



# The Need Analysis of Technology-Based Project-Based Learning in Higher Education

Gede Angga Pratama Anugraha<sup>1\*</sup>, Ni Nyoman Padmadewi<sup>2</sup>, 

<sup>1,2</sup>English Language Education, Ganesha University of Education, Singaraja, Indonesia

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## ABSTRAK

*Pembelajaran abad 21 lebih menekankan pada pembelajaran yang berpusat pada siswa dan menuntut siswa untuk mengembangkan kompetensi 6C. Sejalan dengan hal tersebut, metode pembelajaran berbasis proyek dapat dijadikan sebagai metode yang dapat membantu siswa untuk mengembangkan kemampuannya, khususnya pada mata pelajaran keterampilan berbahasa. Penelitian ini bertujuan untuk menganalisis karakteristik pembelajaran berbasis proyek berbasis teknologi yang diperlukan dalam pengajaran keterampilan bahasa di perguruan tinggi. Penelitian ini menggunakan metode campuran eksplanatori. Mata kuliah keterampilan berbahasa dianalisis dari segi kondisi saat ini dan yang diinginkan dalam empat aspek seperti konteks, input, proses, dan produk. Pengumpulan data dilakukan dengan menggunakan kuesioner, wawancara, dan analisis dokumen. Untuk memberikan keterpercayaan atau validitas dan reliabilitas, penelitian ini menggunakan metode triangulasi sumber. Hasil penelitian mengungkapkan bahwa kerangka konseptual mengenai penerapan pembelajaran berbasis proyek melalui teknologi dalam pengajaran mata kuliah keterampilan berbahasa perlu ditambahkan ke perguruan tinggi. Adanya kerangka konseptual dapat membantu dosen dalam melaksanakan pembelajaran berbasis proyek di kelas keterampilan berbahasa.*

## ABSTRACT

21st-century learning places more emphasis on student-centered learning and requires students to develop 6C competencies. In line with this, the project-based learning method can be used as a method that can help students to develop their abilities, especially in language skills subjects. This study aims to analyse the characteristics of technology-based project-based learning needed in teaching language skills in tertiary institutions. This research used an explanatory mixed method. The language skills courses were analyzed in terms of the current and desired conditions in four aspects such as context, input, process, and product. The data were collected using questionnaires, interviews, and document analysis. To provide trustworthiness or validity and reliability, this study used the source triangulation method. The results of the study revealed that the conceptual framework regarding the application of project-based learning through technology in teaching language skills courses should be added to higher education. The existence of a conceptual framework can assist lecturers in implementing project-based learning in the language skills class.

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## 1. INTRODUCTION

Several learning methods have developed in education along with the development of technology. The development of technology in learning is inseparable from the 21st-century learning system, where the skills needed can utilize technology in learning (Reynolds et al., 2016; Safira et al., 2021; Siregar, 2020). In addition, 21st-century skills include mastery of student competencies in communicating, collaborating, thinking critically, and also having good creativity. This is also in line with the Ministry of Education and Culture's policy that human resources must have basic competencies including creative thinking, critical thinking, communication, collaboration, computational logic, and compassion, which can be called as 6C Competencies (Hidayatullah et al., 2021; Selman & Jaedun, 2020; Zubaidah, 2018). These skills are implemented thoroughly in every learning topic, including mastering English as a foreign language learning in the education system in Indonesia. Thus, 21st-century skills do not only require students to master English theoretically, but more than that, students must be involved in activities that can improve skills in communication, collaboration, critical thinking, and creativity, and can also use technology in learning (Astuti et al., 2019; Frerejean et al., 2021; Yu & Wan Mohammad, 2019).

In line with 21st-century learning, the use of project-based learning methods can improve students' competencies in mastering 6C competencies. Project-based learning is a student-centered learning method using

projects as a core activity, in which students are asked to solve a problem according to the material taught by the instructor (Chu et al., 2017; Gai et al., 2018; Poonpon, 2017). Giving projects to students is not necessarily just to produce a product, but this method has a more detailed application, where the projects students work on will be assessed starting from planning solutions, and developing solutions, to the results obtained through plans made by students in solving problems. The project-based learning method requires students to explore, interpret, and collect information to produce various forms of learning activities (Akharraz, 2021; Alotaibi, 2020; Asfihana, 2022). The characteristics of implementing project-based learning are that students can determine the model used in making projects, the teacher gives problem topics to students, students look for solutions to solving these problems in collaboration, and evaluation is carried out in stages starting from planning, working, to projects that are completed. produced by students (Arnaz & Adnan, 2021; Sirisrimangkorn, 2021; Yusri, 2018).

