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Implementation of Project-based Learning Method to Enhance Numeracy Ability of Procedural Text Material of English Subject

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Abstract
The National Examination (*Ujian Nasional/UN*) has been replaced by the National Assessment (*Asesmen Nasional/AN*), which includes the Minimum Competency Assessment (*Asesmen Kompetensi Minimum/AKM*), a character survey, and an assessment of the learning environment. The basis of this research lies in the observation that numerous teachers still employ a monotonous teaching style, leading to students feeling sleepy during the learning process due to the teacher's ineffective methods. Consequently, the mastery of the material remains low, resulting in decreased student achievement. The aim of this research is to enhance the engagement of students and the professionalism of teachers during the English teaching and learning process, thereby improving the quality of student learning outcomes. To achieve this aim, classroom action research was undertaken over two cycles. In the pre-cycle, the author delivered material using an individual work approach, yielding a result of only 20.58% in the complete category. In cycle I, students achieved a result of 38.24% in the complete category. Similarly, in cycle II, the results rose to 94.11% in the complete category. From the comparison of results from pre-cycle to cycle II, it can be concluded that the Project-based Learning methods effectively enhance the numeracy skills of students in English lessons. The findings of this study strongly suggest that the Project-based Learning method is a valuable pedagogical approach for enhancing numeracy skills within the English language classroom.

Keywords: Numeracy, procedural text, English for EFL

INTRODUCTION

The National Examination (*Ujian Nasional/UN*) has been replaced by the National Assessment (*Asesmen Nasional/AN*), which includes the Minimum Competency Assessment (*Asesmen Kompetensi Minimum/AKM*), a character survey, and an assessment of the learning environment. AKM addresses both literacy and numeracy skills. Numeracy is linked to the ability to solve scientific problems. Developing numerate citizens has been a global educational goal since the mid-20th century (Coffey & Sharpe, 2023). Numeracy is the ability to identify, describe and communicate various types of numbers and mathematical symbols to solve mathematical tables, graphs, and problems. There are few math teaching materials, especially those based on numeracy (Situmorang et al., 2023). Mathematics education is a key subject where the complicated interplay of literacy, numeracy, and logical reasoning lays the groundwork for students' intellectual development (Pratiwi et al., 2024).

In the other hand, numeracy is the capacity to use numbers and basic mathematical symbols to solve problems in everyday contexts. Math self-concept is a student's assessment of their mathematical abilities, aptitude, enjoyment, and interest. Both are critical components that influence the adjustment of one's knowledge and skill development (Danuri et al., 2023). Nowadays, learning mathematics is more than just strengthening one's mathematical ability, because in reality, mathematics ability alone is insufficient to tackle everyday problems. In the book (Roebyanto and Harmini, 2017) mentioned that counting is only a small part of mathematics and nowadays everyone must be able to solve problems both in mathematics and in real life. Also, numeracy for some learners is a difficult skill. The approach to increase one's numerical skills in the real world is to expand one's mathematical understanding. Thus, it is not only math that makes it easier for individuals to understand other people's thoughts; it also demands numerical abilities so that people may access and use more advanced knowledge in numerous aspects of their lives (Deda et al., 2023; Geiger, 2016, 2018; Oktafiani et al., 2020). There are even learners who are afraid when there are English lessons in which there is numeracy material because they feel unusual, some are lazy or sleepy because they are told to read, write and count. With the method used which will be further discussed is the Project-based Learning method applied in this study so that learners get the maximum benefit both from the process and the learning outcomes.

Therefore, students' attitudes, mindsets, and talents change as they grow from childhood to adulthood. This illustrates that, in accordance with the belief that each individual is very unique, every human being has the potential for greatness (Krooi et al., 2024). Similar to how not everyone sees their own specialness or uniqueness, it is not uncommon to find kids that are depressed, stressed out about their studies, or exhibit odd attitudes and actions. As a result, education is required to begin the process of making each individual aware of their rights (Tusyana et al., 2019).

Consequently, quality education comes from quality schools. Therefore, to improve quality and superior learning outcomes, schools are the focal point of advanced and quality education (Ekaningsih, 2023). Efforts to improve the quality of education in schools must be tireless, anytime, anywhere, and under any conditions (Sulfemi, 2019). Because teachers can directly influence, develop and improve students' intelligence and abilities, the success of learning objectives depends on many factors, including teacher factors when carrying out the teaching and learning process (Syaiful, 2022).

Hence, Permendikbud No. 22/2016 explains that teachers must discover the suitable learning model to increase the efficiency and effectiveness of obtaining students' graduation competencies. Furthermore, learning should be done in such a way that students interact with one another, transmit positive energy, be exciting, challenging, and effective, and encourage students to be actively involved, while also leaving enough room

for initiative, inventiveness, and independence based on students' talents, desires, personal development, and psychology (Rahmadina, 2024).

