DEVELOPING A PROJECT BASED LEARNING MODEL INCORPORATING PRIOR KNOWLEDGE ACTIVATION FOR TEACHING WRITING

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ABSTRACT

This research is aimed at developing a project-based learning model incorporating prior knowledge activation for teaching writing. Teaching writing is challenging since the skill comprises linguistic and cognitive aspects. Writing is a process of pouring ideas into text which involve cognitive domain; therefore, a model for teaching writing needs to be tailored so that learners can learn writing and improve their skill. This study is a Design and Development research comprising 5 stages namely analysis, design, development, implementation and evaluation (ADDIE). Through analysis, questionnaires were distributed to second grade students of MAN 5 Jombang. Interviews were also conducted with 2 teachers who taught writing to explore needs and problems in teaching writing. Then, design and development of the model was conducted, followed by implementing the model in MAN 5 Jombang. The result of analysis showed that students preferred learning model that involve them actively. In addition, students also stated that learning to write required knowledge regarding topics and other aspect related to writing such as grammar, mechanic and vocabulary. The model developed in this study employed project-based learning incorporating with prior knowledge. Thus, students learned in a project atmosphere, while prior knowledge activation was integrated in each phase to help them retrieve past knowledge and improve their writing. The result of pre and post-test showed that the model successfully improved students' writing score from 50,39 to 86,21. The questionnaires distributed in evaluation stage revealed that students enjoyed the atmosphere of project-based learning and felt they understood the material better. In conclusion, the model successfully fixed learning atmosphere and improved students' writing skill.

Keywords: project-based learning, prior knowledge, writing

INTRODUCTION

Teaching and learning in a vocational education institution should be based on students centred learning (Roemintoyo and Budiarto, 2023). It means that the teaching and learning process must aim at developing skills, especially those required by the workplace. In reference to the need of vocational education, it is necessary to implement a teaching approach that prepares learner with job-related skills such as teamworking, communication and problem solving. Project-based learning (PBL) is an approach that has been implemented in various fields of education background. PBL does not only influence academic skills, but also non-academic skills. Bell, (2010) stated that project-based learning is an important strategy in creating independent thinkers and learners. In an environment of project-based learning, learners solve real-world problems by designing their own inquiries, planning their learning, organizing their research and implementing multiple learning strategies. As a learning approach that is rooted from constructivism, project-based learning entails the construction of knowledge with multiple perspective within a social activity and allows for self-awareness of learning and knowing while being context dependent (Duffy & Cunningham, 1996 in Tamim & Grant, 2013)

In classroom setting, project-based learning is also used to teach language especially English. Pham, (2019) stated that in project environment four language skills are integrated. Thus, learners use language authentically. A study conducted by Wardani et al., (2021) revealed the effects of project-based learning. It stated that PBL impacted five aspect of students' writing skill namely; content, structure, organization, vocabulary and mechanic. PBL also encouraged students to collaborate which helped them to work in a team. The study also reported positive impacts in terms of students' critical thinking and problem-solving skill. Those two studies, showed that the use of PBL could create supporting atmosphere in the classroom. Thus, it can be concluded that PBL can be used in language classrooms since it develops students' skills in language, as well as job-related skills required in the workplace.

Project-based learning is implemented through some stages that are aimed to conduct different activities. Perkin (2023) proposed five stages of project-based learning that is integrated with Bloom's Taxonomy. For example, the first stage which is planning is based on Bloom's cognitive area, specifically to understand and remember. The second stage is launching the project, which is based on Bloom's taxonomy to create. The third stage is implementation, which is based on Bloom's taxonomy to understand and remember. The fourth and fifth are conclusion and debrief. Those stages are based on Bloom's to create and evaluate. However, this model did not consider the need to address other aspects in writing such as the function of writing. According to Cheung (2016) writing did not only connect with sentence accuracy but also with discourse that focus to the purposes of writing such as writing description, comparison or contrast. In other words, writing must also pay attention to particular type of communication.