Following the characteristics of project-based learning, the steps for implementing project-based learning in the learning process are a.) Determine the topic of the problem to be worked on; b.) Make plans regarding projects that will be implemented for students; c.) Design a schedule of activities or determine the allocation of time needed in making the project; d.) Instructors supervise and guide students in developing projects; e.) Assessing the processes that have been made by students in forming projects; and f.) Carry out reflection activities as a form to improve student performance based on the project produced (Abuhmaid, 2020; Anazifa & Djukri, 2017; Wilson, 2021). In addition, the application of project-based learning in higher education is also regulated in Permendikbud number 3 of 2020 concerning the higher education system in article 14 (3) which states that learning methods that can be applied in higher education are one of them implementing project-based learning in the classroom (Made Sudana et al., 2019; Yustina et al., 2020). Of course, with this regulation, the use of project-based learning is very relevant for use in higher education, because this method focuses on students and can improve 6C competencies for the learners. Learning English taught in universities in Indonesia is language skills subject. Language skills are skills that must be mastered by EFL learners, and these skills are an important aspect of mastering English (Aghayani & Hajmohammadi, 2019; Fageeh, 2011; Ha, 2021). Language skills in question are skills in conveying feelings through speaking and writing, and being able to understand feelings through listening and reading. From the explanation above, it is necessary to have an appropriate learning method for teaching language skills to EFL learners. One of the learning methods that are appropriate to use is technology-based project-based learning, where the method is in line with the goals of 21st-century skills. There are several types of research conducted on project-based learning in teaching language skills and 21st-century learning (Aghayani & Hajmohammadi, 2019; Agustina & Efendi, 2021; Artini et al., 2018).

Research through need analysis of using technology-based project-based learning in teaching language skills subjects in higher education has not been much conducted. Of course, it is necessary to analyze project-based learning through the technology needed in teaching language skills. The need to conduct this research is also directed by the fact that in 21st-century learning, the mastery of 6C competencies must be owned by every individual whereas, through the project-based learning method, these competencies will be achieved well because this method focuses on student development. For that reason, the language skills subject courses need to be analyzed. Therefore, this study was conducted to analyze the characteristics of project-based learning needed in teaching language skills in higher education.

## 2. METHOD

The study used an explanatory mixed-method design which is the method of collecting the quantitative data first through a questionnaire and continuing with qualitative data through interviews and document analysis inquiry (Creswell & Creswell, 2018). In analyzing the project-based learning needed in teaching language skills subject, this study combines CIPP and OEM models. By combining these models, this study analyzes the current condition and desired condition from four aspects such as in context, input, process, and product. The object of need analysis is language skills courses in STKIP Agama Hindu Singaraja in 2022/2023. The language skills courses were chosen as the object of the study because this course has an important role in improving students' abilities in mastering English skills. Four aspects are analyzed, namely context, input, process, and product. In the context aspect, this study aims to analyze the conceptual framework regarding the application of project-based learning in teaching language skills subject. In the Input aspect, this study aims to determine the readiness of lecturers and students to implement project-based learning. In the process aspect, this study aims to analyze the planning, implementation, and evaluation of the application of project-based learning. In the product aspect, this assessment aims to analyze the products produced through the application of project-based learning.

The focus of the research is analyzing the characteristics needed in teaching language skills subject using project-based learning through technology. To provide trustworthiness or validity and reliability, this study used the source triangulation method, in which this research was conducted by collecting data obtained

quantitatively through questionnaires and qualitatively through interviews and document analysis to obtain the characteristics needed in teaching language skills through technology.

### 3. RESULT AND DISCUSSION

#### Result

The need analysis study was conducted on four aspects such as in terms of context, input, process, and product. The results would be briefly explained in the [Table 1](#).

**Table 1. Context Aspect**

<b>Context</b>
<p>Current Condition:</p> <ul style="list-style-type: none"> <li>- Through the results of questionnaires, interviews, and document analysis, these institutions do not yet have a conceptual framework regarding the application of project-based learning, especially in teaching language skills.</li> <li>- The institution has a juridical basis that underlies higher education, but in learning language skills, there is no application of project-based learning.</li> </ul>
<p>Desired Condition:</p> <ul style="list-style-type: none"> <li>- Some rules underlie the application of project-based learning through technology in teaching language skills in higher education.</li> <li>- A conceptual framework is needed regarding the application of project-based learning in teaching language skills.</li> </ul>

Base on [Table 1](#), the result of the context aspect shows that STKIP Agama Hindu Singaraja does not have a conceptual framework and rules that underlie the application of project-based learning in teaching language skills subjects. This can be seen from the results of interviews and document analysis conducted, where respondents stated that they still did not fully understand the application of project-based learning, especially in teaching language skills. The RPS that they use has not implemented project-based learning in the classroom. So, looking at the current situation, rules and a conceptual framework are needed regarding the application of project-based learning, especially in teaching speaking skills, writing skills, listening skills, and reading skills. In addition, seeing the development of 21<sup>st</sup>-century learning, it is necessary to adapt technology in implementing this method in the classroom. The input aspect is show in [Table 2](#).

