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Developing English Listening Learning Model Infused with Project-Based Learning and Digital Scholarship for Autonomous Learners

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ABSTRACT

This study aims to develop an English listening learning model infused with project-based learning and digital scholarship for autonomous learners. Digital scholarship (DS) is one element of eco-literacy that uses digital tools and technologies to make teaching and learning easier. Project-based learning (PjBL) is much better at offering contextualized, hands-on learning experiences that encourage critical thinking in the face of challenging problems. The descriptors of autonomous learners are infused into the existing learning model to create a dynamic and enriching educational experience for autonomous 10th-grade students. Conducted at a senior high school in Bogor, West Java province, the four steps of modified design and development research—need analysis, design, development, and evaluation—were applied in this study. The data were gathered by observation, interviewing, and syllabus analysis of the existing learning paradigm and reviewing pertinent research on PjBL, DS, autonomous learning, and listening comprehension. After a review of the relevant literature, it was discovered that three of eleven PjBL descriptors, five of the twenty-five DS descriptors, six of eleven B1 listening skill descriptors, and two of eleven autonomous learner descriptors had been included in the current learning model. A conceptual framework is used to develop the existing learning model to be an English listening learning model infused with project-based learning and digital scholarship for autonomous learners.

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I. INTRODUCTION

In the contemporary era, characterized by globalization and rapid technological advancements, English language proficiency has emerged as a crucial asset for individuals and societies alike. The demand for effective English language learning models has never been more pronounced. Traditional classroom-based instruction, while valuable, often falls short in equipping learners with the skills necessary to navigate the complex and dynamic challenges of the 21st century (Brown, 2001).

English listening is a crucial language skill for effective communication. Autonomous learners play a vital role in their language learning journey. While numerous studies have explored English listening learning strategies, there is a growing emphasis on autonomous learning (e.g. Benson, 2007). Additionally, project-based learning (PjBL) and digital scholarship have emerged as promising pedagogical approaches (e.g. Thomas & Brown, 2011; Selwyn, 2012). Despite the potential benefits of PBL and digital scholarship for language learning, there is a dearth of research on their integration into English listening instruction, particularly for autonomous learners.

Despite the potential benefits, current educational paradigms often lack comprehensive integration of DS markers. Our research, grounded in frameworks by Boyer (1990), Borgman (2007), and Oxford Digital Scholarship (2010), aims to bridge this gap. Through a modified design and development research approach, we conducted need analysis, design, development, and evaluation phases. Data were collected via observations, interviews, and syllabus analysis, revealing that only five of the twenty-five DS markers were present in existing curricula.

This research is situated within the broader context of English language teaching and learning, with a particular focus on developing effective approaches for autonomous learners. The paper will explore the theoretical underpinnings of PjBL and digital scholarship, discuss their potential benefits for English language learning, and present a detailed description of the proposed model. Additionally, the paper will address the challenges and limitations of implementing such a model and offer recommendations for future research and practice.

Key studies have highlighted the benefits of PjBL in fostering critical thinking, problem-solving, and collaborative skills (Thomas & Brown, 2011). Additionally, digital scholarship has been shown to enhance learner engagement, motivation, and access to diverse resources (Selwyn, 2012). However, few studies have explicitly examined the integration of these two approaches in the context of English listening learning, particularly for autonomous learners.

Existing research has also touched upon the importance of autonomy in language learning (Deci & Ryan, 2000). Autonomous learners are more likely to be motivated, engaged, and successful in their language studies. By combining PjBL and digital scholarship, we can create a learning environment that supports autonomy by providing learners with opportunities for self-directed learning, choice, and responsibility.

While existing research offers valuable insights, it is important to note that the specific context of English listening learning and the unique characteristics of autonomous learners require further investigation. By addressing the research gap identified in this study, we aim to contribute to a more comprehensive understanding of the potential benefits and challenges of integrating PjBL and digital scholarship in English listening learning for autonomous learners.

