, communication, cooperation, sharing of resources, exchange of ideas, and problem-solving. The integration of 4Cs skills improvement requires changes in classroom materials, teaching models, and strategies for students to be conducted in education (Embark Saleh, 2019a). Nevertheless, students may struggle to work effectively in groups, which limits their ability to develop collaborative skills.

One learning model that is highly recommended to help students develop collaboration is project-based learning (Budiarti et al., 2021). Project-based learning (PjBL) has been applied as a learning model which can be conducted to improve the 4Cs in EFL classrooms (Somphol et al., 2022) as well as all 21st-century skills (Chu et al., 2017; Krajcik & Czerniak, 2018; Miller & Krajcik, 2019; Virtue & Hinnant-Crawford, 2019; Tsybulsky & Rozanov, 2021). When implementing an effective speaking learning process, the emphasis turns from memorizing language rules to applying knowledge in real-world situations (Rochmahwati & Effendi, 2020). Connecting language learning to real-world issues allows students to demonstrate practical



knowledge while engaging them in meaningful interactions and tasks that improve their language skills. The researcher incorporated PjBL into the speaking classroom to stimulate students' interest in real-world issues and support their speaking learning process. Many experts in education state that PjBL is a promising learning model that can develop students' 4Cs skills. Cocco (2006) points out that PjBL is a teaching model that follows a constructivist approach, focusing on engaging students in a variety of inquiry-oriented activities, including their cooperative actions to achieve learning goals. In the context of the EFL classroom, integrating PjBL into foreign language learning is a necessary condition for EFL students to have better learning (Li et al., 2015), and it can develop their language skills (Syarifah and Emiliasari, 2019). However, students and teachers have become accustomed to working alone, and working with peers is an unusual situation that can cause anxiety and difficulty in speaking (Bashan & Holsblat, 2012). Therefore, the presence of ICT in the PjBL process can increase engagement and motivation to work collaboratively.

In the educational context, ICT is defined as a variety of technological tools and resources utilized for communication, information creation, dissemination, storage, and management (Tinio, 2003). ICT plays an essential role in improving education quality such as motivating and engaging students to learn and facilitating learning resources. ICT includes a wide range of technologies, such as computers, the Internet, mobile devices, and software (Chaidi, et al., 2021). ICT may be utilized to improve PjBL by providing students with access to information and resources and promoting communication and collaboration to support speaking practice. Most importantly, ICT might promote a shift to a student-centered environment which is in line with the project activities proposed by project-based learning. The integration of PjBL and ICT leads to the process of constructing knowledge and skills by incorporating authentic learning situations and student-centered learning (Efendi, 2017). Thus, in an ideal EFL classroom, integrating project-based learning with ICT encourages students to become active, autonomous, and self-directed (Mamakou and Grigoriadou, 2010). Hence, ICT fosters a rich learning environment in which students take on meaningful projects of speaking skill, harnessing digital tools and resources to enhance their language skills while honing their critical thinking, creativity, communication, and collaboration abilities.

While a lot of previous studies have explored the effectiveness of project-based learning (PjBL) and ICT separately in the English as a Foreign Language (EFL) education context, few have systematically investigated their integration and specific implications for developing 4Cs skills. Several previous researchers, such as Gustiani et al. (2021), Sari & Prasetyo (2021), Sirisrimangkorn (2018), and Zhang (2015), have highlighted the positive effect of PjBL and ICT on English language abilities and student motivation in EFL classrooms. However, the emphasis has often been on language learning outcomes, and the development of 4Cs skills has not been a central theme. Erdogan (2019)



recommends that the EFL classroom should not only enhance speaking skills but also contribute to improving 4Cs skills to meet the evolving demands of students' lives. Although Efendi (2017) noted the positive influence of ICT on students' attitudes toward PjBL, there exists a research gap concerning the enhancement of 4Cs skills within the framework of 21st-century learning and innovation skills. This study aims to address this gap by exploring the integration of PjBL with ICT to improve student's language skills, specifically in speaking, and foster the development of 4Cs skills.

This study examines the interaction between PjBL, ICT, and the development of speaking and 4Cs abilities in the setting of EFL classrooms. This research will also contribute to the development of a PjBL-based ICT intervention that can be used to develop speaking and 4Cs skills in EFL classrooms. Therefore, the researcher will delve into the existing body of previous literature that can leverage PjBL integrated with ICT to improve speaking and 4Cs skills in EFL classrooms.