**Table 2. Input Aspect**

<b>Input</b>
<p>Current Condition:</p> <ul style="list-style-type: none"> <li>- Through the results of the interviews, lecturers have not been able to apply the project-based learning method in teaching language skills.</li> <li>- In the RPS used by lecturers, there is no application of project-based learning. The learning method focuses on discussions, and quizzes, and continues with semester assessments.</li> </ul>
<p>Desired Condition:</p> <ul style="list-style-type: none"> <li>- A conceptual framework is needed that can be used as a reference for lecturers in implementing project-based learning in teaching language skills.</li> <li>- The conceptual framework used must be driven by the use of technology.</li> </ul>

From [Table 2](#), the results show that lecturers are not ready to implement project-based learning, which can be seen from the lesson plans they make. Lesson plans that are made only use the method of discussion, question and answer, quizzes, and semester tests. Even though several lecturers provide assessments through their final assignments, this does not apply to project-based learning as a whole. Looking at the current situation, it is necessary to have a conceptual framework that can provide brief material regarding the application of project-based learning, both from basic knowledge about project-based learning and how to apply it in the classroom. In addition, it is necessary to establish technology-based learning plans, in which lecturers apply project-based learning using technology in teaching. Process aspect is show in [Table 3](#).

**Table 3. Process Aspect**

<b>Process</b>
<p>Current Condition:</p> <ul style="list-style-type: none"> <li>- In teaching language skills, the lecturers did not implement project-based learning because there was no conceptual framework for implementing this learning method.</li> <li>- There is no application of project-based learning as seen in the RPS owned by each lecturer.</li> </ul>
<p>Desired Condition:</p> <ul style="list-style-type: none"> <li>- The application of project-based learning accelerates steps such as planning, implementation, and also at assessment stage so that the implementation of project-based learning can run well.</li> <li>- Application of project-based learning based on technology.</li> </ul>

Table 3 shows that the language skills courses at STKIP Agama Hindu Singaraja have not implemented project-based learning. Even though the speaking skills and writing skills courses use projects in class, the method does not apply project-based learning as a whole. The method used is more inclined to use task-based learning in which the lecturers give assignments as their final assessment. This can also be seen from the lesson plan that each lecturer has, where they do not apply project-based learning in teaching in class. Seeing the current situation, a conceptual framework is needed that can help lecturers prepare lesson plans that use project-based learning methods. The lesson plan that is owned must be by the stages of implementing project-based learning. These stages include planning or determining the topic to be worked on, then implementing it in class, and also the assessment used to assess student processes. The product aspect is show in Table 4.

**Table 4. Product Aspect**

<b>Product</b>
<p>Current Condition:</p> <ul style="list-style-type: none"> <li>- Products produced in teaching language skills such as videos and essays and do not apply project-based learning as a whole.</li> </ul>
<p>Desired Condition:</p> <ul style="list-style-type: none"> <li>- A conceptual framework is needed that can apply project-based learning in teaching language skills and using technology.</li> <li>- The resulting product is driven by the application of project-based learning which can improve 21<sup>st</sup>-century skills.</li> </ul>

Table 4 shows that in the STKIP Agama Hindu Singaraja in the current condition, the lecturers ask the students to make a project such as videos or essays. The application of project-based learning does not only assess the products produced but more than that the application of project-based learning includes the processes carried out by students in producing products. So, seeing this situation, it is necessary to have a conceptual framework that can be used as a reference for lecturers in helping students to produce projects where the processes carried out can develop each student's language skills. In addition, the application of technology is also needed in current learning, so it is important to apply project-based learning using technology as the medium.

The result of the need analysis toward the use of project-based learning in teaching language skills in higher education has not been implemented properly. This is because there are no rules and conceptual frameworks that underlie the application of technology-based project-based learning, especially in teaching language skills. So here are some of the characteristics needed regarding the application of project-based learning in teaching language skills in higher education. There are rules and a conceptual framework regarding the application of project-based learning, in which the conceptual framework explains in more detail both the basic knowledge regarding the application of project-based learning and the steps for implementing it in the classroom, especially in teaching language skills. The conceptual framework that is made must be in accordance with the needs of students in achieving learning objectives, especially in improving language skills. In addition, the conceptual framework created can be used as a reference by lecturers in teaching, so that lecturers are pedagogically prepared to implement project-based learning. The application of project-based learning in teaching language skills must be based on the use of technology to achieve 21<sup>st</sup>-century learning. A conceptual framework is needed that can assist lecturers in providing assessments in accordance with the application of project-based learning. The project-based learning method is a complex method, where assessment is not only seen through the products produced but assesses every process taken by students in producing products. The application of project-based learning can improve students' English skills, both in the four language skills. With the explanation above, it is clear that STKIP Agama Hindu Singaraja requires a conceptual framework for the