English is currently extensively spoken over the world. It serves as a universal language for countries. It has a huge impact on several areas, including banking, computers, advanced studies, business, engineering, medicine, and tourism (Ma'rufah et al., 2024). It is one of the subjects taught at all levels of education, including junior high school (SMP). Through this study, students acquire foreign language skills that become capital for global communication skills. One of the teaching materials of junior high school English subject is the teaching material of procedure text. Understanding the text enables learners to identify and organize instructions for doing or using something. This text encourages learners to think systematically (Ekaningsih, 2023). According to Anderson & Anderson (1998) a procedural text is a piece of writing that instructs the reader or listener on how to accomplish a task.

Project-based Learning (PjBL) refers to a teaching approach that teaches curriculum concepts through projects that carry the principles of learner-centred teaching, learner autonomy, collaborative learning, and learning through tasks (Mali, 2016). In other hand, Hattarina et al. (2022) use Project-based Learning (PjBL) as a learning strategy in their curriculum. PjBL can increase student engagement and critical thinking skills. Nurmala et al. (2021) and Abbas & Fathira (2022) identify four essential 21st century skills: creativity, critical thinking, communication, and teamwork. Experts agree that PjBL is crucial for decision-making and problem-solving during critical thinking (Putri et al., 2023). Project-based Learning is a learner-centered learning model that provides meaningful learning experiences for learners. Learners' learning experiences and concepts are based on the products created in the Project-based Learning process. Meanwhile, the Project-based Learning model is a learning paradigm that allows educators to guide learning in the classroom by including project work. Project work is a form of work that involves complex tasks based on very difficult questions and problems that guide students in designing, solving problems, making decisions, and carrying out research activities and provide opportunities for students to work independently.

In addition, Alfath (2024) define PjBL as a collaborative learning technique that enables students to develop and share work outputs. PjBL is a teaching methodology that builds on the foundation of PjBL. To develop many types of learning, students engage in exploration, assessment, and synthesis interpretation activities. PjBL is a thorough investigation into a real-world situation (Masti et al, 2019). According to Cyndiani et al. (2023), problem-based learning (PjBL) engages students in problem-solving and helps them learn new abilities. They may also exercise cooperation or collaboration, and PjBL allows them to organize projects. Implementing PjBL as a learning approach can have numerous benefits for both instructors and students (Ovartadara, et al, 2020). They are: (1) students pick up modern information and capacities in learning, (2) make students' problem-solving abilities, (3) upgrading students more excited within the learning prepare, (4) progressing and developing students' capacities in preparing assets, (5) cultivating collaboration between students, (6) students can make their claim choices and make venture task systems, (7) there are issues whose arrangements have not been foreordained, (8) students can plan forms to attain comes about, (9) understudies must be required to get and organize data, (10) understudies make continuous evaluations, (11) understudies occasionally check back on work that has been done, (12) the learning approach produces an item that's assessed for its prevalence, (13) the classroom environment permits for resilience of mistakes and alterations. Some previous studies have shown the effectiveness of PjBL in improving student learning outcomes, for example, Surya et al. (2018) found that the Project-based Learning (PjBL) learning model can improve learning outcomes and creativity of third grade students of SD Negeri

Sidorejo Lor 01 Salatiga compared to students who follow conventional learning. Another research by Budijah (2021) showed that PjBL can improve students' learning outcomes in procedure text material at SMA Negeri 3 Kota Tegal. Recent research was also conducted by Putri et al. (2022) to find out how the teacher's implementation of the Project Based Learning model in writing class VII students' procedure text at Sariputra National Junior High School in Jambi City to improve critical thinking skills with a qualitative approach with a phenomenological research type with data sources including lesson plans, implementation processes, and learning evaluations applied by 14 teachers to class VII students at Sariputra National Junior High School. The data obtained is how teachers design, implement, and evaluate learning using the Project-based Learning model. Based on the research results, the learning process of procedural text using the Project Based Learning model can be said to be successful because the learning applied is in accordance with the syntax or stages of the existing Project Based Learning model.

From the explanation above, it proves that there is research that supports the effectiveness of Project-based Learning models, but there are still gaps that need to be further researched, one of which is the application of Project-based Learning in understanding numeracy on procedure text material in English subjects. This research falls within the broader area of language education, specifically focusing on English language teaching and learning, with a particular emphasis on developing numeracy skills within the context of procedural text. While numerous studies have demonstrated the effectiveness of Project-based Learning (PjBL) in various educational settings, including language learning, there remains a significant gap in research specifically investigating the impact of PjBL on enhancing numeracy skills within the context of English procedural text learning for ninth graders. To address this gap, this study aims to investigate the effectiveness of the PBL approach in improving the numeracy skills of grade IX junior high school students through the learning of procedural text material in the English subject. By conducting this research, the study contributes to a deeper understanding of the specific benefits of PBL in developing both language and mathematical skills within a relevant and engaging learning context.

METHOD

This classroom action research was conducted at SMP Negeri 8 Kandis and specifically this research was conducted in class IX A with 34 students consisting of 23 male students and 11 female students. The implementation time starting from normal learning, cycle I and cycle II is as follows: (1) pre-cycle research on Tuesday, 1 August 2023 hours 1 - 2, (2) cycle I research time on Wednesday, 2 August 2023 hours 3 - 4, (3) cycle II research time on Tuesday, 8 August 2023. The research was initially conducted using pre-cycle learning or the learning process using the personal work method. This research was conducted in two cycles, each comprising planning, action, observation, and reflection. In the planning phase, preparations included developing lesson plans (RPP), creating test questions, and preparing learning materials. During the action phase, teachers facilitated learning and observed student progress. Data analysis focused on evaluating the impact of PjBL on students' numeracy skills. Reflection involved identifying areas for improvement in each cycle.