Research Questions

To guide the exploration of this topic, the following research questions were formulated to address key aspects of the study:

1. How does the integration of project-based learning and ICT improve speaking and nurture the 4Cs Skills in EFL classrooms?
2. What are students' perceptions of integrating project-based learning to improve speaking and nurture the 4Cs skills in EFL classrooms?

Literature Review

Speaking and Teaching Speaking

The text delves into the multifaceted nature of speaking, defining it as the crucial ability to orally communicate and exchange ideas, emotions, and information. Brown (2015) emphasizes the interactive expression of thoughts, highlighting that speaking is fundamental for individuals to articulate themselves through language. Aspects of speaking, including vocabulary, pronunciation, grammar, and fluency, are dissected, with Harris (2007) categorizing vocabulary into receptive and productive, and pronunciation encompassing suprasegmental and segmental features. Grammar, described by Hadfield (2008) and Uibu and Liiver (2015), is presented as the foundation for forming correct sentence structures, aimed at enhancing speaking and writing skills. Fluency, defined as the ability to communicate with ease and expressiveness, is crucial for conveying messages rapidly, effectively, and fluently (Namaziandost et al., 2020).

The second part of the text explores the teaching of speaking, with Brown (2015) and Nunan (2003) emphasizing its inseparability from the learning process. Principles for effective teaching, outlined by Bailey (2003), stress the balance between fluency and accuracy, engagement through group or pair



work, minimizing teacher-centered discourse, incorporating negotiation for meaning, and addressing both transactional and interactional speaking. The suggested implementation of speaking group drama video projects aligns with these principles, fostering a holistic development of language skills through activities that balance fluency and accuracy, encourage collaboration, and cover various speaking tasks. Classroom activities, recommended by Harmer (2008), encompass role-play, game-based learning, discussions, prepared talks, questioning, and simulation/role play, aligning with specific learning objectives. The stages of teaching speaking, as suggested by Goh and Burns (2012), involve capturing learners' focus, offering input, executing speaking tasks, emphasizing language skills or strategies, and revisiting tasks with repetition in various forms. Assessing speaking performance, as per Harmer (2001) and Brown (2004), involves providing feedback, marks, or grades, with a focus on micro- and macro-skills, including language forms, functions, and various components contributing to overall proficiency.

Nunan (2003) defines teaching speaking to English Foreign Language (EFL) students as demonstrating pronunciation, stress patterns, and fluency, while Bailey (2003) outlining five principles for effective teaching. These principles advocate for balancing fluency and accuracy, encouraging student engagement through group or pair work, minimizing teacher-centered discourse, incorporating negotiation for meaning, and addressing both transactional and interactional speaking. Responding to these principles, the researcher proposes implementing speaking group drama video projects with ICT, promoting holistic language development through scripting, rehearsing, filming, and editing. Additionally, diverse speaking activities recommended by Harmer (2008), such as role-play, communicative game-based learning, discussions, prepared talks, questioning, and simulation, further enhance speaking skills aligned with specific learning objectives. Goh and Burns (2012) propose a comprehensive seven-stage cycle for activities in a speaking lesson, ensuring a well-rounded approach to language acquisition. This cycle begins by capturing learners' focus on speaking, followed by providing input and guiding their planning. The execution of speaking tasks is then emphasized, with a focus on language, skills, or strategies. The importance of revisiting speaking tasks is highlighted, with repetition taking various forms to reinforce learning. Essential strategies involve guiding students in reflective practices on their learning experiences and obtaining valuable feedback on their progress. This structured cycle not only promotes effective language development but also encourages continuous improvement and self-awareness in the process of mastering speaking skills.

4Cs Skills of 21st Century Skills

The 4Cs including creativity, critical thinking, collaboration, and communication are essential skills to succeed in the 21st century era. The origin of the 4Cs skills came from the consensus of the Partnership for 21st-Century Skills (P21) that four skill categories under the heading learning and innovation



skills involve the ability to show creativity and innovation, critical thinking and problem-solving, communication, and collaboration. To address learning and innovation abilities, along with information, media, and technology abilities, as well as life and job skills, students need to be proficient in the 4Cs. Those skills should be mastered by students to assist with the complexity of the learning process (Benek & Akcay, 2022) and achieve success (Somphol et al., 2022).