In addition to the theory proposed previously, another theory proposed by Stoller (2002) in Richards & Renandya, (2002). The stages are aimed specifically to

project-based learning in language classroom. In general, the steps proposed by Stoller (2002) have basic steps similar to other theories. However, the theory proposed by Stoller (2002) adds some steps that are directed to provide students with language demands needed for the next step. There are three steps specific for providing language for students. Students are given language preparation before they continue to the next step. The steps of project-based language learning proposed by Stoller comprises of the following; agree on a theme for project, determine the final outcome, structure the project, prepare students for language demands of step 5, gather information, prepare students for language demands for step 7, compile and analyse information, prepare students for language demands of step 9, present final product, evaluate the project.

A study conducted by (Musa, (2011) in Information Science and Technology revealed the practice of project-based learning in Workplace Communication course. The findings of this study indicated positive result as students perceive the integration of project-based learning give many benefits. The characteristic of project-based learning that are students centred and teacher facilitated provide opportunities for students to engage more and to focus on process. In conclusion, applying project-based learning to add more meanings in English based course has enhanced students' skill that are related to workplace such as teamworking, managing conflicts, decision making and communication skills. Therefore, it is essential to apply project-based learning in the teaching of English both EFL and ESP.

Writing is one of basic language skills that has to be mastered by students, especially those who learn English. Writing is one of productive skills that is seen as important ability in foreign language learning (Pratama et al., 2018). Writing is also a major language skill to master since it has some functions. Referring to Klimova (2012) writing has a key social and educational role. Walsh (2010) also said that writing plays essential function in a career for professional communication. Therefore, writing is required in workplace. The skill is used in some part of workplace in reference to its function as communication medium and in duties related jobs. Writing is said to be asynchronous activity in nature (Joe and Shin 2012 in (Shin & Kwon, 2021). It means that writing is not restricted by time. Writing e-mail, keeping a diary and creating documents are some examples of the asynchronous nature of writing. Those that have been mentioned previously are some evidences that writing relates to tasks in the workplace.

In addition, writing is one of language skills that is seen as an important ability in foreign language learning (Pratama et al., 2018). It is not merely a means to communicate ideas and opinion, but ability to write reflects the process of thinking. As one of language skill writing is also needed in the workplace. There are duties related jobs that need writing such as writing email, writing report, writing business proposals and many more (Perinpasingam, 2015). Therefore, implementing project-based learning in teaching writing can be seen as an opportunity to significantly improve the skills. Improving writing skills can indirectly increase the opportunity to get jobs.

In reference with writing, several studies reported that writing is not an easy

skill. Renandya et al., (2020) stated that writing is difficult since it requires linguistic and cognitive ability both for L1 and L2 learners. Isleem (2012) added that writing covers cognitive processes, as it involves generating ideas, translating ideas into sentence, take care of the correct form, mechanics and / or orthography, and thinking of the readers and social setting. Thus, writing is complex since it is not only a process of pouring ideas into text, but also thinking from readers' perspective. A work of writing should be understood by various readers from different social background; therefore, it must pay attention to correct grammar rules, punctuation and sentence construction.

Discussing about the nature of writing, Hayes and Flower (1981 in (Shin & Kwon, 2021) stated that writing is a recursive process which allows writers to refer to the produced output and modify it. Bereiter & Scardamalia (1987 in Shin & Kwon, 2021) also stated that cognitive development of writing skill is divided into three big steps; knowledge telling (creating and generating what the writer wants to say), knowledge transforming (changing what the writer wants to say) and knowledge crafting (shaping what to say and how to say it).

A study conducted by Shanmugam et al., (2023) revealed that cognitive factors such as prior knowledge and critical thinking influence writing skill. In reference with the statement, it is perceived that the interference of certain cognitive factors in writing is necessary. Prior knowledge which is accumulated from past knowledge and experience can help learners to write better.

Hasanuddin (2020) stated that prior knowledge is a collection or combination of knowledge, experiences, attitude and even beliefs that an individual has acquired from experiences throughout his life. This knowledge is used to construct new knowledges and experiences. Some studies reported the result of investigating prior knowledge in learning. Susilo (2016) noted that there was a positive correlation between prior knowledge, ability to finish a task and concept investigation. The higher the level of prior knowledge, the better the correlation was found. Another study by Hikmah (2018) presented that students' achievement was influenced positively and significantly by prior knowledge. In addition, Puji Astuti (2015) added that prior knowledge is one of factors that influenced learning achievement.