implementation of project-based learning that takes into account technology and makes use of appropriate evaluation in the learning process. In order to conduct project-based learning effectively and conduct learning objectives, it is also required that each student may enhance their English well. The learning process carried out at STKIP Agama Hindu Singaraja still applies online learning, in which lecturers and students meet face-to-face online through telecommunications media such as Zoom and Google Meet or via chat applications such as WhatsApp and Telegram. This technology is very helpful in expediting the online learning process. By using technology, lecturers can interact with students even in different places and times. Delivery of material that can be done through technology makes it easier for students to access the material anywhere and anytime so that students experience a flexible learning experience. Online learning gives students the opportunity for flexible learning, online collaborations with their teammates, and access to the material through browsers, and encourages students to become self-regulated learners.

In response to the research question regarding the characteristics required in implementing project-based learning in language skills courses, several findings have been collected. In teaching language skills, STKIP Agama Hindu Singaraja does not have rules and a conceptual framework regarding the application of project-based learning. So that a conceptual framework is needed that can be used as a reference for lecturers in teaching language skills using the project-based learning method. The subjects analyzed in this study were scientific writing, speaking simple monologues, listening for short statements, and reading. Of the four courses, two of them stated that the lecturer applied project-based learning. However, basically, lecturers do not apply project-based learning in teaching language skills subject. This can be seen from the lesson plan used in class. Lecturers tend to use the method of discussion, question, and answer, and end-of-semester exams. Giving projects at the end of the semester, as is done in speaking and writing courses, tends to use the task-based learning method.

## Discussion

From the research results obtained, STKIP Agama Hindu Singaraja needs to develop a conceptual framework regarding the use of project-based learning in teaching language skills through technology. This echoes the findings reported by previous study which state that learning English in higher education must adopt a learning method that is in accordance with 21st-century learning (Padmadewi et al., 2019). Project-based learning is a very appropriate method for improving 21<sup>st</sup>-century skills because this method has student-centered learning. The use of technology can also be applied to this learning model. The other result findings also support the results of this study, where the use of an E-module as the application of project-based learning has good quality in teaching language skills (Agustina & Efendi, 2021). Through the E-module, students' mastery of English can be achieved with good results.

The lesson plans used in teaching language skills still use the discussion and question and answer method and have not implemented project-based learning. This also proves that lecturers are not ready to apply project-based learning methods, so there is a need for a conceptual framework that can provide basic knowledge to lecturers regarding the application of project-based learning. In order to achieve the learning objectives, teaching language skills requires a distinct approach (Darancik, 2018; Friantary et al., 2020). A conceptual framework for the implementation of project-based learning in teaching language skills can be a useful strategy for enhancing students' abilities. The use of project-based learning can also develop competencies and help students improve their command of the English language. These findings echo the findings reported by other previous studies, which showed that using project-based learning in EFL classes might stimulate students' motivation to complete the project and solve the problem through their competencies (Aghayani & Hajmohammadi, 2019; Kavlu, 2016). From the findings discussed, it can be implicated that higher education needs to develop a conceptual framework for the use of project-based learning in teaching language skills. In addition, the application of project-based learning must refer to English learning and be in accordance with the goals of 21<sup>st</sup>-century learning (Conrad & Openo, 2018; Hussin et al., 2019).

The significance of the study is it can be used as the basis to develop the conceptual framework for teaching language skills through technology-based project-based learning. For that reason, the focus of this research is to analyze the characteristics of project-based learning through technology needed in teaching language skills subjects. The recommendation from this study is can be used as information regarding developing the strategy using project-based learning in teaching language skills in higher education and can be used as a basic reference in forming a conceptual framework regarding the application of project-based learning. The application of project-based learning is complex in that the assessment is not only seen from the projects produced but also looks at how students are in the process of creating these products. Therefore, the conceptual framework for using project-based learning to teach language skills is very important for achieving the learning objectives.

## 4. CONCLUSION

From the results and discussion, this research can be concluded that STKIP Agama Hindu Singaraja as a higher education needs to develop a conceptual framework regarding the use of technology-based project-based learning in teaching language skills subjects. The project-based learning method is also in line with the goals of 21<sup>st</sup>-century learning which prioritizes student-centered learning and also enhances self-regulated learning. Through the results of this research, it is hoped that the language skills course will have a project-based learning plan based on technology. Besides that, the conceptual framework needed is a framework that can be used as a reference for lecturers in implementing project-based learning in the classroom. This application is not only assessed from the project produced but assessed as a whole starting from planning, the process carried out by students, to the resulting product. Therefore, an assessment is needed that can cover all activities in the project-based learning in teaching language skills courses method.

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