JURNAL EDUSCIENCE (JES)
p-ISSN : 2303 - 355X | e-ISSN : 2685 - 2217
PUBLISHED BY : LPPM of UNIVERSITAS LABUHANBATU

Technologies-Supported Collaborative Problem-Solving Learning Model for Foreign Language Learning Based on Cases and Projects

Aisyiah Al Adawiyah[1]*, Akbar Syamsul Arifin[2]

[1]French Language Education Undergraduate Program, Universitas Negeri Semarang, Indonesia
[2]Arabic Language Education Undergraduate Program, Universitas Negeri Semarang, Indonesia
*Email: aisyiahaladawiyah@mail.unnes.ac.id

ARTICLE INFO

Keywords:
Learning model
Foreign language
Technologies-supported collaborative problem-solving

ABSTRACT

Purpose—This research aims to develop standardized learning steps by applying technology to enhance student interactivity, improve learners' communication skills, and address challenges of student engagement in foreign language learning.

Methodology—The development process follows four stages: 1) preliminary research, 2) model development planning, 3) model validation, evaluation, and revision, and 4) model implementation. A qualitative approach is employed to gain insights into applying the developed model in classroom learning.

Findings—The small-scale trial in the *Grammaire Pré-Avancé* course shows that students learn autonomy through group work that involves searching for references and improving their understanding of the discussed material. Specifically, the model developed enhances learners' digital literacy, critical thinking skills, and language proficiency in both receptive and productive aspects.

Significance—The research underscores the potential benefits of integrating technology with case methods and project-based learning. It can significantly boost digital literacy and critical thinking in foreign language learning and improve long-term language skills.

Received 30 December 2024; Received in revised form 7 January 2025; Accepted 20 April 2025
Jurnal Eduscience (JES) Volume 12 No. 2 (2025)
Available online xx April 2025

INTRODUCTION

Foreign language learning is one of a person's efforts to master a foreign language effectively and efficiently. Foreign language learning has become an essential part of the education system in Indonesia, which aims to improve learners' communication skills in a multicultural work environment to compete globally. To enhance communication skills, it is necessary to provide contextualized, authentic, and practical foreign language learning to provide relevant, meaningful, and authentic learning experiences that will strengthen learners' language skills. Case- or project-based learning methods supported by technology enable effective and learner-centered language learning. "Using the case method, students learn to communicate in a foreign

language in real-world situations. They must participate in discussions, argue, and respond to others' views. PBL also involves students communicating with their team members when designing a solution or product, which requires effective communication skills." (Masita, 2023).

Based on the Indikator Kinerja Utama Perguruan Tinggi Negeri (IKU PTN) Kepmendikbud 754/P/2020 related to the goal of improving the quality of curriculum and learning, classroom learning in a percentage of S1 and D4 / D3 / D2 courses uses the case method or team-based project learning method as part of the evaluation weight (Ridlo, 2021). Universitas Negeri Semarang (UNNES), a university that organizes and develops education, uses both methods in lecture activities. Implementing those methods requires a learning design with learning activities that support the achievement of competencies. As in foreign language learning at UNNES, lecturers develop and implement learning activities that follow the characteristics of the case and project-based learning methods in the form of semester lesson plans. The challenge was the lack of students' ability to adapt to active learning due to passive class participation. Therefore, methods with student-centered learning characteristics are appropriate when applied to technology in learning. As stated by Zambrano et al. (2019), technology helps students to meaningfully and independently work first with educational material, then with scientific information, to lay the foundations of self-organization and self-education to improve their skills continuously. As part of the facilities provided by UNNES, lecturers need to use Google Workspace for Education technology to support interactive learning. Case methods and project-based learning methods with the help of technological media are part of the effort to achieve the university's goal of creating brilliant learning.

Case-based learning is a strategy used to present a lesson using a found case as learning material, which is then studied together to arrive at a solution (Rahmat et al., 2023). The definition of project-based learning as a form of situational learning is based on constructivist findings that students gain a deeper understanding of material when they actively build their knowledge by working and using ideas (Krajcik & Blumenfeld, 2006). The case and project-based learning methods encourage students' active involvement in analyzing cases they encounter during the learning process. "Implementing case method and project-based learning requires a learning design with learning activities that support the achievement of competencies. Developing and implementing appropriate learning activities is important in both methods." (Farikah et al., 2022). In this case, technology plays an important role in helping teachers to more efficiently manage the classroom and provide a more dynamic learning experience for students (Farikah et al., 2022) so that students improve their communication, collaboration, creativity, and critical thinking skills (Prahitaningtyas, 2023). This active, contextualized, and problem-solving learning should be applied to foreign language learning. It requires an authentic learning approach to motivate language learners to master the foreign language they are learning.

A foreign language in language learning is a language that a learner learns in addition to their native language (Parera, 1993). The general purpose of foreign language learning is intercultural communication and understanding (Hardjono, 1988). Learners are said to have achieved this goal when they have the knowledge and skills in foreign languages by the stated objectives (Rohmatun, 2014). The teaching of foreign languages at the Faculty of Languages and Arts, UNNES, is included in 4 courses, consisting of Japanese Language Teaching, Arabic Language Teaching, Chinese Language Teaching, and French Language Teaching. Based on the commitment to implementing the case and project-based learning methods, lecturers have implemented both in preparing semester lesson plans and lecture activities. Instructions and training are provided by the Institute of Education and Professional Development (LPPM) so that lecturers can understand the application of these two methods in learning activities. Lecturers also often hold discussions, especially when implementing team teaching. This is done to equalize perceptions so that the learning design in the courses taught can maximize active and independent learning through case and project-based learning methods. The results of the needs questionnaire responses on the application and its problems of the case method and project-based learning method are that a total of 14 out of 20 respondents stated that the obstacles they encountered when using the case method in foreign language learning were General Limitations, namely the difficulty of getting students active in learning because of their different learning preferences and understandings. Then, as many as 12 out of 20 respondents stated that the obstacles they encountered in implementing project-based learning methods in foreign language learning were lack of adaptability to active

learning, precisely the difficulty in arousing students' active learning because students tend to be passive in class and do not participate much in learning stages that require collaboration. However, designing learning using those methods is not easy due to the characteristics of students, who usually need additional encouragement to be actively involved in the learning process. As facilitators, teachers must also design relevant and meaningful case studies or projects that align with the learning materials and the curriculum. Therefore, technology needs to be used as a supporting media for preparing case studies or projects and to be used to its full potential to improve students' academic performance (Liu et al., 2013). This is strengthened by Skylar and Kharchenko's research, which utilizes technology and combines case and project-based learning methods in e-learning. It is a student-centered approach with the formation of an individual trajectory of the education and homework depending on the individual preferences of students and the recommendations of teachers; focus aimed at the development of creative and research competencies; monitoring by the teacher to analyze the adoption of learning material by students; analysis of the opportunities to improve the homework process; taking into account curriculums of other interrelated academic courses (Sklyar & Kharchenko, 2020).