In conjunction with the utilization of project-based learning to enhance writing performance, it is pivotal to integrate cognitive factors such as prior knowledge. This is in line with previous research conducted by Hoesny et al., (2023). The result of study showed that prior knowledge essentially regulates writing performance. Therefore, advance research in developing a mode that integrate project-based learning and prior knowledge is required. By combining project-based learning with prior knowledge it is expected to enhance writing skill as well as add value to the teaching of writing. In relation to the background, this research is aimed at developing a project -based learning model incorporating prior knowledge to teach writing.

METHOD

This study is a design and development research with ADDIE approach which consist of analysis, design, development, implementation and evaluation. This approach was used since the product

developed related with education. Martatiyana et al., (2023) stated that ADDIE model was used to establish teaching material and it has been proven to result excellent outputs. Questionnaires and interview were conducted in analysis. Both were aimed at exploring problems and needs in teaching and learning writing skill. There were approximately 60 second grade students from MAN 5 Jombang filled the questionnaire, while for interview the sources were two teachers who taught writing. The two teachers presented their experiences related to problems and needs to teach writing. The next phases are design and development. These phases were aimed at designing and developing the model, and guidebook for teachers and students. After finishing design and development, the following phase is implementation. This phase was aimed at validating the model and trying out the model in a writing class. There were some aspects used in validation rubric, such as whether the model already accommodate the principles of PBL and prior knowledge, the model already considered the parts that require to be mastered in writing, the model provided students with collaborative activities, instructions for teachers and students are clearly informed in the model and the guide book presented clear information for the model implementation.

After the implementation, the final step is evaluation which was conducted by giving questionnaires to students. The questionnaire was intended to investigate their perceptions towards the model. The questionnaire was developed based on each aspect that was integrated in the model.

FINDINGS AND DISCUSSION

Findings are presented based on ADDIE model which starts from the result of analysis, design, development, implementation and evaluation. In the analysis, there were two methods conducted: interview and questionnaires. The interview was done with two teachers who taught writing in MAN 5 Jombang and English Department of State Polytechnic of Malang. The interview was aimed at investigating the problems, needs and how writing was taught in the classroom. It was found that teachers faced some problems such as demotivation in both learning English and Bahasa Indonesia, students' low proficiency in English and students' dependence on online assistance like Google Translate and Google Search Engine. It was also added that the most difficult aspect in teaching writing was teaching to construct sentences and generating ideas to write. Another difficulty in teaching writing was guiding students to pay attention to coherence. Thus, the writing seemed not relevant to the topic's ideas. In terms of need, both teachers agree that a method to keep students' participation and interested in learning writing was significant. Moreover, the method must be able to guide students gradually in resulting a work in writing.

The result of questionnaire can be summarized that first of all students needed a teaching method that motivate them to actively participate both in groups and individually. Secondly, most students agreed that they need prior knowledge in writing. Some prior knowledge that was identified like grammar, mechanics and information about the topics. In terms of problems, most students stated that finding for ideas to write was the most challenging,

followed by searching for appropriate vocabularies which were in line with the topics. Referring to the result of analysis mainly related to prior knowledge, Kellog (2008) stated that writing connects with cognitive ability specifically thinking and memory. Dragomir and Niculescu (2020) added that writing involves complex cognitive ability. To produce a piece of text, writers require not only language ability but also analysing information and solving problems of how to present written information that can be understood by readers. Therefore, the role of prior knowledge activation becomes significant in developing writing skill.

In the design phase, some references were prepared to guide the building of model to teach writing. The references required are those related to project-based learning, writing performance teaching writing and prior knowledge. (Stoller, 2002), (Jalinus et al., 2017) and (Cheung, 2016) were used as main references. In addition, guide book for teachers and students were also prepared. The guide book covers preparation, implementation and evaluation stages both for teachers and students. In each stage details were written regarding the activities that could be done by teachers and students.