Critical thinking refers to the ability to think critically and deeply about something the students focus on. Kivunja (2015) describes critical thinking ability as an individual's skill to apply broad cognitive processing abilities that implement high-order thinking levels of analyzing, evaluating, and developing new ideas or generating and that allow students to think deeply to solve problems. In other words, it is the ability that students should possess as a meta-cognitive process that links to human cognitive ability (Ariadne de Villa, 2017). The elements of cognitive skills are derived and represented from the Revised Bloom Taxonomy by Anderson, Krathwohl, D. R., et al (2001) that the six levels of the cognitive domains are remembering, understanding, applying, analyzing, and creating. Analyzing and creating stages are considered to assist the students have critical thinking. In addition, other critical thinking skills involve interpretation, inference, explanation, and self-regulation as the critical thinking foundation principles (Baez, 2004). Students must be able to make acceptable decisions and judgements based on what they have learnt or read, utilize reasoning as suitable to the context, and analyze complicated systems to answer when applying critical thinking and problem-solving (Erdogan, 2019).

Communication skill has become one of the aspects to indicate one's success in the 21st century. Larmer et al (2015) cited by Budiarti et al (2020) defined that it refers to the ability to communicate both verbal (oral interaction) and written (written interaction) information, as well as understand the written text and oral information (receptive interaction). In other words, communication ability is more than just being able to articulate thoughts and listen effectively, or using numerous media and technology. Rather, students must be able to analyze the quality of their communication and assess its impact (P21, 2009, 2019). As a result, Erdogan (2019) stated that communication ability does not consist merely of mastery of syntax and language. It also comprises the ability to explain oneself effectively and correctly to the circumstance, interlocutors, issue, time, and location. Communication is the third skill of the twenty-first century, and its use in EFL classrooms has recently become a must rather than an option. It refers to any mutual interactive attempt by two interlocutors to negotiate meaning in various communication circumstances (Embark Saleh, 2019b). To conclude, in the 21st century, communication skill encompasses verbal and written interaction, understanding written and oral information, and evaluating its effectiveness. It's a crucial skill in EFL classrooms, demonstrating interactive mutual negotiation.

Collaboration is a skill that enhances collective intelligence through technology-mediated interactions, involving assisting, suggesting, receiving,



and negotiating with others (Brown, et al., 2015). In other words, collaboration means a process focusing on the quality of student interactions, and it can promote social interdependence, communication, cooperation, sharing of resources, exchange of ideas, and problem-solving (Child and Shaw, 2018). In the context of the learning process, it refers to students working together to complete a project or task goal when each member has a duty to play in completing the tasks. As a result, students benefit from collaborative activities, particularly those requiring detailed explanations, critical thinking, and the application of their knowledge to complex tasks or problems (Barron, et al. 2008; Evans, 2020). In an EFL classroom, collaboration skills involve giving and receiving feedback, sharing roles, recognizing contributions, listening, developing ideas, expressing personal opinions, listening patiently, defining problems, and supporting group decisions (Nur et al., 2021). Therefore, it is necessary to increase collaboration among students as the ability to collaborate with others, work through difficult problems, and apply newly acquired information to new contexts. Collaborative learning focuses on fostering student engagement and group knowledge growth.

In the 21st century, mastering creativity is deemed crucial as it is the way to effective learning. Rati et al. (2023) explain that the 4Cs indicator of creativity refers to creative thinking. Creative thinking involves the ability to generate many ideas, think freely and openly, and be responsive to new ideas in a group. It involves expressing the lack of developed ideas, finding ideas to create products from environmental materials, and acting on these ideas to make a beneficial contribution to the group and oneself. Implementing innovation involves transforming ideas into products independently and in groups, and developing ideas into work. Creativity is the ability to create unique, original work that aligns with task requirements and holds value within its specific context (Lubart and Thornhill-Miller, 2019). To enhance students' creative thinking skills, teachers can encourage active participation, explore topics using primary or real data, and devise innovative ways to inform new findings, as suggested by Nakano & Wechsler (2018). In the learning process, Kivunja (2015) recommends several ways to increase creativity that can be developed such as being capable of resolving real-world challenges, being open and curious, and capable of applying knowledge and skills in analyzing, evaluating, elaborating, and creating, being capable of finding and expressing numerous creative thinking strategies (such as thought mapping, visual creativity, word association, SWOT analysis, and lateral thinking) to generate innovative concepts. Creativity skill encompasses not only visual arts but also the ability to discover new ideas, develop innovative solutions to problems, generate diverse and unique ideas, and adapt to diverse perspectives, thereby enhancing overall creativity (Nur et al., 2021).