More specifically, Wulandari et al. (2023) explain the meaning of case-based and project-based learning: Case-based learning is a method in which students in real-life situations present in learning to improve problem-solving and decision-making skills. Active learning that focuses on a case involves students in learning by doing. Project-based learning allows students to work on tasks (in the form of projects) that have been systematically designed, demonstrate performance, and be accountable for group work results in the form of products. The learning activities are designed as systematic tasks (projects) so that students learn knowledge and skills through a structured and complex process of inquiry, then formulate and carry out the process of guidance and assessment. Technology is a teaching and learning tool that can prepare students to face future challenges, participate in collaborative learning, facilitate the need for independent learning, and build a positive character of students in increasing learning autonomy (Adawiyah et al., 2023). The use of technology not only makes learning more innovative and engaging but also improves student learning outcomes (Husna et al., 2024), such as the use of Google tools. Google Tools is a platform in a series of teams that can provide opportunities for students to increase opportunities for critical, communicative, collaborative, and creative thinking to support educational goals—learning and teaching activities (Jamaludin et al., 2022). "Google is very influential in the progress of digitalization, which has presented various features that can facilitate humans in various aspects. In education, Google has presented software or web-based tools that can be accessed anytime and anywhere to facilitate and develop the digitalization era called Google Workspace for Education." (Irani, 2022). The collaboration between the case method and the project-based learning method, using Google tools in their application, can be considered a pedagogical strategy based on Piaget and Vygotskian foundations in the sense that it promotes interaction between learners and, consequently, knowledge construction (Hasni & Belletête, 2023). Therefore, literature and theoretical studies on both methods, as well as the use of Google tools from different sources, need to be conducted as a problem-solving approach in this research, as described below:

The first research, Hasni & Belletête (2023), examined secondary school teachers' perspectives on project-based teaching and learning in science and technology, as reported in the *Canadian Journal of Science, Mathematics, and Technology Education*. They employed qualitative methods using both open and closed questionnaires. The findings indicate that many teachers lack a clear understanding of implementing project-based learning in the classroom, suggesting a need for further training and a clear conceptual framework for science and technology contexts. A key strength of this study lies in the detailed analysis of questionnaire responses, which provides readers with a clear understanding of the research problem. However, the authors do not elaborate on the steps required to implement project-based learning in science and technology classrooms. The second, Sismanto et al. (2024), explored the challenges and strategies for adopting Google Workspace for Education in Indonesian educational institutions, published in the *Asian Journal of Education and Social Studies*. Using a qualitative case study approach, the researchers identified multiple challenges, including mindset barriers, limited technological resources, communication gaps, and infrastructure constraints. They proposed six strategies to address these obstacles, such as increasing teacher participation in training and obtaining support from school leaders. The article's main strength is its practical contribution,

as it offers clear, actionable strategies to enhance the effective use of Google Workspace. However, it does not discuss how these strategies might integrate with the characteristics of case method or project-based learning. The third, Sharpe & Young (2023) investigated the use of Google Classroom as an assistive technology in inclusive classrooms, detailed in the *Canadian Journal of Learning and Technology*. The qualitative case study reveals that Google Classroom's speech-to-text features facilitate writing and reading comprehension for students with special needs while allowing teachers to assign and manage tasks from any location. A strong point of this study is its clear description of data analysis procedures and inclusion of multiple perspectives—both from students and teachers. Nonetheless, the article does not tie its findings to any specific learning method, such as case or project-based learning. The fourth, Daryanes et al. (2023), developed interactive learning media based on the case method to improve students' problem-solving skills in a Basic Biology course, as reported in *Heliyon*.

The researchers adopted an R&D approach using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). They thoroughly explain the needs analysis process and the learning media development steps. Despite this strength, the authors do not provide detailed information on implementing or integrating the developed media in actual classroom settings. The last research, by Suartama et al. (2023), focused on designing a gamification model for case-based and project-based online learning using Moodle LMS, as described in the *Journal of Education and e-Learning Research*. This R&D study included product testing to refine the gamification model. The article's strength lies in its clear exposition of how the learning media was developed and how the LMS can be utilized effectively. However, the authors note that the model has only been tested within a single institution, leaving its applicability to other educational contexts or LMS platforms unproven.

According to the passage before, the novelty that can be formulated in this research, based on the literature review results of the five studies above, is the development of case and project-based models with implementation steps involving Google tools for foreign language learning. This collaboration allows for the creation of interactive and collaborative learning, thus forming a habit in students in problem-solving the process of understanding the material they encounter and maximizing the potential use of technology, especially in learning activities. The identification of problems encountered in the application of case-method and project-based learning methods in learning activities and an overview of the use of technology in the application of both methods in learning activities are attempts to develop standard learning steps in developing learning models. The formulation of this novelty is also based on previous research, which states that "the case-method and project-based digital learning method module seeks to improve the quality of learning and prepare students to face challenges in the digital era. The application of digital modules effectively improves teacher ability and student creativity. Moreover, the use of case method and team-based project in the implementation of the module strengthens students' critical thinking and collaborative skills." (Winatha et al., 2024). This research is then a study of lecturers' understanding of implementing case-method and project-based learning methods in the classroom so that these two methods can be combined and applied to foreign language learning using technology through Google tools. This research aims to complement previous studies on the application of Google tools in learning so that the utilization of Google tools in developing both collaborative learning models can be adequately formulated. Efforts to develop learning models are made to develop standardized learning steps, without any differences in perception in implementing them, so that both methods can be applied to foreign language learning following the characteristics of these methods by involving the use of technology.

METHODOLOGY

The research method used is qualitative research and development to develop a learning model design. Research and development (R&D) is a method used to produce specific products and to test the effectiveness of these products (Sugiyono, 2013). The R&D method is concerned with developing product-oriented research used in education (Bennett et al., 1984). The R&D method does not simply evaluate educational theories but develops effective products for specific school programs, such as teaching and learning materials and media (Gay, 1992). More specifically, through the R&D method, researchers can develop or design proposed models

for educational practice in several developmental steps (Gustiani, 2019). Using this method, we can focus on research that produces effective, innovative, and sustainable models, which could optimize the application of the case and project-based learning methods by utilizing technology for interactive foreign language learning. Through a series of stages, R&D helps identify actual problems and needs in the field so that the developed learning model follows the existing context and challenges. At the same time, the qualitative approach is used to obtain an overview and description of the application of model development in classroom learning.

The Technologies-supported Collaborative problem-solving learning model is a combination of case-method and project-based learning methods that optimizes the use of technology by using Google tools in its learning steps. A model is a narrative description that illustrates procedures or steps to achieve a particular goal, and these steps can be used to measure success or failure in achieving the goal (Yang et al., 2005). The development was carried out to formulate a conceptual and contextual foreign language learning module that is feasible, practical, and effective based on objective conditions in the field. The development steps to be carried out are based on the theory of developmental modification (Rofii et al., 2018), adapted to the situation's needs (Gall et al., 2007). The four stages of development in this study are as follows:

1) The preliminary research phase is a comprehensive review of relevant theories and literature conducted to understand the characteristics of the case method, project-based learning method, and Google tools. This theoretical groundwork informed the creation of a question grid and helped frame the study's focus. At the same time, a needs questionnaire was distributed to respondents, providing essential data on practical requirements and challenges faced in the field. Building on these insights, 2) the development planning model phase involved identifying problems related to applying the case method and project-based learning in foreign language contexts, as well as using technology. Drawing on the results of the needs questionnaire, researchers designed a learning model that integrates these methods with Google tools. The outcome was a 10-step learning model development syntax, combining case-based and project-based strategies to enhance foreign language learning. 3) In the model validation, evaluation, and revision, a prototype of the newly designed model underwent peer review. Feedback was collected to refine the model, ensuring its effectiveness and relevance. This iterative process included adjusting the model's syntax to align with specific receptive and productive language skills facilitated by Google tools. 4) In the last, the model implementation phase featured limited or pilot testing of the refined model in a controlled setting. Observations of the learning process and collected data provided insights into how effectively the model performed in practice. As a result, researchers produced model implementation modules that serve as tangible evidence of the model's impact on teaching and learning outcomes.

As an initial stage of model development, a needs questionnaire was distributed to respondents consisting of lecturers from four different programs as an instrument of data collection technique. The data of this study is relevant information from the respondents, specifically regarding their perceptions, needs, and insights related to the characteristics of the case method, project-based learning method, and Google tools. The collected data were then analyzed using the descriptive analysis technique. It is carried out to interpret the questionnaire response so that we can develop the model based on the needs of the lecturers and the characteristics of the case-method and project-based learning method using Google tools. This technique is part of structured observation, which is systematically designed by making observations using research tools, one of which is a closed questionnaire (Sugiyono, 2013).