To design the model, this research refers to the steps of project-based language learning (PjBLL) and project-based learning (PBL) in general. PjBLL and PBL are different for PjBLL incorporates language preparation steps before move to the next step. Such steps cannot be found in PBL in general. PBL in general focuses on accomplishing projects that are similar to real world products in a collaborative atmosphere. The model developed in this study later is referred to project-based learning prior knowledge (PBL-PK). PBL-PK is divided into three big phases that cover preparation, implementation, and evaluation. There are 10 steps in the model which cover; two steps in preparation phase, six steps in implementation phase and two step in evaluation phase. Preparation phase is aimed at preparing teachers and students before PBL is implemented. The step comprises preparing materials and selecting online sources for carrying out PBL. Additionally, the step also prepares students for the project. This include giving explanation about what is PBL, structuring the project and discussing the concepts of project. The next phase is implementation that is aimed mainly at performing projects. In this phase students do activities in a PBL setting, which is mainly characterized by constructing knowledge and collaborative works. Students have been divided into groups in the previous phase; thus, they work with their groups to collect and analyse information in conjunction with each part of essay that they have to achieve. The parts of essay are introduction, content, and conclusion.

The last phase is evaluation. In this phase teachers gave feedbacks after students present their project in former phase. In addition, questionnaires were provided so students can also contribute their assessment towards the implementation of PBL. This phase is expected to encourage students to share their opinion regarding the activities that have been done in a PBL context.

In each phase, prior knowledge required to complete the projects is inserted. There is some relevant knowledge that are identified such as grammar, vocabulary, mechanics and topics and writing related

knowledge. In introduction students are provided with material about thesis statement and Tenses that are in line with the essay type. In content, the prior knowledge needed is information about the topics and basic grammar especially Tenses. In the conclusion, prior knowledge about the structure of conclusion, mechanics and grammar is provided.

In development stage, the steps of PBL-PK were developed. In addition, guide for teachers and students were also developed. Along with this, the development also covered ideas of project works for writing and sources of materials. After finishing the development of PBL Prior Knowledge steps, the development of the guide book was started.

In the following, the model is presented in the form of table. This table shows the steps of PBL-PK in teaching writing. Each phase is accompanied with steps and explanation whether it is aimed at PBL or PK.

Table 1. The Model of Project-Based Learning Prior Knowledge

Phase	Steps		
		Prior Knowledge/PBL	*Activities*
Preparation	Preparing materials and online sources to support prior knowledge	Material related to essay writing Online sources related to essay writing	**Teacher:** Facilitate the activities by showing examples of project in writing, explain the core of PBL. **Students**: Discuss with their groups and construct their concepts about the projects
	- Preparing the classroom for PBL - Dividing students into groups - Giving explanation about what is PBL and Prior Knowledge - Presenting the structure of project Discussing about the theme of project works		**Teachers:** Guide the activities, resent examples of project, present the structure of projects **Students:** Discuss the project and its structure
Implementation	Activating prior knowledge for language requirements (explaining about essay, the structure of essay, types of essays)	Example of essay (Prior Knowledge)	**Teachers:** Provide activities to inspire/trigger students to write. The activities can be related to the type of essay and can be done outdoor Explain about the structure and types of essays Give example of essays Guide students' discussion regarding the types and structure of essays

			Give exercises **Students:** Discuss the types and structure of essays referring to the examples given by teachers Do exercises
	Gathering information and analyze introduction of an essay	Example of essay, example of each part of essay (PBL)	**Teachers**: guiding students' activities **Students**: work with their group to discuss about what information is needed, how the information will be collected, how it is analyzed and organized analyze parts of introduction in the example that they find, write introduction Present the result of their discussion Write introduction
	Activating prior knowledge for language requirements (for writing content of an essay)	Text about the topics that is going to be written Tense/Grammar (Prior knowledge)	**Teachers:** Guide students in text reading Explain about grammar rules related to writing content Give feedbacks regarding the introduction that the students have written Give exercises **Students:** Discus about the text with their group Do exercises
	Gathering and analyzing information about content of an essay	PBL	**Teachers:** Guide students' activities **Students**: Find example of content in an essay Discuss with their groups Present the result of discussion Write content
	Activating prior knowledge for language requirements (for writing conclusion)	Example of conclusion Parts of conclusion Grammar rules needed for writing conclusion (Prior Knowledge)	**Teachers:** Explain parts of conclusion Explain grammar rules required to write conclusion Guide students' activities Give exercises Give feedbacks regarding the content of essay that the students have written **Students:** Discuss example of conclusion given by teacher Do exercise
	Gathering and analyzing information	PBL	**Teachers:** Guide students' activities **Students:**