This study mainly aims to address this gap by developing a comprehensive English listening learning model that incorporates PjBL and digital scholarship to foster autonomous learning. In detail, this study aims to analyze and describe the use of a project-based learning model of English listening infused with digital scholarship for tenth graders; to analyze and describe the procedure of developing a project-based learning model of English listening infused with digital scholarship for tenth graders; to develop project-based learning model of English listening infused with digital scholarship for tenth graders. The proposed model draws on theoretical frameworks from constructivism (e.g., Vygotsky in 1978), sociocultural theory (e.g. Lantolf & Thorne in 2007), and self-directed learning (e.g. Knowles in 1975).

Therefore, this study will investigate the following research questions: ‘To what extent have the existing learning model in English listening class of tenth graders employed project-based learning and been infused with digital scholarship?’ and ‘How is the design of the project-based learning model of English listening infused with digital scholarship for tenth graders?’ By addressing these research questions, this study seeks to contribute to the field of English

language teaching by providing a practical and innovative model that can enhance English listening comprehension and empower learners to take charge of their own language learning. The model will be designed to foster autonomous learning and enhance listening comprehension. Relevant theoretical frameworks and empirical studies are discussed. The rationale for selecting these sources is explained. The research questions guiding the study are clearly stated. These questions will be addressed through the proposed model and its implementation.

II. METHODS

This study was conducted in a senior high school in Bogor, West Java, Indonesia. The English teacher has language teaching experience for years. He is quite active in joining activities related to teacher professional development provided by the Indonesian regional government. Therefore, his teaching is always supported by technology. This is the reason why the researchers recruited him as a participant in this study. The existing learning model was collected from the tenth graders especially the class where he teaches.

The research design of this study is design development research or DDR. Design development research is a methodological approach commonly used in educational research to design, develop, and evaluate innovative educational materials, programs, or interventions. It is particularly suitable for contexts where there is a need to create new or improved educational resources that address specific learning challenges or goals. Key characteristics of design development research are iterative process, focus on practicality, emphasis on evidence, and collaboration. Iterative process means that the research involves multiple cycles of design, development, evaluation, and revision. This allows researchers to refine their approach based on feedback and insights gained from each iteration. While focus on practicality means that the goal is to create practical and usable educational resources that can be implemented in real-world settings. Emphasis on evidence means that the research process involves collecting and analyzing data to support the effectiveness of the designed materials or programs. Finally, collaboration means that design development research often involves collaboration between researchers, educators, and other stakeholders to ensure that the final products meet the needs of learners and teachers (McDonough and Prieto, 2005; Fullan and Langworthy, 2006; Reeves, 2006; Tashakkori and Teddlie, 2009).

Stages of design development research are need analysis, design, development, and evaluation. In need analysis, the specific needs or problems that the educational resource aims to address were identified. This phase starts with collecting the existing syllabus documents and observing the live classroom where the teacher observed the model from several schools. The researcher also conducted library research to look for reviews of literature on project-based learning, autonomous learning, learning model concept and components, syllabus components, theory of language and learning, listening skills, and digital scholarship. Then the phrases or words inside of the existing syllabus documents are analyzed using descriptors of project-based learning, learning model, syllabus components, and digital scholarship. Additionally, the researcher conducted in-depth interviews with teachers. This is to verify the model used in teaching and learning activity and see how far learning models are used. Additionally, library research to identify the challenges and deficiencies in speaking skills among tenth graders and understand the preferences of tenth-grade students regarding English speaking skills. Furthermore, after doing the literature review, the researcher formulated indicators for Digital Scholarship, and Case-Based Learning. In design, initial prototypes or drafts of the educational resource based on the identified needs were created. In development, the prototypes based on feedback and evaluation were refined and improved. In evaluation, the effectiveness of the educational resource in achieving its intended goals was assessed by collecting data. However, researchers only did the research until the design phase.

III. RESULT AND DISCUSSION

Analyzing the existing learning model

The result of analysis on existing learning model components shows that project-based learning has been infused in existing learning model but not all descriptors have been infused in the components. The third, fifth, and eighth descriptor of PjBL (PJ3, PJ5, and PJ8) was the most descriptors that were infused in existing learning model components, namely learning objectives, learning materials, media, activities, and assessment. The ninth, tenth, and eleventh descriptors of PjBL (PJ9, PJ10, and PJ11) were the least descriptors that were infused in existing learning model components. All of them were infused in activities and assessment. The detailed results of the analysis of project-based learning in existing learning model components were presented in table below (Table 1).