Besides the expert review, a small-scale pilot test was also used to implement the learning model in actual practice. The model was implemented in a controlled learning environment with a sample group of 5th Semester French Language Education students in the course *Grammaire Pré-Avancé* (intermediate-level French grammar). The small-scale trial shows that students learn autonomy through group work that involves searching for references and improving their understanding of the discussed material. Specifically, the model developed enhances learners' digital literacy, critical thinking skills, and language proficiency in both receptive and productive aspects. Thus, the flow of the development of this model is as illustrated in the following figure:

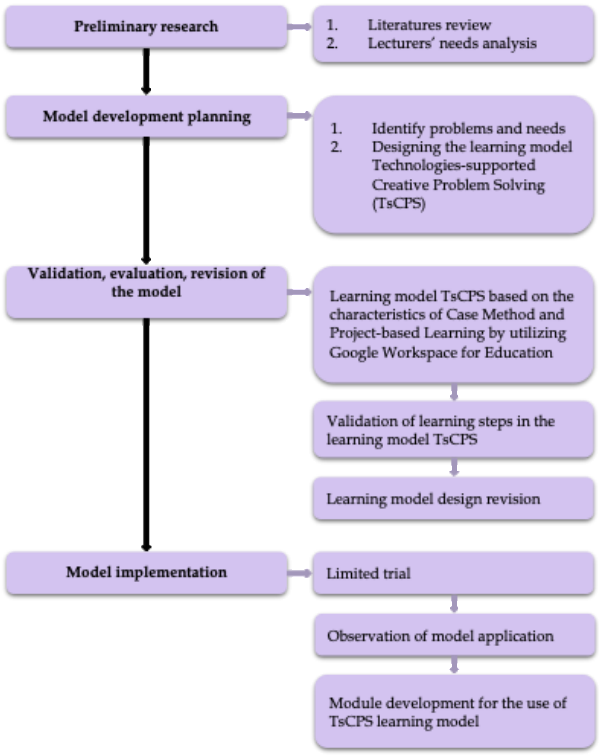

Figure 1. Development Design of Technologies-supported Collaborative Problem Solving Learning Model

FINDINGS

This section describes in detail the basis and process of developing the Technologies-supported Collaborative problem-solving model based on the problems of applying case-method and project-based learning methods and the description of their application together with the use of technology in foreign language learning classrooms. Both were obtained from the needs questionnaire (as shown in Figure 2 – 7) that the researchers distributed to each of the four lecturers of foreign language teaching programs. The researcher then analyzed the responses from the questionnaire to find out the application of case-method and project-based learning methods in the classroom so that both can be further developed according to the needs of the field.

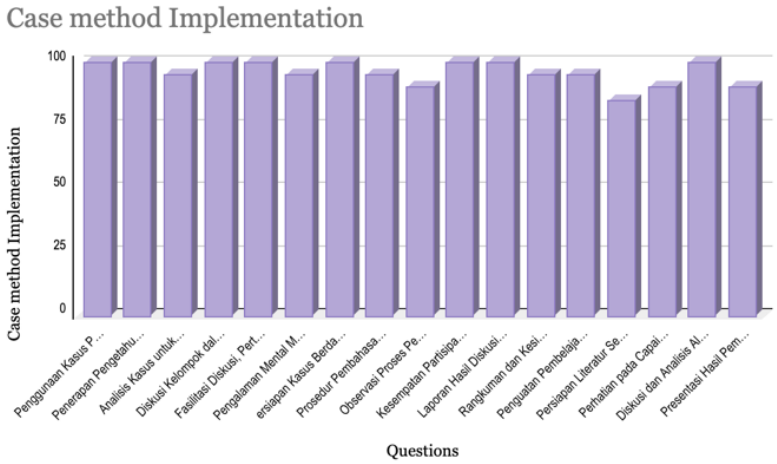

Figure 2. Case Method Implementation

The questionnaire results in Figure 2 show that the application of the case method in foreign language learning has been carried out, with the majority of indicators reaching 100%, such as the presentation of real cases, facilitation of the application of theory in the real world, group discussions, and presentation of analysis results. However, some aspects still need improvement, such as the preparation of literature sources by

students (85%), as well as the involvement of teachers in providing additional information during discussions (90%). In addition, some steps, such as learning summarization and student reflection, are also not fully consistent (95%). The method has been implemented but still needs improvement for more optimal results.

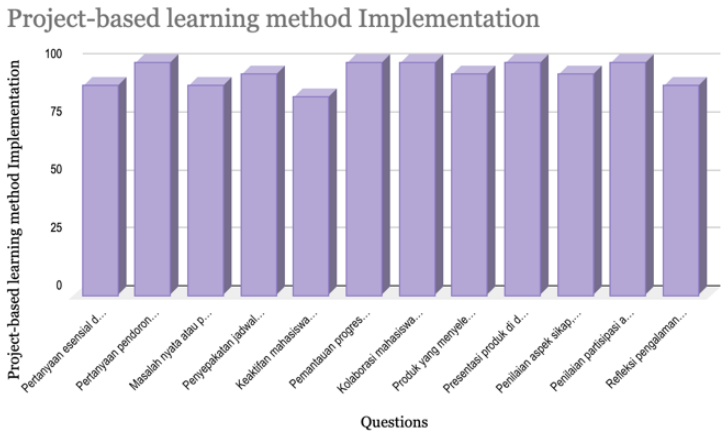

Figure 3. Project-based Learning Implementation

Then, for the project-based learning method implementation questionnaire results in Figure 3 shows that it is well implemented, with most aspects receiving a high positive response, such as providing prompting questions (100%), monitoring project progress (100%), student collaboration (100%), and assessing participation and product quality (100%). Students were also active in developing work plans (90%), agreeing on project schedules (95%), and presenting project results in the form of presentations (100%). However, some aspects still need to be improved, such as student involvement in the stages of the scientific method (85%) and reflection on the learning experience (90%). This shows that although this approach effectively improves student engagement and skills, further guidance is needed to ensure all students can optimally carry out the scientific method and actively reflect on the learning experience.

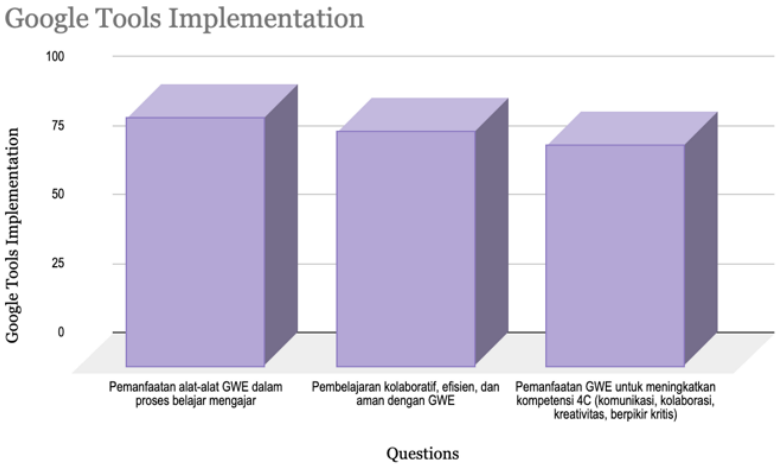

Figure 4. Google Tools Implementation

On the utilization of Google tools in learning, the questionnaire results in the figure above show that it has been implemented quite well. As many as 90% of respondents stated that they use Classroom, Google Meet, Google Docs, Google Forms, and Google Slides in teaching and learning. In addition, 85% of respondents claimed that using these tools helps create collaborative, efficient, and safe learning. However, their utilization to improve students' technological competencies in critical thinking, communication, collaboration, and creativity (4Cs) is still slightly lower, with a percentage of 80%. This shows that although Google tools have been widely utilized in learning, further optimization is still needed to develop students' 21st-century skills more effectively.