	about conclusion of an essay		Find example of conclusion in an essay Analyze parts of conclusion in the essay Discuss with their groups Present the result of discussion Do exercises Write conclusion
Evaluation	Accomplishing Projects and Presenting Projects		**Teachers:** Guide students during their project accomplishment Provide consultation regarding students' projects Assess the process and the end product of the projects Give feedbacks regarding conclusion that have been written **Students:** Do the projects Present the project
	Giving feedbacks		**Teachers:** Give feedbacks regarding the process and the end product **Students:** Share their opinion regarding the implementation of projects

Table 1 shows the steps of PBL-PK in essay writing. The steps in PBL PK for essay writing are directed to three parts of essay specifically introduction, content and conclusion. The model is divided into three phases namely preparation, implementation and evaluation. Preparation phase has 2 steps, implementation phase has 6 steps, and evaluation phase has 2 steps. Preparation phase is aimed at preparing materials and online sources to support prior knowledge. In addition, the classroom has to be prepared. Preparing classroom is conducted by explaining about PBL PK to students, dividing class into some groups, and discussing the projects' theme. Implementation phase focuses on how PBL PK is managed. This phase comprises the teaching of writing and the implementation of PBL PK. This phase mainly consists of activating prior knowledge, gathering and analysing information. Those two steps involve teachers' role as facilitator and students as active participants. Teachers or lecturers activate prior knowledge regarding writing skills by using materials that are presented through pictures or texts, while students do collaborative work and discussion to achieve the target in each PBL PK step. The activities proposed in the model refers to the procedures of teaching writing which involves providing a model as example of the writing target and analysing the model to identify the language used, the organization, the context, purposes and audiences(Dragomir & Niculescu, 2020).

After the model was developed, implementation stage of this study was started by validating the model. The

validation was conducted by expert to assess whether the model requires revision or can be implemented. The model was validated by an expert. The expert was a lecture from Universitas Negeri Sebelas Maret, Solo. His background of study was Educational Technology. The result of validation shows that the model requires minor revision. The revision was done by fixing students' and teachers' activities and changing the term of 'providing prior knowledge', to 'activating prior knowledge.

After validating, the next stage is implementing the model in MAN 5 Jombang. The implementation was started with conducting pre-test for second grade students. The students were selected since the subjects related with the model was taught in second grade. After the pre-test was conducted, the model started to be implemented. The first phase in the model is preparation which has two steps including preparing materials and preparing the classroom for PBL-PK implementation. The classroom was given explanation related to PBL-PK, the structure of the project, dividing students into groups and discussing the theme of project. The next phase was implementation which was started with activating prior knowledge for language requirements. The prior knowledge targeted was prepositions of place, simple presents tense, and adjective/noun phrase. The materials were relevant for descriptive paragraph which was the first topic in lesson plan. Teacher explained about prepositions of place and simple present tense using materials provided. The next step was gathering and analysing information. This step was conducted after teacher provided language requirements, which is dealing with prior knowledge activation. Gathering and analysing information were aimed at constructing knowledge which is central to project-based learning. The step provides opportunity for the students to find out about introduction, content and conclusion in paragraph. They did this by finding for information, then discussed it in a group. They analysed the information then presented and received feedbacks from the teacher. The implementation phase also covers accomplishing and presenting projects. This step requires teachers' role as facilitator. They guide students during project accomplishment, including provide consultation session regarding the project. In this step teachers also do assessment and give feedbacks regarding the project. Implementation phase is supported by online sources as source of material and writing exercises. The online sources are in the form of You Tube, website that provide text to enrich students' knowledge regarding the topic of essay, website for Grammar, website for writing exercises. The final phase is evaluation. This step allows both teachers and students to give evaluation and reflection concerning the process of PBL PK implementation. This phase can be done with the assistance of technology such as Mentimeter and Google Form.