Table 1. Analysis Results of Project-Based Learning (Krajcik et al. 2000) in Existing Learning Model Components

No.	Code	Project-Based Learning Descriptors	Existing Learning Model Components							Total
			C1	C2	C3	C4	C5	C6	C7	
1	**PJ1**	Igniting curiosity and guides anchored by a central, open-ended question or problems.	-	-	-	✓	-	✓	✓	**3**
2	**PJ2**	Achieving specific learning goals aligned with the curriculum.	-	✓	✓	✓	-	-	-	**3**
3	**PJ3**	Fostering deeper engagement and relevance for students connected to real-world problems or scenarios.	-	✓	✓	✓	-	✓	✓	**5**
4	**PJ4**	Actively participating in planning, researching, and completing the project.	-	✓	✓	-	-	✓	✓	**4**
5	**PJ5**	Involving teamwork and collaboration, allowing students to develop communication, negotiation, and problem-solving skills while working towards a common goal.	-	✓	✓	✓	-	✓	✓	**5**
6	**PJ6**	Having some degree of choice in how to approach the project, allowing for differentiation and catering to diverse learning styles.	-	-	-	-	-	✓	✓	**2**

7	**PJ7**	Creating tangible outputs such as presentations, models, prototypes, or performances that showcase student learning.	-	-	✓	✓	-	✓	✓	**4**
8	**PJ8**	Using technology as a tool to support research, communication, and the creation of final products.	-	-	✓	✓	✓	✓	✓	**5**
9	**PJ9**	Evaluating students' understanding through their project work and presentations.	-	-	-	-	-	✓	✓	**2**
10	**PJ10**	Asking questions, research, analyze information, and draw conclusions.	-	-	-	-	-	✓	✓	**2**
11	**PJ11**	Reflecting on their learning journey, including successes, challenges, and areas for improvements.	-	-	-	-	-	✓	✓	**2**

Note: **C1 =** Basic Information; **C2 =** Learning Outcomes; **C3 =** Learning Objectives; **C4 =** Learning Materials; **C5 =** Media; **C6 =** Activities; and **C7 =** Assessment

The result of analysis on existing learning model components shows that digital scholarship has been infused in existing learning model but not all descriptors have been infused in the components. There are five digital scholarship descriptors that are infused in existing learning model components. The eleventh descriptor (MO2) is infused in learning materials. The twelfth, thirteenth, and fourteenth descriptors (MO3, CO1, dan CO2) are infused in the activities. The twenty first descriptor (DS3) is infused in the learning objective. The detailed results of the analysis of digital scholarship in existing learning model components were presented in table below (Table 2).

Table 2. Analysis Results of Digital Scholarship Descriptors (Cobo & Naval, 2013; Pearce et al., 2012; Scanlon, 2018) in Existing Learning Model Components

No.	**Descriptor of Digital Scholarship**	**Code**	**Learning model components**						
			C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
1.	Using digital tools for research, data analysis, publishing, and sharing academic work.	**RE1**	-	-	-	-	-	-	-
2.	Providing new ways to collect, analyze, and present data more efficient and innovative.	**RE2**	-	-	-	-	-	-	-
3.	Leveraging digital platforms in increasing the accessibility of academic work.	**RE4**	-	-	-	-	-	-	-
4.	Using open-access to share the academic work.	**AC1**	-	-	-	-	-	-	-
5.	The research data is free accessible.	**AC2**	-	-	-	-	-	-	-