In addition to the implementation results above, the following are the details of the responses to the problems of applying the case and project-based learning methods and using Google tools in learning activities in the four foreign language learning programs.

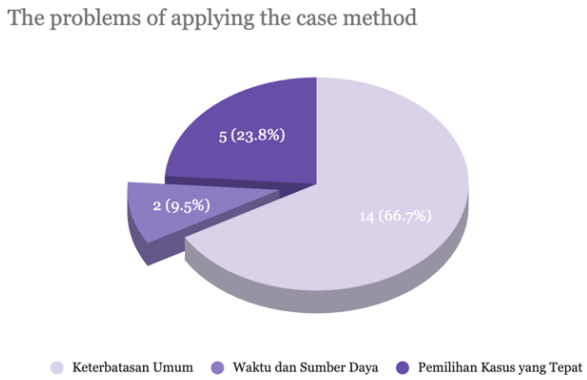

Figure 5. The Problems of Applying The Case Method

The questionnaire results show some limitations in case study-based learning, which are categorized into general limitations (67%), time and resources (10%), and appropriate case selection (24%). General limitations include the lack of active student participation, low student literacy in understanding case studies, students often not preparing literature even though they have been given instructions beforehand, and some students having difficulty connecting theory with the given case. Regarding time and resources, students experienced problems managing the schedule for completing the assignment, and there were limited references relevant to the case study. In selecting appropriate cases, the cases given were often unsuitable for students' conditions because they came from overseas contexts or were less relevant to the characteristics of the course. A total of 14 out of 20 respondents in Figure 5 indicated that the obstacles they encountered when implementing the case method in foreign language learning were General Limitations. Engaging students in active learning is challenging due to their varying learning preferences and comprehension levels.

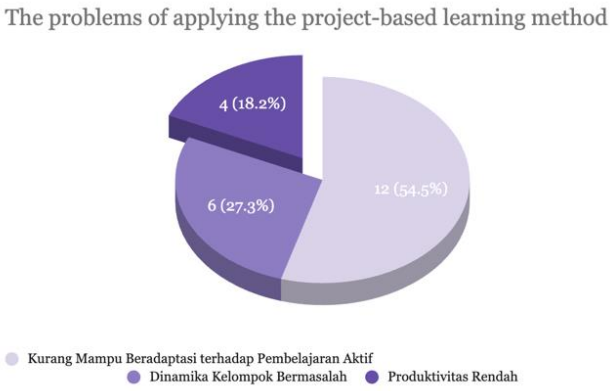

Figure 6. The Problems of Applying The Project-based Learning Method

The questionnaire results in Figure 6 showed several obstacles in project-based learning, with the main categories being a lack of adaptability to active learning (55%), problematic group dynamics (27%), and low productivity (18%). In the first category, students experienced difficulties adjusting to the learning method, such as low enthusiasm, lack of understanding of instructions, and challenges in time management and technology. Meanwhile, in the second category, there were problems in group work, such as domination by some members, lack of coordination, and no report on unequal participation. Low productivity was also an obstacle, where students struggled to complete the project on time, lacked creativity in project design, and the initial project produced did not follow the theory, requiring many revisions. A total of 12 out of 20 respondents indicated that the challenges they faced in implementing project-based learning in foreign language education stemmed from its inability to adapt to active learning methods, characterized by the difficulty in engaging

students in active learning due to their tendency to be passive in class and their limited participation in collaborative learning activities.

Therefore, based on the results of the above responses, the development model must adapt its case provision to reflect the real world, enabling students to reason and relate these cases to the theory and subsequently generate problem-solving solutions. These problem-solving skills can lead students to project completion as a practical application of their theoretical knowledge. Diverse backgrounds and foreign language skills mean that students are not always ready to be actively involved. Varying levels of motivation require teachers to adjust the complexity of the case or project to keep students interested and able to participate. Students accustomed to conventional learning methods may not have the independent skills required in case method and project-based learning, such as initiative, time management, and collaboration skills. Presenting real case examples will help students see the practical benefits of foreign language learning. Through case analysis that culminates in a project, students can apply their knowledge of grammar, vocabulary, and communication skills more authentically.

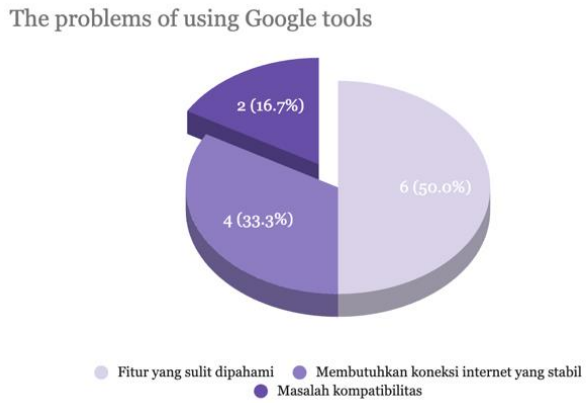

Figure 7. The Problems of Applying The Google Tools

Almost all the respondents in Figure 7 stated that they use Google Tools in foreign language learning. However, some of them, as many as 6 out of 20 respondents, stated that the obstacles they encountered when using Google Tools in foreign language learning were features that were difficult to understand, that is, the limitations of teachers and students in mastering the use of Google Tools. Others answered outside of the above categories, so the category of features that are difficult to understand is the most representative answer to the question of barriers to using Google Tools. Therefore, the development of the model needs to provide an explanation or steps for the use of Google Tools related to the collaborative development of the two methods. Google Tools, as the involvement of technology in the developed model, is used to create interactive, collaborative learning and can build positive student characters by increasing learning autonomy and providing opportunities for students to increase their digital literacy knowledge.

Some teachers or students are not familiar with certain features, such as collaborative document management, revision tracking, or utilizing add-ons that can enrich learning. Therefore, the model needs to include clear steps for utilizing Google Tools. By adjusting the case method and project-based learning steps, the developed model is expected to bridge theory to practice, combining case analysis with actual project implementation while utilizing technology for collaboration and digital literacy improvement.

Design of Technologies-supported Collaborative Problem Solving Learning Model

The model is a collaborative learning model between the case method and project-based learning method, providing active and situational learning experiences through the analysis of simulated or real cases, using technology as a personalized learning approach to integrate learners' knowledge and practical skills, encouraging them to work independently and take responsibility for their learning. Including technology in the model makes language learning more meaningful and relevant. It develops the collaboration, creative thinking, and digital literacy skills that learners need in this era of an intelligent society. This model in foreign language learning is applied to provide a more relevant and practical learning experience for language

learners by presenting examples of learning materials to develop receptive and productive skills in foreign languages.

The general steps that the teacher can take start with the learning process that follows a structured approach to enhance student engagement, critical thinking, and collaboration. It begins by posing relevant questions that connect the subject matter to students' prior knowledge, sparking curiosity and interest. Follow-up probing questions further encourage deep thinking and critical analysis. Case studies are presented in narrative form, utilizing multimedia tools like Google Slides to make learning more engaging. Students are guided through the case study process, individually or in groups, with precise time allocations and expectations. They plan their projects by outlining objectives, steps, and resources while engaging in peer discussions to explore diverse perspectives. Teachers facilitate and monitor discussions, ensuring productive engagement using the 5W+1H questioning method and online resources under supervision. Continuous monitoring allows for real-time feedback, with worksheets and Google Docs used for tracking progress. Students present their findings using Google Slides, receiving constructive feedback to refine their communication skills. Throughout the process, both presenters and their peers are evaluated based on their contributions, ensuring a comprehensive learning assessment. Finally, the session concludes with a summary and reflection, reinforcing key concepts and encouraging self-evaluation for continuous improvement.