The Concept of Project-Based Learning in EFL Classroom

Project-based learning is a teaching model that highlights task assignment, especially in the form of projects that guide students through an enquiry



process. As the evaluation basis for teachers, it is expected that students should be able to improve knowledge, abilities, and attitudes (Thomas, 2000). In addition, Bell (2010) introduced that project-based learning (PjBL) is an innovative model of learning that teaches numerous critical strategies for success in the 21st century. Students manage their learning through exploration and collaboration to research and develop projects representing their understanding. Krajcik and Shin (2014) indicated six hallmarks of PjBL, including a stimulating question, a focus on learning objectives, involvement in educational activities, student collaboration, the use of scaffolding technological devices, and the development of tangible products. While finishing the products, (Guo et al., 2020) explained that in this knowledge integration, application, and construction process, students must collaborate to develop solutions to actual problems. Finally, the teacher comments and assists students in their learning process.

The Principle of Project-Based Learning revolves around adhering to several essential principles delineated by Larmer et al. (2015) to ensure an effective and impactful learning cycle in the classroom. Firstly, Project-Based Learning starts with the introduction of challenging problems or essential questions, initiating an inquiry process that stimulates critical thinking and problem-solving skills. It emphasizes sustained inquiry, fostering critical thinking, collaboration, and self-management skills throughout the entire learning journey. Second, authenticity is maintained by integrating real-life context into the learning process, ensuring that project design, activities, equipment usage, and project results' impact on the environment are genuine. Third, the principle of student voice and choice empowers students to express ideas and make choices, thereby enhancing their critical thinking and problem-solving skills. Fourth, reflection activities involve both students and teachers in assessing the effectiveness of the inquiry process and making necessary improvements. Fifth, critique and revision are encouraged, with feedback from groups, teachers, and experts facilitating the identification and correction of inappropriate elements in project results. Lastly, Project-Based Learning concludes with a Public Product, providing students with opportunities to showcase their work to the class or a broader audience, fostering a sense of satisfaction and motivation.

Project-based learning involves and consists of several key steps. Korkmaz and Kaptan (2002) state some crucial steps of successful learning process. In the initial stages, students define project subjects, conduct research, and formulate questions to establish the project framework. Subsequently, groups create project plans outlining objectives and roles. The implementation phase follows, involving data organization and analysis. Planning the presentation, defining key points, and selecting a style occur in the next step, leading to the organization and presentation of data in diverse settings. The final step involves evaluation, where collaborative assessment and feedback contribute to the overall assessment process. Larmer et al. (2015) further expand on these steps, emphasizing the initiation of project-based learning with the selection of a topic by teachers. Pre-communicative activities introduce necessary vocabulary,



essential questions guide the project focus, and project designing involves selecting a type and outlining activities. Developing a project timeline fosters time management and teamwork skills, while the project's culmination enhances data processing, problem-solving, and communication skills. Assessing project results ensures accountability, with formative assessments evaluating performance and outcomes. Project evaluation, involving feedback and student reflection, prompts discussions on challenges and the application of skills in the project implementation process.

In EFL classroom, project-based language learning involves three main stages: planning, implementation, and reporting. These stages result in main learning activities, including choosing topics, designing plans, completing projects, and assessing results. Dole et al. (2017) showed the common benefits of implementing PjBL. This model can boost how much students get involved in learning, making them more motivated and able to learn on their own. According to Boss and Krauss (2007), using PjBL can also help students do better in learning, improve their critical thinking, and enhance skills like processing data and information, solving problems, working in a team, communicating, and managing themselves. However, the implementation of PjBL in classrooms generally can cause challenges such as teachers' resistance to students' driven learning (Aksela et al., 2019), students' demotivation to participate in the project that is not relevant to their lives (Barlian, 2015), insufficient technological resources to facilitate the integration of technology and PjBL (Aldabbus, 2018), disengagement and frustration due to working independently, group work, performance assessments, and lack of guidance (Canez, 2018).

ICT Use in EFL Classroom

Another aspect that succeeds students in learning is utilizing information and communication technology (ICT) including a wide range of technologies, such as computers, the internet, mobile devices, and software (Chaidi, et al., 2021). The use of ICT in learning process supports promoting active learning (ICT-enhanced learning utilizes tools for information evaluation, processing, and analysis, fostering student curiosity and real-world problem solving, engagement, and "just-in-time" learning), collaborative learning (ICT-supported learning fosters interaction, cooperation, and awareness among students, teachers, and experts enhancing teamwork, communication) (Tinio, 2003), and enhance students; motivation, engagement, as well as academic achievement (Khan and Alwi, 2018). In the EFL context, implementing ICT may assist teachers and students in developing and adapting to the new aspects of 21st-century teaching and learning (Akpabio & Ogiriki, 2017). Abdulkareem Alkamel et al. (2018) categorize several ICT tools such as web-based and non-web-based learning. Web-based learning (technology-based learning/distance learning/online education/e-learning allowing for the creation of well-designed, learner-centered, affordable, interactive, official, and flexible e-



learning environments) includes YouTube, email, blog, Skype, and Zoom. Besides, non-web-based learning includes radio, television, laptop, and language lab. In addition, the emergence of the internet also becomes ICT support. The e-learning platforms include learning management systems (LMS) such as Google Classroom, Moodle, Blackboard, Edmodo, and Padlet, simulation-related technologies like Augmented Reality Applications, Artificial intelligence like ChatGPT, Chatbot, Slidesgo, Online assessment tools like Kahoot, Socrative, etc, multimedia including PowerPoint slides, video editing application (De Oliveira et al., 2023).