6.	Sharing pre-results online before formal peer review.	**AC3**	-	-	-	-	-	-	-
7.	Updating blog or social media profiles with relevant content and research updates.	**DP1**	-	-	-	-	-	-	--
8.	Growing number of followers on website or social media, indicating a strong interest in the academic work.	**DP2**	-	-	-	-	-	-	-
9.	Engaging interactions through discussion and interaction online.	**DP3**	-	-	-	-	-	-	-
10.	Incorporating interactive display in their presentation.	**MO1**	-	-	-	-	-	-	-
11.	Using multimedia such as videos, audio clips, or animations regularly to enhance presentation.	**MO2**	-	-	-	✓	-	-	-
12,	Presenting data through visualization such as charts, graphs, and infographics to aid understanding of the concept.	**MO3**	-	-	-	--	-	✓	-
13.	Getting along in collaborating with peers in doing the project.	**CO1**	-	-	-	-	-	✓	-
14.	Involving in giving different viewpoints.	**CO2**	-	-	-	-	-	✓	-
15.	Actively communicating thoughts in open-mindedness.	**CO3**	-	-	-	-	-	-	-
16.	Downloading digital resources frequently, indicating high interest.	**UD1**	-	-	-	-	-	-	-
17.	Receiving substantial number of views of the digital resources.	**UD2**	-	-	-	-	-	-	-
18.	Interacting significantly with the digital resources.	**UD3**	-	-	-	-	-	-	-
19.	Navigating digital environments effectively	**DS1**	-	-	-	-	-	-	-
20.	Evaluating an understanding of digital concept.	**DS2**	-	-	-	-	-	-	-

21.	Demonstrating the use of various digital tools and software for academic and research purposes.	**DS3**	-	-	✓	-	-	-	-
22.	Applying the digital skills in completing assignments, projects, and activities efficiently.	**DS4**	-	-	-	-	-	-	-
23.	Showing how the use of latest digital tools.	**TA1**	-	-	-	-	-	-	-
24.	Showing the up-to-date with the latest digital trends.	**TA2**	-	-	-	-	-	-	-
25.	Finding unique and creative ways to use digital tools in research purposes.	**TA3**	-	-	-	-	-	-	-

Note: **C1 =** Basic Information; **C2 =** Learning Outcomes; **C3 =** Learning Objectives; **C4 =** Learning Materials; **C5 =** Media; **C6 =** Activities; and **C7 =** Assessment

The result of analysis on existing learning model components shows that B1 listening skill has been infused in existing learning model but not all descriptors have been infused in the components. There are six B1 listening skill descriptors that are infused in existing learning model components. The descriptors are the first descriptor (UC1), third descriptor (UM2), fifth descriptor (UR1), sixth descriptor (WT1), and eighth descriptor (WT3). All descriptors are infused in learning objectives, learning materials, activities, and assessment. The detailed results of the analysis of B1 listening skill in existing learning model components were presented in table below (Table 3).

Table 3. Analysis Results of B1 Listening Skill Descriptors (CEFR) in Existing Learning Model Components (CEFR, 2018)

No.	Listening competences	Listening descriptors	Code	Learning model components						
				C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
1.	Understanding conversation between other people	Can generally follow the main points of extended discussion around him/her, provided speech is clearly articulated in standard dialect	**UC1**	-	-	✓	✓	-	✓	✓
2.	Understanding as a member of live audience	Can follow a lecture or talk within his/her own field, provided the subject matter is familiar and the presentation straightforward and clearly structured	**UM1**	-	-	-	-	-	-	-
		Can follow in outline straightforward short talks on familiar topics provided these are	**UM2**	-	-	✓	✓	-	✓	✓

		delivered in clearly articulated standard speech.								
3.	understanding announcements and instructions	Can understand simple technical information, such as operating instructions for everyday equipment.	**UA1**	-	-	-	-	-	-	-
		Can follow detailed directions.	**UA2**	-	-	-	-	-	-	-
		Can understand public announcements at airports, stations and on planes, buses and trains, provided these are clearly articulated with minimum interference from [auditory/visual] background noise	**UA3**	-	-	-	-	-	-	-
4.	Understanding radio, audio, and recordings	Can understand the information content of the majority of recorded or broadcast audio material on topics of personal interest delivered in clear standard speech.	**UR1**	-	-	✓	✓	-	✓	✓
		Can understand the main points of radio news bulletins and simpler recorded material about familiar subjects delivered relatively slowly and clearly.	**UR2**	-	-	✓	✓	-	✓	✓
5.	Watching television and film	Can understand a large part of many TV programmes on topics of personal interest such as interviews, short lectures, and news reports when the delivery is relatively slow and clear.	**WT1**	-	-	✓	✓	-	✓	✓
		Can follow many films in which visuals and action carry much of the storyline, and which are delivered clearly in straightforward language.	**WT2**	-	-	-	-	-	-	-
		Can catch the main points in TV programmes on familiar topics when the delivery is relatively slow and clear.	**WT3**	-	-	✓	✓	-	✓	✓

Note: **C1** = Basic Information; **C2** = Learning Outcomes; **C3** = Learning Objectives; **C4** = Learning Materials; **C5** = Media; **C6** = Activities; and **C7** = Assessment

The result of analysis on existing learning model components shows that autonomous learning skill has not been much infused in existing learning model. There are only two descriptors from eleven descriptors. The two descriptors are third (CS3) and eighth descriptors (AS3). The third descriptor was infused in activities and assessment. The eighth descriptor also was infused in activities and assessment. The detailed results of the analysis of autonomous learning skills in existing learning model components were presented in table below (Table 4).