In French language learning on *Raconter des expériences passé* (Telling past experiences), the teacher asks students questions, such as "What activities did you do during the semester break?". Students then begin to share their experiences briefly so that they are focused on learning. The teacher asks probing questions to dig deeper into their understanding, such as "How do I construct the right sentence to talk about an experience?". Students started discussing with their peers, trying to answer these questions based on their understanding. Afterward, the teacher presents a short narrative in French using Google Slides: *L'été dernier, je suis allé en France avec ma famille. Nous avons visité la Tour Eiffel et mangé des croissants délicieux*. Students read the text carefully, trying to understand its meaning. The teacher then asks them to identify the forms of the verbs used in the text. Once students understand the sentence structure in the story, the teacher gives them a challenge: to create a short story about their vacation experience in French. Before starting to write, students discuss in small groups, share story ideas, and look for appropriate vocabulary. In the process, they use Google Docs to record their ideas. While the students work, the teacher goes around the class, observing their discussions and watching for any possible use of machine translation. If students are struggling, the teacher provides additional guidance and directs them to search for the necessary information using the search engine. Once the story's construction was complete, each group presented their work in front of the class using Google Slides. During the presentation, their peers asked questions and provided feedback in French, so there was natural interaction. When all the groups have finished presenting their stories, the teacher summarizes the day's learning by highlighting the difference between *passé composé* and *imparfait* and how they are used in telling past experiences. The teacher also invites students to reflect on the learning process they have understood and what still needs improvement.

In language learning, learners need to master four language skills to use language effectively for communication. In the context of foreign language learning, foreign language skills refer to the ability of learners to use a language other than their mother tongue to communicate effectively. Language skills can be divided into two categories: specific, receptive, and productive aspects (Mulyati, 2014). The receptive aspect is the reception or absorption, as seen in listening and reading activities. The productive aspect is the output or production of oral and written language, as seen in speaking and writing activities.

Receptive skills

Learning receptive language skills, including listening and reading, requires structured learning steps to help learners understand and internalize foreign languages. The learning process begins with introducing the topic and learning objectives, focusing on understanding the main ideas, extracting specific information, and recognizing key expressions. To assess prior knowledge, students are asked relevant questions such as "Have you ever..." or "What do you know...". They are then divided into small groups of 2-3 members to ensure active participation and allow for effective monitoring. Learning materials like audio or text, such as

conversations, news, articles, or short stories, are presented using multimedia tools like Google Slides to enhance engagement. Students are given time to listen to the audio or read the text to familiarize themselves with proper pronunciation. As they engage with the material, they take notes on keywords and discuss the main ideas with their partners. To deepen understanding, students make predictions about the information by answering 5W+1H questions, ensuring critical thinking and active participation. Comprehension is reinforced through follow-up tasks like summarization and answering questions representing the text's key details. Evaluation is conducted by displaying slides with audio transcriptions, key vocabulary, and comprehension question answers, allowing students to compare their responses. Constructive feedback is provided to improve receptive skills, focusing on vocabulary, comprehension, and information recognition. The lesson concludes with reflection, where students discuss challenges and develop strategies for improvement in future learning activities.

Productive skills

Learning productive language skills, including speaking and writing, requires learning steps that focus on developing learners' ability to produce foreign language effectively and creatively. This productive learning can be preceded by applying receptive language skills learning steps, as previously explained. The receptive skills acquired previously are a strong foundation to continue mastering productive skills. As stated in the Guidelines for Assessment and the Common European Framework of Reference for Languages, learners progress from one language skill to another, starting with listening, reading, conversation, speaking, and writing (Tagliante, 2005).

The learning process begins with an introduction to the topic and objectives, focusing on understanding the main ideas, finding specific information, and practicing sentence structures to enhance vocabulary and speaking fluency. To assess prior knowledge, students are asked relevant questions such as “Have you ever...” or “What do you know...”. They are then divided into small groups of 2-3 members to ensure active participation and allow for adequate supervision of speaking or writing practice. Learning materials, such as conversations, news, articles, or short stories, are presented using multimedia tools like Google Slides to engage students. Learners are given time to listen to the audio or read the text to familiarize themselves with pronunciation rules. They then analyze and discuss key elements like sentence structure, vocabulary usage, and core information with their partners. To deepen understanding, students make predictions about the content using 5W+1H questions, ensuring critical thinking and active participation. Following this, they practice speaking or writing by completing sentences, creating dialogues, or composing short paragraphs, with teachers providing assessment rubrics and feedback. Assignments such as presentations, debates, vlogs, or essays allow students to express their ideas creatively while applying acquired language skills. Progress is monitored through worksheets on Google Slides or Google Docs, enabling students and teachers to track it in real-time. Learners then present their projects, engaging in adaptive learning and receiving constructive feedback from peers and teachers. The teacher evaluates productive skills while students contribute feedback, fostering critical thinking and peer appreciation. Finally, the session concludes with a discussion summarizing learning outcomes, reinforcing key points, and encouraging reflection on challenges and strategies for future improvement.

Utilization of Google Docs and Google Slides in Technologies-supported Collaborative Problem Solving Learning Model

Google Docs and Google Slides are teachers' most widely used collaborative media for explaining material and individual and group work. Google Docs and Google Slides are suitable for collaborative learning because they support real-time collaboration, flexible access, interactive comments, version tracking, and the ability to integrate different media. Both tools even have language support features to help break down language barriers, including built-in dictionaries, synonym suggestions, spell check, and grammar check (Scissors, 2021). Below is an explanation of receptive and productive language learning with these two tools:

Provides reading and writing activities

Table 1. Utilization of Google Docs and Google Slides for Reading and Writing Activities

Google Docs	Google Slides
Develop lesson plans for each meeting: 1. Upload or link texts for students to read with their groups. 2. Develop text comprehension questions using **Building Blocks> Project assets** to create a response table according to the order of the groups. 3. Reuse the response table according to the order of the student's group through the **Building Blocks> Project Assets** feature to allow the student to compile a list of new words or phrases found. 4. Provide grades and feedback with the **Comments** feature.	Develop student worksheets for exercises and projects for each meeting: Develop response slides to write a text summary using the **Comments > "@"** feature to link student groups to their response slides. Reorganize response slides to write essays related to the topic through the **Comments > "@"** feature to link student groups to their response slides. Provide grades and feedback with the **Comments** feature for students to improve structure, grammar, and argument.

Utilizing the two Google tools above allows teachers to compile lesson plans in one meeting with Google Docs and then compile student worksheets on Google Slides as a medium for collecting writing assignments.

In Docs: 1) The instructor uploads or links the text for the learner to read with the group; 2) after reading, the learner answers the comprehension questions of the text by typing the answers from the discussion with the group in the response table column provided. In this section, the teacher provides comments to assess or provide feedback on their responses directly; 3) the learners continue the receptive exercise by compiling a vocabulary list to highlight new words or phrases. In this section, the teacher provides comments to give feedback by asking learners to look up the meaning of the vocabulary list.

On the Slides: 2) After answering the comprehension questions, learners write a summary or response on the response slides provided. In this section, the teacher offers comments to assess or give feedback on their responses directly; 3) learners work on the next productive exercise by writing an opinion paragraph or essay related to the topic with the help of a pre-constructed vocabulary list. In this part, the teacher gives immediate feedback by writing comments to improve structure, grammar, and argument. Finally, the teacher gives a structured assessment based on a rubric appropriate to the assessed skill.