Integrating Information and Communication Technology (ICT) into education offers a transformative approach, enriching the learning experience with various benefits. ICT facilitates access to a wealth of information resources and enhances communication, fostering continuous learning and a culture of inquisitiveness among students and teachers (Afshari et al., 2009). It also promotes collaboration, adaptability, and personalized learning, catering to individual student needs and nurturing essential 21st-century skills such as problem-solving and critical thinking (Mukan & Kravets, 2022). Moreover, ICT enables educators to transition from traditional lecturing to student-centered learning, utilizing technology-based resources for a more engaging educational experience (Cavas et al., 2009). Despite these advantages, the integration of ICT in education poses challenges that require careful consideration. Content creation for ICT platforms can be time-consuming and resource-intensive, demanding additional expertise. The effective use of ICT tools depends on adequate training and support, and concerns about data privacy and security may arise, posing potential risks to the personal information of students and teachers (Wang, 2017). Studies also highlight challenges such as insufficient knowledge, skills, teaching experience, resources, training opportunities, and administrative support in effectively incorporating ICT into educational settings (Salehi & Salehi, 2012; Rabah, 2015). Inconsistencies in investments further contribute to the complexities faced in leveraging ICT for educational enhancement.

Teaching Speaking through Project-Based Learning Using ICT

The importance of project-based learning in cultivating an enjoyable speaking class and ensuring a successful speaking learning process cannot be underestimated. According to Aldabbus (2018), collaboration between teachers and students, or among students, is critical for fostering learning and effectively developing communication skills. The success of a speaking learning process is dependent on student interaction and collaboration, which creates an environment conducive to spoken language acquisition. Teachers play a critical role in encouraging students to express themselves effectively and ensuring peer comprehension. This model is consistent with Wang and Kokotsaki's (2018) emphasis on students' autonomy, constructive inquiries, goal planning, teamwork, communication, and reflection within real-world practices that characterize project-based learning.



When implementing an effective speaking learning process, the emphasis turns from memorizing language rules to applying knowledge in real-world situations (Rochmahwati & Effendi, 2020). Connecting language learning to real-world issues allows students to demonstrate practical knowledge while engaging them in meaningful interactions and tasks that improve their language skills. The researcher incorporated project-based learning into the speaking classroom to stimulate students' interest in real-world issues and support their speaking learning process.

Project-based learning, which consists of ten critical steps, promotes critical and creative thinking while also fostering collaborative learning in group projects. As students engage in the social aspects of project-based learning, this process simultaneously develops 21st-century skills, including oral communication (Barron et al., 1998; Markham, 2011). Through activities such as information sharing, project discussions, task assignments within groups, and presenting project outcomes, students improve their communication skills throughout this model (Koparan & Guven, 2014).

Project-Based Learning with ICT Develop 4Cs Skills

Project-based learning (PBL) integrated with ICT has emerged as a dynamic educational learning model, offering various learning environments for students. This section explores several previous researches on how the combination of PBL and ICT assists in the development of 4Cs skills (creativity, critical thinking, communication, and collaboration). Seeking to understand the synergies between these instructional methods and their impact on fostering essential 21st-century skills through an examination of various studies will be shown.

Numerous research studies highlight a strong correlation between project-based learning (PBL) and the development of students' 21st-century skills known as the 4Cs (Amalia & Apriani, 2016; Astawa et al., 2017; Canez, 2018; Talat & Chaudhry, 2014). Canez (2018) conducted a mixed-methods case study in a primary school, examining the affordances of 21st-century learning practices and the incorporation of the 4Cs skills through PBL. The study, involving 31 fifth-grade students, demonstrated that PBL provided opportunities for collaboration, effective communication, creative expression, and critical thinking among students. Talat and Chaudhry (2014) obtained comparable findings in their study, where they conducted a survey involving 30 teachers in Lahore, Pakistan. They defined 21st-century skills as encompassing critical thinking, communication, and collaboration, and their research investigated how PBL and these skills influenced students' creativity and competitiveness.