Table 4. Analysis Results of Autonomous Learner Descriptors (Holec, 1981) in Existing Learning Model Components

No.	Autonomous Learner Components	Autonomous Learner descriptors	Code	Learning model components						
				C1	C2	C3	C4	C5	C6	C7
1.	Cognitive skills	can effectively set clear, achievable learning goals and identify resources needed to attain them	**CS1**	-	-	-	-	-	-	-
		possess a repertoire of learning strategies and can choose the most appropriate ones based on the learning task or material	**CS2**	-	-	-	-	-	-	-
		can analyze information, evaluate their progress, and identify areas for improvement	**CS3**	-	-	-	-	-	✓	✓
2.	Metacognitive skills	demonstrate an awareness of their own strengths, weaknesses, learning styles, and preferred learning environments	**MS1**	-	-	-	-	-	-	-
		can effectively plan their learning activities and reflect on their progress to adapt their approach as needed	**MS2**	-	-	-	-	-	-	-
3.	Action-oriented skills	can effectively manage their study time, prioritizing tasks and meeting deadlines	**AS1**	-	-	-	-	-	-	-
		are skilled at finding and critically evaluating learning resources to support their goals	**AS2**	-	-	-	-	-	-	-
		can actively engage in learning activities without constant teacher intervention	**AS3**	-	-	-	-	-	✓	✓
4.	Affective skills	possess a strong intrinsic motivation to learn and are driven by a desire for personal growth and knowledge acquisition	**FS1**	-	-	-	-	-	-	-

	believe in their ability to succeed and are persistent in the face of challenges	**FS2**	-	-	-	-	-	-	-
	demonstrate a sense of ownership for their learning and take responsibility for their academic success	**FS3**	-	-	-	-	-	-	-

Note: **C1 =** Basic Information; **C2 =** Learning Outcomes; **C3 =** Learning Objectives; **C4 =** Learning Materials; **C5 =** Media; **C6 =** Activities; and **C7 =** Assessment

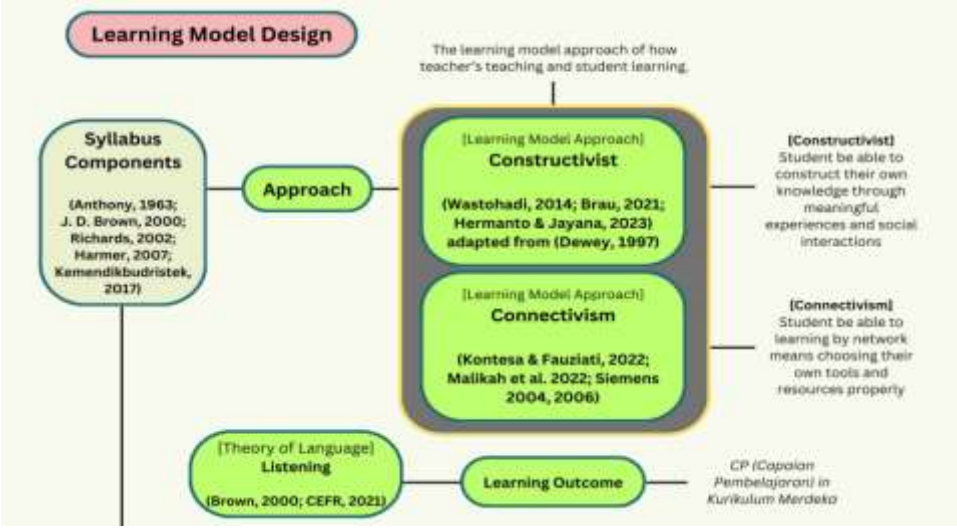
The results of analysis on the existing learning model above show that the least skill infused in the learning model is autonomous learning skills because only two descriptors are infused in two learning model components and digital scholarship skills because only five from twenty five descriptors are infused in three learning model components. In order to develop a project-based learning model of English-listening infused with digital scholarship for autonomous learners, the researchers need to infuse more descriptors of autonomous learners and digital scholarship to the existing learning model. The conceptual framework of infusing autonomous learning skills to the existing learning model is presented in the following section.