Listen to audio/ video and make spoken responses

Table 2. Utilization of Google Docs and Google Slides for Listening and Speaking Activities

Google Docs	Google Slides
Develop lesson plans for each meeting: 1. Upload or link audio/ video for students to listen to with their groups. 2. Develop listening comprehension questions using **Building Blocks> Project assets** to create a response table according to the order of the groups. 3. Reuse the response table according to the order of the student's group through the **Building Blocks> Project Assets** feature to allow the student to compile a list of new words or phrases found. 4. Provide grades and feedback with the **Comments** feature.	Develop student worksheets for exercises and projects for each meeting: Develop response slides to write a summary of the material information using the **Smart Chips> People** feature to link student groups to their response slides. Reorganize response slides to compose a conversation related to the topic through **the Smart Chips> People** feature to link student groups to their response slides. Provide grades and feedback with the **Comments** feature for students to improve structure, grammar, and argument.

Utilizing the two Google tools above allows teachers to compile lesson plans in one meeting with Google Docs and then compile student worksheets on Google Slides as a medium for collecting speaking assignments.

In Docs: 1) The instructor uploads or links the audio/video for the learner to listen to with the group; 2) then, the learner answers the comprehension questions while listening for the second time by typing the answers from the discussion with the group in the response table column provided. At this point, the teacher comments to assess or give feedback on their responses directly; 3) the learners continue the receptive exercise by listing the important words or phrases they heard in the third listening activity. In this part, the teacher provides comments to give feedback by asking the learners to find the meaning of the list.

On the Slides: 2) After answering the comprehension questions, learners write a summary or response on the response slides provided. In this section, the teacher offers comments to assess or give feedback on their responses directly; 3) learners work on the next productive exercise by constructing a conversation related to the topic with the help of a pre-compiled list of words or phrases. In this part, the teacher gives immediate feedback by writing comments to improve structure, grammar, and argument. Finally, the teacher provides a structured assessment based on a rubric appropriate to the assessed skill.

Technologies-supported Collaborative Problem Solving Learning Model Evaluation Criteria

In general, every foreign language learning has its assessment criteria based on the frame of reference of the language-using country. We assess language skills in French following the Common European Framework of Reference for Languages (CEFRL). However, the following is an example of evaluation criteria (rubric) that can be used to assess the application of the Technologies-supported Collaborative Problem Solving Learning Model in foreign language learning. These criteria integrate aspects of language skills (receptive and productive) and collaboration.

Table 3. Evaluation Criteria

Aspects	Indicators	Scores			
		4	3	2	1
Receptive skills	- Able to understand the main idea and important details of the text/audio. - Can identify relevant vocabulary, sentence structure, or cultural context. - Able to infer and summarize information heard or read.	- Identify the main idea and details correctly. - Master vocabulary and sentence structure according to context. - A summary is obvious and to the point. - Demonstrates a deep understanding of the text/audio.	- Identifies most of the main ideas and important details. - Fair command of vocabulary and sentence structure. - A summary is clear enough, but it still needs a slight improvement. - The understanding of the text/audio is good, but there are some minor flaws.	- The main idea and important details are identified in a limited way. - Vocabulary and sentence structure are still inappropriate. - A summary is not thorough or confusing. - Comprehension of text/audio is shallow and needs further practice.	- It is difficult to identify the main ideas and details. - Very limited in vocabulary and sentence structure. - A summary is unclear or out of context. - Shows very little understanding of the text/audio.
Productive skills	- Able to express oral or written ideas in a clear and	- Expresses ideas fluently, coherently, and creatively.	- Expresses ideas clearly but needs minor improvements in sequence	- Ideas are not coherent or clear. - Mistakes in grammar, vocabulary,	- Difficulty in expressing ideas clearly or coherently. - Many grammatical,

	structured manner. - Apply linguistic rules (grammar, vocabulary, memorization, intonation) appropriately. - Demonstrate fluency and accuracy of language according to the expected level.	- Minimal grammar and vocabulary errors. - Pronunciation (for speaking skills) and writing (for writing skills) are excellent. - Able to argue and interact effectively.	or language style. - There are some grammatical, vocabulary, or pronunciation errors, but they do not interfere with understanding. - Oral/written communication is reasonably fluent but needs improvement in confidence or elaboration of ideas.	or memorization occur frequently. - Oral/written communication is somewhat inhibited, so the message is not fully expressed. - Needs guidance to develop ideas and improve language accuracy.	vocabulary, or pronunciation errors hinder understanding. - Unable to maintain communication effectively. - Requires intensive assistance to organize and express ideas.
Collaboration & Communication	- Work together with group members to analyze cases and complete projects. - Actively participate in group discussions (asking questions, giving opinions, listening). - Respect the opinions and contributions of teammates.	- Actively engage in group discussions and assignments. - Demonstrates a sense of responsibility, respects peers' opinions, and coordinates tasks well. - Communication between members is practical, supportive, and goal-focused.	- Engages in discussions well, although there is still room for improvement. - Respected colleagues' opinions, although coordination was sometimes lacking. - Communication is quite effective but occasionally lacks focus on the goal.	- Sometimes, they are less involved or passive in group discussions. - Coordination and communication with group members is often hampered. - Still need motivation to contribute equally.	- Not actively participating in the discussion. - It is uncooperative and often inhibits the group process. - Communication is not purposeful, creates conflict, or hinders the achievement of group goals.

The evaluation of this learning model is based on three main aspects: receptive skills, productive skills, and collaboration and communication. On the receptive skills aspect, a score of 4 is given if students can understand the main idea and important details of the text or audio well. A score of 3 indicates fairly good comprehension, although there are still slight shortcomings in the accuracy of the summary or in-depth understanding of the material. A score of 2 indicates difficulty in identifying the main idea and important details and inappropriate vocabulary and sentence structure use. A score of 1 indicates minimal comprehension, difficulty identifying key information, and significant problems in summarizing correctly. In the productive skills aspect, learners with a score of 4 can convey ideas orally and in writing fluently, creatively, and structurally. A score of 3 shows a good ability to express ideas, although some minor errors in

grammar and vocabulary do not hinder understanding too much. Learners with a score of 2 have difficulty organizing ideas in a clear and structured way, with frequent grammar and vocabulary errors, so communication is hampered. Score 1 is given to learners with great difficulty expressing ideas orally and in writing, with many errors hindering understanding and ineffective communication. In the aspects of collaboration and communication, a score of 4 indicates active involvement in group discussions, working well together, and appreciating other members' opinions and contributions. Score 3 is given to learners who are active in the discussion, although there are still some problems in coordination. A score of 2 indicates that learners are less involved in the discussion, have poor coordination, and still need encouragement to contribute actively. Meanwhile, learners with a score of 1 tend to be passive, uncooperative, and less able to communicate effectively in the group, thus hindering the achievement of common goals. With this rubric, teachers can conduct a comprehensive and transparent assessment of various aspects of learning based on Technologies-supported Collaborative Problem Solving, especially in the context of foreign language learning.

DISCUSSION

Combining the Case Method and Project-Based Learning in foreign language learning allows for a comprehensive learning experience. Students not only learn to understand and analyze real situations through cases but also develop projects that demand practical application of the language. The synergy of these two approaches results in a learning process that is more in-depth, interactive, and relevant to real-world needs, thus strengthening students' communication skills and cross-cultural understanding. The relevance to foreign language learning is that through real-life, relevant projects, learners learn a foreign language and develop critical thinking skills, collaboration, and creativity. Meanwhile, case-based learning allows learners to think analytically and solve problems. In the context of foreign language learning, this method helps learners understand the use of language in various fundamental and complex situations. Google tools help teachers facilitate learning according to the characteristics of both methods so that learning can be well-directed.