Amalia and Apriani (2016) investigated how using technology in English instruction with project-based learning improved students' speaking skills. They found a significant enhancement in speaking performance after the



intervention. The results indicated that combining PjBL with technology could boost communication and creativity skills. Students expressed high enthusiasm, confidence, creative thinking, and the ability to learn independently and collaborate within the PjBL setting. However, the study lacked clarity about the specific role of technology in the project and the development of the PBL program. In a smaller study, Astawa et al. (2017) examined how PjBL influenced English productive skills and the teaching process. The analysis revealed a positive impact of PjBL on students' English skills, promoting enthusiasm, confidence, creativity, self-directed learning, and collaborative learning. Targeting seventh-grade students, the study suggested emphasizing PBL's contribution to communication, creativity, and collaboration.

Conceptual Framework

Conceptual Framework (Proposed Learning Activities) Project-Based Learning with ICT to Improve Speaking and 4Cs Skills

A conceptual framework integrates Project-Based Learning (PjBL) with (ICT) to address the challenges associated with improving students' speaking and 4C (Communication, Collaboration, Critical Thinking, and Creativity) skills. PjBL, a student-centered pedagogical approach, provides students with a contextualized learning experience in which they work on real-world projects that require effective communication and collaboration. Students can overcome the traditional barriers of lack of motivation and fear of making mistakes by incorporating ICT tools such as learning platforms, multimedia resources, learning applications, or websites. ICT's interactive nature not only allows for a dynamic learning environment but also allows students to practice speaking in a less intimidating and more immersive setting.

Furthermore, the conceptual framework addresses the issue of insufficient speaking practice time in traditional teaching methods. PjBL allows for the seamless integration of speaking activities into project work, ensuring that students spend sufficient time developing their oral communication skills. The interaction of project tasks and speaking practice ensures that students not only learn but also improve their ability to express themselves effectively. This method makes use of technology to improve time management, allowing students to practice speaking skills on a regular and progressive basis.

On the other hand, the framework addresses the issue of limited student collaboration. PjBL promotes teamwork and interdependence, fostering a collaboration that is essential for the development of 4C skills. Using ICT tools improves collaboration by allowing for seamless communication and resource sharing while breaking down geographical and temporal barriers. The framework aims to cultivate a supportive learning community by emphasizing group projects and interactive platforms, promoting the exchange of ideas and mutual support among students.

In conclusion, the conceptual framework combining Project-Based Learning and ICT provides a comprehensive solution to the identified problems in improving students' speaking and 4C skills. It addresses issues of motivation, fear, time constraints, and collaboration, resulting in an enriched learning environment in which students not only improve their speaking skills but also develop essential 4C skills required for success in a rapidly changing global landscape. The conceptual flow chart can be seen below:

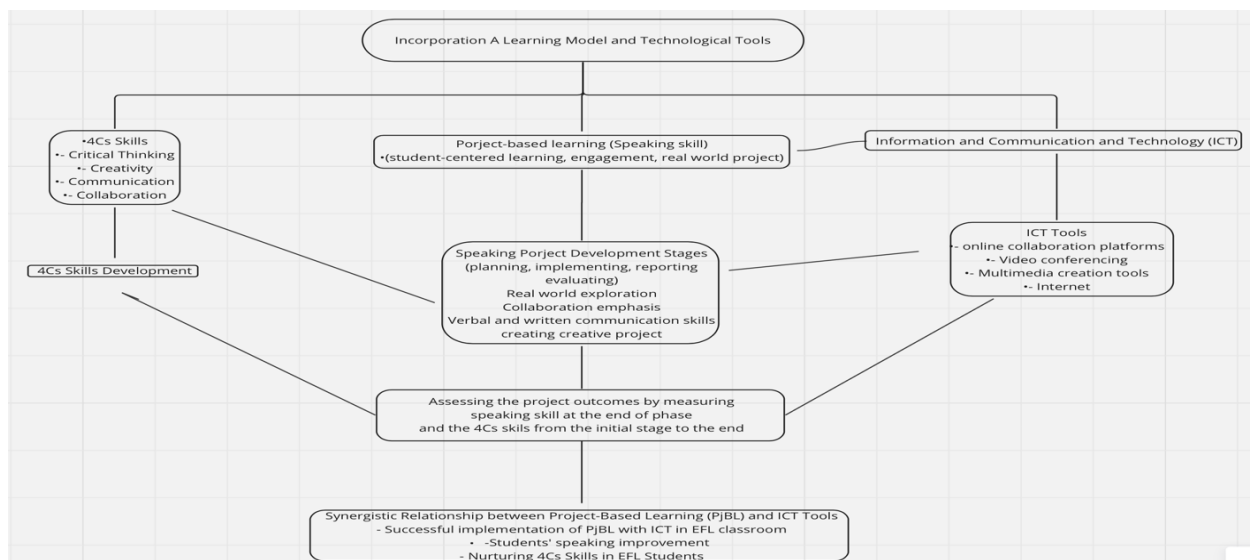


Chart 1. Conceptual Flow

Methodology

The conceptual study is derived from several theories synthesis. This study follows a methodology that involves conducting a comprehensive search in libraries and examining previous existing literature reviews on the topic of project-based learning, ICT, speaking, and the 4Cs skills. The search covers both online resources, including many articles in journals and chapters in books. References are drawn from prominent online search databases such as Google Scholar, ERIC, Web of Science, Science Direct, Taylor and Francis Online, and Scopus. The advanced search is focused on key terms like project-based learning, ICT tools, speaking, the 4Cs (communication, collaboration, critical



thinking, creativity), EFL classrooms, or students. Only articles from journals, chapters from books, and full-text documents are considered for references. It's important to note that the limitations of this paper may arise from the constraints of the selected databases, as mentioned earlier. The search results specifically exclude studies in science scopes like Engineering, Medical Education, Health, Law, Economics, etc. related to the impact of project-based learning and ICT. Additionally, the references are not restricted to the Indonesian context; the study also considers global implementation of the research topic progress from 2017 to the present, up to 2023. However, the classical theories such as speaking skills and project-based learning are rooted in the electronic books obtained from publications in the 2000s.

Finding and Discussions

Project-Based Learning with ICT Improve Speaking and Nurture The 4Cs Skills In EFL Classrooms

Several related previous studies have supported that project-based learning is an appropriate learning model that can enhance English language skills and the 4Cs skills. A study by Haniah et al. (2021) investigated the implementation of online project-based learning in teaching 4Cs Skills. This research involved 33 university students from a public university in Central Java. The implementation of online project-based learning was conducted in a public speaking class via Google Meet to have a class and rehearsals of a speech video project. The online PjBL is recommended as an effective learning model for enhancing students' speaking proficiency and the 4Cs improvement. In addition, engaging in online project-based learning (PjBL) supports students in developing creativity, innovation, communication, critical thinking, and collaboration skills. Therefore, it will be concluded that online PjBL using Google Meet means the involvement of ICT tools can foster their outcome in speaking and 4C skills development. Another previous study by Ramasari et al. (2021) explored the use of storyboards in PjBL for teaching speaking skills. The students successfully created and presented a story of Malin Kundang using storyboards, utilizing platforms like Zoom and Google Meetings. The experimental research indicated the effectiveness of storyboards in PjBL as an alternative method to enhance student speaking achievements. During the project, students demonstrated creativity and critical thinking in devising storyboard elements, spending their time reading, writing, and practicing oral communication. From the description above, it can be said that project-based learning using Google Meet and Zoom (ICT tools) to present the storyboard can improve speaking skills. The study has gained the results of 4Cs skills such as creativity, critical thinking, and communication skills.

Teaching speaking through project-based learning with ICT has been shown to boost students' speaking and 4Cs skills (Suryani & Orilina Argawati, 2023). The study highlights progress in speaking abilities, including fluency, pronunciation, grammar, and vocabulary. The speaking test results demonstrated a significant improvement in students' scores from the first to the second cycles



of the study. The incorporation of ICT tools and project-based activities offers chances for students to participate in genuine speaking tasks, leading to better fluency and pronunciation. Furthermore, the collaborative nature of project-based learning enables students to refine their speaking skills through interactions with peers. This study showcased the role of editing software such as FilmoraGO, Kinemaster, and Inshot in enhancing students' creativity. The study revealed that integrating these tools into PjBL allowed students to actively engage in group discussions, learn new concepts, and become more motivated. Through video creation and editing, using platforms like YouTube, students explored multimedia projects, fostering a more interactive learning experience. This is evident from the observation that students were actively engaged in their group work and were able to negotiate and share ideas effectively. From the observation, the majority of students were able to share and collaborate well, as seen by their interactions during group work. Through group work and discussions, students can share ideas, negotiate, and work together to achieve common goals, thereby improving their communication and collaboration skills.