The Development of Project-Based Learning Model of English-listening Infused with Digital Scholarship for autonomous learners

This section focuses on the answer of the following research question: 'How is the design of the project-based learning model of English listening infused with digital scholarship for tenth graders?' As it has been explained in literature review, a learning model consists of approach, method, and technique. To develop a project-based learning model of English-listening infused with digital scholarship for autonomous learners, it is clear that the approach, method, and techniques need to be determined. In determining an approach, the thing that should be considered is the way of teaching and the way of learning. An approach can be determined by selecting the theory of learning and theory of language which is suitable to the learning model that the researchers designed. The theory of learning adopted for this learning model is from Dewey (1997) which is related with constructivism (Cruickshank et al., 2006) and connectivism by Siemens (2004) as a supported theory for Digital Scholarship. It stated that students are able to learning by network means choosing their own tools and resources properly. Cruickshank et al. (2006) stated that students are able to construct their own knowledge through meaningful experiences and social interactions. Project-based learning and autonomous learning are designed from connectivism and constructivist theory of learning. In other words, project-based learning (PjBL) and autonomous learning are indeed grounded in connectivism and constructivism theories of learning. Constructivists believe that students are able to construct their own knowledge through meaningful experiences and social interactions. In connectivism, students are required to be able to learn by networking. It means they should choose their own tools and resources properly. These two learning objectives could be reached by doing projects in an autonomous way. In order to follow the national curriculum, the researchers develop the

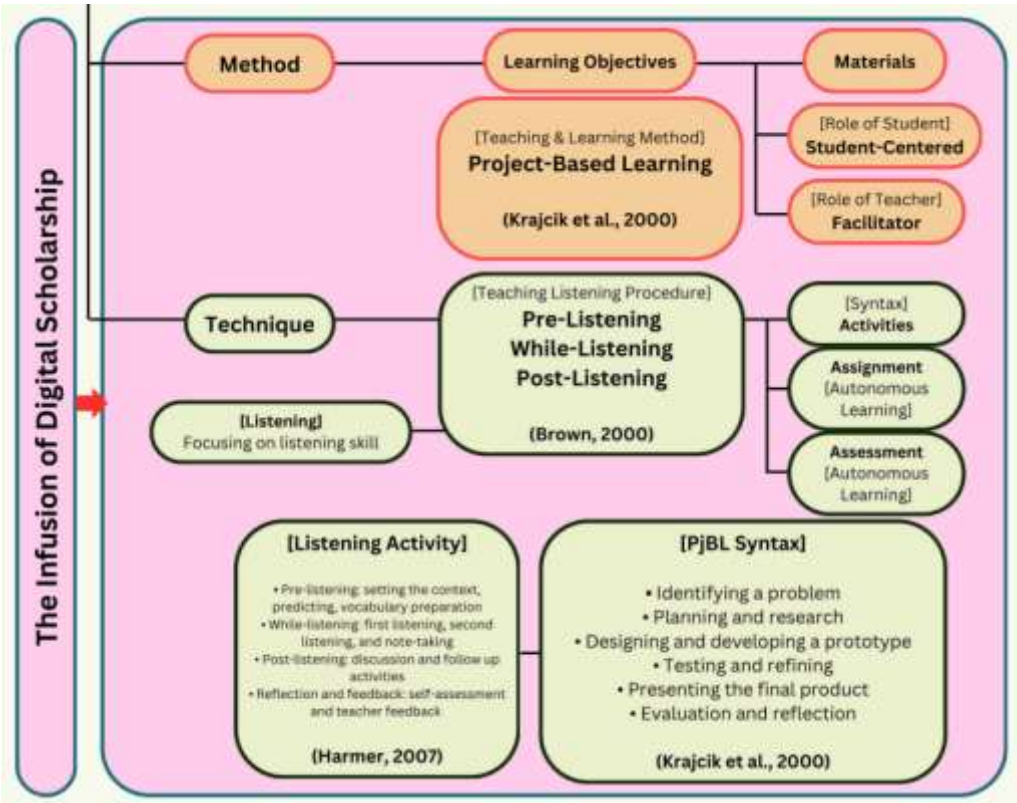
learning model by referring to theory of language for listening skills from Brown (2000), CEFR (CEFR, 2018) and Kemendikbudristek (2022). It stated that students learn and acquire new knowledge through information processing and correlating with prior knowledge. The learning outcome adjusted with the indicators of CEFR (2018) designed for tenth graders and Kurikulum Merdeka by Kemendikbudristek (2022). The following figure (Figure 1) visualizes the explanation of how the two theories are connected to one another.