The case method and project-based learning emphasize contextual, collaborative, and challenging learning activities for learners. However, their application can vary depending on the subject area and learning objectives. Here are the differences and similarities between the application of these two methods in foreign language learning and other learning contexts:

Table 4. Case-method and Project-based Learning in Foreign Languages and Other Disciplines

Similarities	Differences
1. Based on Real Problems These methods focus on real-world problems or authentic case studies in foreign language learning and other subjects. The main goal is to train learners to think critically, analyze situations, and design relevant solutions. 2. Collaboration and Discussion In case method and project-based learning, learners are actively involved in group discussions, both to explore cases (Hasni & Belletête, 2023); (Daryanes et al., 2023) and to complete projects (Suartama et al., 2023). The collaborative process helps improve communication skills and shared responsibility. 3. Teacher's Role as Facilitator In both learning contexts, teachers deliver the material and guide, monitor, and provide feedback during case analysis or project work (Sharpe & Young, 2023); (Sismanto et al., 2024). Teachers encourage learners to utilize various learning resources, including technology	1. Specific Learning Objectives Foreign Language: Focus on mastering the four language skills (listening, speaking, reading, writing) and fluency and accuracy in communication. Case method and project-based learning are applied to deepen cultural context, vocabulary, and language structure. Other Disciplines: Emphasizes understanding of scientific concepts and principles, technical problem-solving skills, and real-world applications of knowledge (Hasni & Belletête, 2023); (Daryanes et al., 2023). 2. Case or Project Type Foreign Language: Cases or projects usually relate to real communication situations (e.g., simulated business conversations, narrative text creation, cultural presentations), thus emphasizing linguistic context and social interaction. Other Disciplines: Cases are more oriented towards solving conceptual or technical

(Google Workspace for Education, Moodle LMS, etc.). 4. Development of 21st Century Skills Both in foreign languages and science or technology, case method and project-based learning hone 21st-century skills such as problem-solving, critical thinking, creativity, and collaboration (Sismanto et al., 2024); (Suartama et al., 2023). Technology, such as Google Classroom or Google Docs/Slides, can strengthen aspects of collaboration and digital literacy.	problems, e.g., experiment design, analysis of scientific data, or development of technological prototypes. 3. Evaluation and Assessment Aspects Foreign Language: Assessment focuses on fluency, accuracy, and flexibility in language (speaking, writing) or text comprehension (reading, listening). Other Disciplines: Assessment tends to emphasize understanding of concepts, the validity of data or findings, and the ability to integrate theory with practice (Hasni & Belletête, 2023); (Daryanes et al., 2023). 4. Technology Learning Approach Foreign Language: Technology is utilized to enhance language skills interactively, for example, through speech-to-text, automatic grammar correction, or online collaboration in writing texts (Sharpe & Young, 2023). Other Disciplines: Technology is used for experiment simulation, 3D modeling, data analysis, or specialized learning management systems (Sismanto et al., 2024); (Suartama et al., 2023). 5. Scope of Application Foreign Language: This can be applied in a relatively small-scale classroom to practice language competence through authentic situations, group discussions, and collaborative text-based or oral projects. Science/Technology: Projects can be more extensive, involving laboratory, field research, or prototype development, that require more significant planning and technical resources.

The novelty that can be formulated in this research is developing case- and project-based models with implementation steps involving Google tools for foreign language learning. This collaboration allows for the creation of interactive and collaborative learning, thus forming a habit in students in problem-solving the process of understanding the material they encounter and maximizing the potential use of technology, especially in learning activities. The formulation of this novelty is also based on previous research, which states that "the case-method and project-based digital learning method module seeks to improve the quality of learning and prepare students to face challenges in the digital era. This research aims to complement previous studies on the application of Google tools in learning so that the utilization of Google tools in developing both collaborative learning models can be adequately formulated. Efforts to develop learning models are made to develop standardized learning steps, without any differences in perception in implementing them, so that both methods can be applied to foreign language learning following the characteristics of these methods by involving the use of technology.

CONCLUSION

The characteristics of learning in the Smart Society era require teachers to be able to teach with the "present." Using technology as a media is one of the efforts of teachers to present interactive and contemporary learning. The characteristics of students, who usually need additional encouragement to be actively involved in the learning process, make using technology helpful in increasing their motivation to learn. In addition, the technology used in learning becomes additional knowledge for the students to improve their digital literacy,

which is very much needed. Therefore, a case-solving and project-based learning approach supported by technology enables practical and learner-centered language learning.

Based on the questionnaire findings in Figure 2 to Figure 7, the lecturers in the four foreign language education programs have generally attempted to apply the case and project-based learning methods in the classroom. Almost all lecturers use both main steps. However, there are still significant obstacles to actively involving students and optimally integrating the two methods. On the other hand, most respondents have utilized Google tools (such as Google Docs and Google Slides) in foreign language learning. However, respondents stated that they still encounter obstacles in understanding its features. This obstacle indicates the need to include clear steps for utilizing Google Tools in the developed model.

The technology-enhanced collaborative problem-solving model attempts to standardize the learning steps in implementing case study and project-based learning in foreign language teaching using technology. Learners follow a series of learning actions that create collaboration and analysis of the given case so that at the end of each lesson, learners can produce language skills that conform to the rules of the language they are learning as practical actions. Collaborative problem-solving in this model focuses on a structured approach to problems that encourages creative and innovative thinking to find solutions to problems. This model can use digital tools such as Google Docs and Google Slides to improve students' language skills through creative and collaborative problem-solving and project-based tasks.

In a French lesson example with the theme *Raconter des expériences passé*, the teacher starts by asking sparking questions to relate the students' experiences during the semester break. Then, the teacher deepens the students' understanding with follow-up questions and presents a short narrative in French using Google Slides. Students are asked to identify the verb tenses used and then write short stories about their vacation experiences in groups using Google Docs. Throughout the process, the teacher provides guidance, monitors the possible use of automatic translators, and directs students to find additional information. Once the stories are finished, students present the results in class using Google Slides, accompanied by questions and answers and feedback from classmates. Finally, the teacher summarizes the material by emphasizing the difference between *passé composé* and *imparfait* and invites students to reflect on the learning process and aspects that still need improvement.

The developed model helps improve receptive and productive skills in foreign language learning. In the receptive aspect, students must analyze real cases through audio and text materials and discuss using 5W+1H questions to identify main ideas and important details, thus enhancing deep understanding. Meanwhile, in the productive aspect, students are encouraged to produce creative oral and written output through collaborative projects, which allows them to practice speaking and writing effectively. Utilizing technology such as Google Docs and Google Slides supports real-time collaboration and immediate feedback from teachers and classmates, so the whole learning process is holistic and interactive.

Further research recommendations related to the Technologies-supported Collaborative problem-solving learning model could focus on testing its effectiveness in various foreign language learning contexts, such as Japanese, Mandarin, French, or Arabic, to explore the adaptability of this model to cultural differences and language complexity levels. The research can also examine the application of the model in a broader context, involving a larger and more diverse sample size from various educational institutions. In addition, research can also explore the effect of the model on improving learners' digital literacy, critical thinking skills, and receptive and productive language skills in the long run. The development of the model based on new technologies, such as artificial intelligence or virtual reality, could also be the focus of research to create more immersive and personalized learning experiences. It is also recommended that more in-depth guidance and training on the use of technology be developed for teachers and students to overcome obstacles in understanding the Google tools feature. Research that involves analyzing teachers' and learners' needs for technology can provide further insights to enhance the implementation of this model at different levels of education.

REFERENCES

Adawiyah, A. Al, Arifin, A. S., & Prasetya, D. B. Y. (2023). The Gamifikasi Pembelajaran Berbasis Quizizz Sebagai Upaya Peningkatan Kompetensi Pemanfaatan Teknologi Pengajar. *Jurnal Pengabdian Nasional (JPN) Indonesia*, *4*(3), 608–615.