Besides, communication and speaking ability as production skills can be improved using the video-making project of microblog video in General English. Permatasari (2023) has investigated the research on a microblog video project to foster university students' communication skills in an EFL setting. Microblog video refers to a website-based platform and blogging activities (commenting and speaking). During the creation of the microblog video project, students enhanced their communication skills by engaging in the dubbing process. Throughout the entire project, students participated in various activities that emphasized the importance of communication skills. This began with a question-and-answer session about the project instructions, where students were prompted to express their thoughts and raise questions. The development of the microblog script also required students to communicate effectively within their group, conveying their ideas about the chosen topic. Furthermore, following instructions to create the video with the students' voice-over provided a clear learning opportunity to enhance communication skills. Through the presentation of information in the dubbing process, students were motivated to speak confidently in English. A prior study conducted by Wati & Rozimela (2019) supported the effectiveness of the dubbing video technique in fostering students' self-confidence in speaking. This technique not only contributes to improving students' speaking abilities but also boosts their confidence in articulating sound and language.

Students' Perceptions Toward Implementation of Project-Based Learning to Improve Speaking and Nurture the 4Cs Skills in EFL Classrooms

Students generally hold positive perceptions regarding the integration of Information and Communication Technology (ICT) into Project-Based Learning (PjBL) for improving speaking and nurturing 4Cs skills in English as a Foreign Language (EFL) classrooms. The students' overall perception of project-based learning with ICT for improving speaking and 4Cs skills was positive (Suryani



& Orilina Argawati, 2023). They valued collaboration and group work, noting that it made speaking in English easier and allowed them to support each other, highlighting the facilitation of teamwork, a crucial aspect of 4Cs skills. Additionally, students expressed heightened motivation and engagement during the project, finding the experience of creating videos with friends exciting and enjoyable. This positive feedback indicates that project-based learning with ICT not only enhanced speaking skills but also boosted motivation and active participation in the learning process. This aligns with previous studies indicating that ICT-enhanced PjBL, employing tools like wikis and blogs, is seen as engaging and motivating, facilitating collaboration, idea-sharing, and critical thinking. Arabloo et al. (2022) found that students enjoyed the use of technology, describing it as enjoyable and meaningful, though some faced challenges such as technical issues and time constraints. Sholikhah (2019) revealed that incorporating YouTube channels, vlogs, and wikis in PjBL was dynamic and enhanced critical thinking, making the learning experience enjoyable. Similarly, Dwi et al. (2019) reported positive perceptions of a video project for EFL students, uploaded to YouTube, stating it was challenging, motivating, and improved English and critical thinking skills. The project involved planning, implementation, and evaluation, encouraging the use of applications for video editing, fostering initiative, accountability, ICT skills, and critical thinking.

Students in the English translation class have displayed a favorable attitude towards ICT-based project-based learning, leading to an enhancement in communication skills (Astuti et al., 2021). Their positive perceptions of the role of ICT tools, particularly Google Translate, were evident in the success of translation projects. Students utilized technology to search for information, translate stories, communicate, and share information within their groups. The reflection of the students highlighted the significance of technology, including the Internet and Google Translate, in their projects. Notably, 68% used technology for information retrieval, 20% for communication via social media, and 64% for designing project images. These findings align with questionnaire results, emphasizing that translation projects contribute to improved communication skills and the acquisition of new information from story books. The students acknowledged the importance of technology in communication, picture creation, information gathering, and exploration of related visuals.

Conclusion

In conclusion, this conceptual paper highlights the pivotal role of Project-based Learning (PjBL) integrated with Information and Communication Technology (ICT) in nurturing the 4Cs skills—Critical thinking, Communication, Collaboration, and Creativity—in EFL classrooms. By exploring existing research literature, this study has presented a comprehensive literature review regarding the way the integration of PjBL and ICT nurtures the 4Cs Skills in EFL classrooms and students' perception while integrating ICT into PjBL to improve speaking and foster their 4Cs skills in EFL classrooms. The results show



that PjBL and ICT integration can be an effective model for developing the 4Cs skills. PjBL and ICT can help students develop the skills essential to succeed in the twenty-first century by giving them opportunities to collaborate, communicate, and think critically and creatively. The conceptual framework combining Project-Based Learning and ICT provides a comprehensive solution to the identified problems in improving students' speaking and 4C skills. It addresses issues of motivation, fear, time constraints, and collaboration, resulting in an enriched learning environment in which students not only improve their speaking skills but also nurture essential 4C skills required for success in a rapidly changing global landscape. The author also proposes the use of the suggested conceptual framework that will help to investigate the implementation process of PjBL and ICT in improving speaking ability and 4C skills and perception. This framework has been predicted to address students' problems in speaking and lack of collaboration and communication in the classroom.

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