Figure 1. The Approach of Project-based learning model design



Method is the overall plan to reach learning objectives by selecting learning objectives, materials, role of teacher and students, and learning activities (Anthony, 1963; Brown, 2000; Jack C. Richards, 2002). In project-based learning, students play a role as the one which learning is centered on and the teacher plays a role as facilitator. Technique describes activity, practices, tactics, time allocation, media used in learning and teaching activity (Brown, 2000). In Joyce's model of teaching, technique is similar with syntax which definition is a systematic sequence of action (Joyce et al., 2015). The steps of learning in this learning model were implemented project-based learning syntax; 1) identifying a problem, 2) planning and research, 3) designing and developing a prototype, 4) testing and refining, 5) presenting the final product, and 6) evaluation and reflection. Listening activity starts from pre-listening where the teacher sets the context, predicts and prepares vocabulary. It continues while-listening activities where the teacher plays the recording as an audio text for at least three times while students are taking notes. In post-listening, teacher and students discuss the materials and do follow up activities. At the end, they do reflection by doing self-assessment and the teacher ends the class by giving feedback. However, in autonomous learning, the students have to do the activities on their own. Therefore, the teacher needs to create individual assignments and self-assessments, also self-rubric to measure how much the students improve on listening comprehension. In order to apply project-based learning, referring to syntax presented in the following figure (Figure 2), the teacher needs to give instruction to the student to identify a problem, testing, presenting, and reflecting individually. The other stage could be done with their friends, namely planning, researching, designing and developing a prototype, and evaluating the prototype.

Figure 2. The Method and Technique of Project-based learning model design



The amount of descriptors of digital scholarship infused in method and technique of teaching and learning is optional. The infusion of digital scholarship into the method of technique depends on the needs of the learners. How much the digital scholarship skills are needed by them could be identified by giving open ended questionnaires and conducting an interview. This also could be determined from the learning outcome set by the national curriculum or learning outcome in CEFR as a standard from the Council of Europe.

IV. CONCLUSION AND SUGGESTION

Analysis and development on existing learning model for tenth graders have been done by answering the two research questions: 'To what extent have the existing learning model in English listening class of tenth graders employed project-based learning and been infused with digital scholarship?' and 'How is the design of the project-based learning model of English listening infused with digital scholarship for tenth graders?' The results of need analysis as the answer of the first research question show that there are three descriptors of project-based learning have been mostly infused in the existing learning model, namely PJ3, PJ5, and PJ8 which are infused in five learning model components, namely learning objectives, learning materials, media, activities, and assessment; there are five digital scholarship descriptors (infused in different learning model components) that are infused in existing learning model components; there are six B1 listening skill descriptors (infused in learning objectives, learning materials, activities, and assessment) that are infused in existing learning model components; and there are only two descriptors from eleven descriptors of autonomous learner (infused in activities and assessment) that are infused in existing learning model components.

In order to answer the second research question, there is a conceptual framework that can be followed in developing the existing learning model into a project-based learning model of English-listening infused with digital scholarship for autonomous learners. In doing so, it is clear that the approach, method, and techniques need to be determined. An approach could be determined by selecting theory of learning and teaching. Method could be determined by selecting learning objectives, learning materials, and the role of students and teachers. Techniques could be determined by planning teaching procedures, learning activities, assignments, assessments from theory of teaching and learning as well as theory of language.

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