Bennett, N., Borg, W. R., & Gall, M. D. (1984). Educational Research: An Introduction. *British Journal of Educational Studies*, *32*(3), 274. https://doi.org/10.2307/3121583

Daryanes, F., Darmadi, D., Fikri, K., Sayuti, I., Rusandi, M. A., & Situmorang, D. D. B. (2023). The development of articulate storyline interactive learning media based on case methods to train students' problem-solving ability. *Heliyon*, *9*(4), e15082. https://doi.org/10.1016/j.heliyon.2023.e15082

Farikah, F., Mulyani, M., Astuty, A., & Cahyaningrum, A. (2022). Learning Case and Project-based Model Methods: Challenges and Opportunities. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, *6*(3), 492. https://doi.org/10.20961/jdc.v6i3.68120

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational Research: An Introduction* (8th, illustrated ed.). Pearson/Allyn & Bacon.

Gay, L. R. (1992). *Educational Research: Competencies for Analysis and Application*. Merrill.

Gustiani, S. (2019). Research and development (R&D) method as a model design in educational research and its alternatives. *Holistics (Hospitality and Linguistics): Jurnal Ilmiah Bahasa Inggris*, *11*(2), 12–22.

Hasni, A., & Belletête, V. (2023). Regards d'enseignants du secondaire au Québec sur l'enseignement et l'apprentissage par projet en sciences et technologie: place, significations et visées. *Canadian Journal of Science, Mathematics and Technology Education*, *23*(4), 622–643. https://doi.org/10.1007/s42330-023-00305-x

Husna, I. A., Syafrizal, Halimatussakdiah, Muliani, & Setiawan, T. (2024). Problem-based learning (PBL) with quizizz: improving student learning outcomes in optical instruments. *Jurnal Eduscience (JES)*, *11*(3), 488–497. https://doi.org/https://doi.org/10.36987/jes.v11i3.5979

Irani, N. K. C. P. (2022). Pemanfaatan Google Workspace For Education Bagi Guru Dalam Pembelajaran. *Metta: Jurnal Ilmu Multidisiplin*, *2*(3), 160–174. https://doi.org/10.37329/metta.v2i3.1795

Jamaludin, Yuswardi, Muttaqin, Mahmudi, A. A., Arni, S., Tantriawan, H., Ekowicaksono, I., Yulita, W., Iqbal, A., Sirait, H., Romindo, Resha, M., Sasongko, D., Ridho, F., & Simarmata, J. (2022). *Google Workspace for Education Platform Pendidikan Digital: Konsep dan Praktik*. Yayasan Kita Menulis.

Jos Daniel Parera. (1993). *Leksikon Istilah Pembelajaran Bahasa* (Cetakan 1). Gramedia Pustaka Utama.

Krajcik, J. S., & Blumenfeld, P. C. (2006). Project-based learning. In *The Cambridge Handbook of The Learning Sciences* (pp. 317–333). Cambridge University Press.

Liu, G.-Z., Wu, N.-W., & Chen, Y.-W. (2013). Identifying emerging trends for implementing learning technology in special education: a state-of-the-art review of selected articles published in 2008-2012. *Research in Developmental Disabilities*, *34*(10), 3618–3628. https://doi.org/https://doi.org/10.1016/j.ridd.2013.07.007

Mulyati, Y. (2014). *Hakikat keterampilan berbahasa*. PDF Ut. ac. id.

Nuri Rohmatun. (2014). *Upaya peningkatan keterampilan menulis bahasa jerman peserta didik kelas xi bahasa man purworejo melalui kartu quartett*. Universitas negeri yogyakarta.

Prahitaningtyas, A. (2023, February 19). *Kenali Google Workspace for Education Lebih Dekat - REFO*. REFO Indonesia. https://www.refoindonesia.com/en/kenali-google-workspace-for-education-lebih-dekat-2/

Rahmat, A., Arif, M., Mirnawati, M., Azizah, S., Lestari, L. P., Aliyyah, R. R., Sarimanah, E., Sushanty, V. R., & Suharyati, H. (2023). *Desain Pembelajaran Berbasis Kasus*. Ideas Publishing.

Ridlo, S. (2021). *Pembelajaran dan Penilaian Team-based Project dan Case Method*.

Rofii, A., Murtadho, F., & Rahmat, A. (2018). Model of Contextual-Based Academic Writing Learning Module. *English Review: Journal of English Education*, *6*(2), 51–60. https://doi.org/10.25134/erjee.v6i2.1242

Sartinah Hardjono. (1988). *Prinsip-prinsip Pengajaran Bahasa dan Sastra*. Depdikbud.

Scissors, J. (2021, June 21). *Instructional Benefits to Integrating Google Docs and Google Slides*. The Kennedy Center. https://www.kennedy-center.org/education/resources-for-educators/classroom-resources/articles-and-how-tos/how-tos/instructional-benefits-to-integrating-google-docs-and-google-slides/

Sharpe, S., & Young, G. (2023). Using Google Classroom as Assistive Technology in Universally Designed Classrooms. *Canadian Journal of Learning and Technology*, *49*(1), 1–17. https://doi.org/10.21432/cjlt28456

Sismanto, S., Cikusin, Y., & Mistar, J. (2024). Challenges and Strategies in Adopting Google Workspace for Education: Perspectives from Educational Leaders in Indonesia. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4758623

Sklyar, V., & Kharchenko, V. (2020). *Case-Based and Project-Based Methods for Effective E-learning in ICT Safety and Security*. https://www.researchgate.net/profile/Vladimir-Sklyar/publication/348139391_Case-Based_and_Project-Based_Methods_for_Effective_E-learning_in_ICT_Safety_and_Security/links/5ff0104845851553a010fe5f/Case-Based-and-Project-Based-Methods-for-Effective-E-learning-in-ICT-Safety-and-Security.pdf

Suartama, I. K., Simamora, A. H., Susiani, K., Suranata, K., Yunus, M., & Tisna MS, G. D. (2023). Designing gamification for case and project-based online learning: A study in higher education. *Journal of Education and E-Learning Research*, *10*(2), 86–98. https://doi.org/10.20448/jeelr.v10i2.4432

Sugiyono. (2013). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D*. Alfabeta.

Tagliante, C. (2005). *L'évaluation et le Cadre européen commun, nouvelle édition*. CLE International/SEJER.

Winatha, I. K., Rusman, T., Suroto, Rahmawati, F., Wijoyo, H., Fitriani, N., & Afriyanto, V. N. (2024). Modul Pembelajaran Digital Berbasis Case Method dan Team Based Project untuk Meningkatkan Kreativitas Siswa. *Jurnal Pengabdian Sosial Indonesia*, *4*(4), 167–174. https://jurnal.fkip.unila.ac.id/index.php/JPSI/article/view/32707

Wulandari, D., Partiwi, S. G., Cahyono, E., Kusumawardani, S. S., & Arifin, S. (2023). *Panduan implementasi pembelajaran berpusat pada mahasiswa.* . Direktorat Jenderal Pendidikan Tinggi Kementerian Pendidikan dan Kebudayaan RI.

Yang, M.-Y., You, M., & Chen, F.-C. (2005). Competencies and qualifications for industrial design jobs: implications for design practice, education, and student career guidance. *Design Studies*, *26*(2), 155–189. https://doi.org/10.1016/j.destud.2004.09.003

Zambrano, J., Kirschner, F., Sweller, J., & Kirschner, P. A. (2019). Effects of group experience and information distribution on collaborative learning. *Instructional Science*, *47*(5), 531–550. https://doi.org/10.1007/s11251-019-09495-0