After accomplishing implementation phase, post-test was conducted to find out the effect of PBL-PK towards students' writing performance. The result of post-test revealed that students' average score increased from 50,39 in pre-test to 86,2.

After implementing the model, the next stage was evaluation. This stage targeted students' perceptions toward the model implementation. The result of evaluation showed that most students (39,7%) said that teaching-learning process when the model

implemented was fun. 35,3% students also agreed that they could actively participated in teaching-learning process when the model implemented. In addition, 42,6% students thought that they understood writing more through the model implementation.

DISCUSSION

In conjunction with the result of analysis, it can be inferred that writing is a complex skill since it involves linguistic skill and cognitive ability because the skill requires learners to generate ideas, translating ideas into sentence, take care of the correct form, mechanics and/orthography and think of the readers social setting (Renandya et al., 2020). In addition, learners are faced to some problems when they write such as writers' block, difficulty in expressing ideas, feeling less confident and afraid of making mistakes (Sasmita & Setyowati, 2021). The study also reported that most errors and mistakes in students' writing were found in the area of unity and coherence, organization, and grammar. The problems identified were possibly related to some factors such as untrained teachers, ineffective teaching methods, examination systems, lack of reading and writing practice, large classrooms, low motivation and lack of ideas (Fareed et al., 2016). In conclusion, writing is connected to many aspects. To find a solution and develop the model, the analysis into problems and needs in writing must be conducted thus a model that meet the need and capable of solving the problems can be developed.

Project based-learning has been reported to gain success in language learning (Argawati & Suryani, 2020) (Hasani et al., 2017) (Ngadiso et al., 2021) (Sari & Syarofah, 2023). The studies revealed that project-based learning does not only improve students' language skills, it specifically improves writing skill. Ngadiso et al., (2021) developed a project-based learning model that can be used to teach speaking, reading, listening and writing skill in high school. The result showed that the model could improve the four language skills. The studies conducted by Argawati and Suryani (2020), Hasani et al., (2017) and Sari and Syarofah (2023) also revealed that the implementation of project-based learning helped students' creativity and critical thinking, especially in writing.

In addition, integrating visual media and technology into project-based learning can also enrich the model thus the learning goals targeted are achieved. For example, Harisma et al., (2019) revealed that project-based learning assisted by visual media could improve students' writing skill, specifically in writing recount text. Moreover, the application of project-based learning has some benefits such as increasing motivation, providing students with workplace skills, giving opportunities for collaborative work and connecting schools works with real world (Roemintoyo & Budiarto, 2023).

The model that has been built in this study integrates prior knowledge into project-based learning setting. The model does not only employ project-based learning, but incorporating the activation of prior knowledge. Prior knowledge is one of affective factors in learning. It was proven that prior knowledge correlate to writing skill (Hoesny, et al., 2023). The study also stated that students with medium and high level of prior knowledge have different writing skill. To sum up, this study develops a model that combine project-based

learning and prior knowledge, which has not been conducted by previous studies mentioned previously. It gives insight that integrating affective factors, for example prior knowledge, can add values to project-based learning. The model that has been developed can be a valuable contribution to the teaching of writing. It can improve the teaching process, and finally can improve students' ability to write.

CONCLUSION

This study was aimed at developing a model based on project-based learning and prior knowledge to teach writing. The outcome of this study is an instructional model which has been tried out in a writing class. From the implementation, the effect of this model was found in the form of increasing average score of writing. The evaluation phase in the study also indicated that students enjoyed fun atmosphere through the use of project-based learning. They also felt that they actively participated in the teaching and learning process, which resulted a better understanding towards writing. In addition, through the project atmosphere students also experienced teamworking and practiced communication skills. These occurred when they involved in group discussion in the process of constructing knowledge. To sum up, this model can be utilized to teach writing since there are a lot of positive effects that contributed for students and their writing skill. This study implies that implementing project-based learning in language learning integrating with affective factors can improve language skills. Teachers should consider using project-based learning as well as paying attention to students' affective factors, especially in language classroom. This model can be a reference for future implementation especially in writing class. Furthermore, a project-based learning model incorporating prior knowledge can also be developed for other language skills such as speaking, reading and listening.

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