FINDINGS AND DISCUSSIONS

Based on the results of observations and evaluations made by the teacher that the learning outcomes of students in the pre-cycle are still low, this is because the teacher in the learning process uses the work individually method, so that the value or learning

outcomes of students obtained from pre-cycle learning is the basis for assessing the development of student learning outcomes can be seen from the table below:

Table 1. Pre-cycle Score Report

No	Student's name	Score	Description
1	AS	20	Not Pass
2	AL	40	Not Pass
3	ANG	40	Not Pass
4	AN	80	Passed
5	AMS	60	Not Pass
6	APSL	30	Not Pass
7	BTT	30	Not Pass
8	CASJW	20	Not Pass
9	CFS	70	Passed
10	DS	60	Not Pass
11	EFS	80	Passed
12	IVT	80	Passed
13	JPS	70	Passed
14	JAS	20	Not Pass
15	JPD	20	Not Pass
16	JS	50	Not Pass
17	KAS	60	Not Pass
18	KN	50	Not Pass
19	KRZ	40	Not Pass
20	MM	20	Not Pass
21	ML	50	Not Pass
22	MF	20	Not Pass
23	P	60	Not Pass
24	R	30	Not Pass
25	RC	20	Not Pass
26	RIS	20	Not Pass
27	RPM	20	Not Pass
28	RP	30	Not Pass
29	RSM	30	Not Pass
30	RPG	20	Not Pass
31	SBS	50	Not Pass
32	WN	80	Passed
33	YKS	50	Not Pass
34	YS	80	Passed
	Average	44,12	
	Minimum Completeness Criteria	70	
	The total of students who've passed	7	
	The total of students who didn't pass	27	
	Learning Completeness	20,58%	

The ability of students in mastering concepts in the pre-cycle with a class average of 20.58% with details of students who scored ≤ 70 as many as 27 students or 69.42% included in the category of incomplete, and those who scored ≥ 70 as many as 7 students

or 20.58% included in the category of complete. Furthermore, researchers carried out cycle 1 activity at the next meeting with the results below.

Table 2. Cycle 1 Score Report

No	Student's Name	Score	Description
1	AS	40	Not Pass
2	AL	70	Passed
3	ANG	70	Passed
4	AN	90	Passed
5	AMS	90	Passed
6	APSL	50	Not Pass
7	BTT	40	Not Pass
8	CASJW	40	Not Pass
9	CFS	70	Passed
10	DS	70	Passed
11	EFS	90	Passed
12	IVT	90	Passed
13	JPS	80	Passed
14	JAS	60	Not Pass
15	JPD	60	Not Pass
16	JS	60	Not Pass
17	KAS	60	Not Pass
18	KN	70	Passed
19	KRZ	60	Not Pass
20	MM	50	Not Pass
21	ML	60	Not Pass
22	MF	60	Not Pass
23	P	60	Not Pass
24	R	60	Not Pass
25	RC	50	Not Pass
26	RIS	50	Not Pass
27	RPM	40	Not Pass
28	RP	40	Not Pass
29	RSM	40	Not Pass
30	RPG	50	Not Pass
31	SBS	70	Passed
32	WN	90	Passed
33	YKS	60	Not Pass
34	YS	90	Passed
	Average	62,65	
	Minimum Completeness Criteria	70	
	The total of students who've passed	13	
	The total of students who didn't pass	21	
	Learning Completeness	38,24%	

The ability of students in mastering concepts in cycle I of students who scored < 70 as many as 21 students = 61.76% included in the category of incomplete, and those who scored ≥ 70 as many as 15 people = 38.24% included in the category of complete.

Furthermore, researchers carried out cycle 2 activities at the next meeting with the results below:

Table 3. Cycle 2 Score Report

No	Student's name	Score	Description
1	AS	70	Passed
2	AL	80	Passed
3	ANG	80	Passed
4	AN	90	Passed
5	AMS	90	Passed
6	APSL	70	Passed
7	BTT	70	Passed
8	CASJW	70	Passed
9	CFS	90	Passed
10	DS	80	Passed
11	EFS	90	Passed
12	IVT	100	Passed
13	JPS	90	Passed
14	JAS	70	Passed
15	JPD	60	Not Pass
16	JS	80	Passed
17	KAS	70	Passed
18	KN	80	Passed
19	KRZ	80	Passed
20	MM	70	Passed
21	ML	70	Passed
22	MF	60	Not Pass
23	P	70	Passed
24	R	70	Passed
25	RC	70	Passed
26	RIS	80	Passed
27	RPM	70	Passed
28	RP	70	Passed
29	RSM	70	Passed
30	RPG	70	Passed
31	SBS	80	Passed
32	WN	90	Passed
33	YKS	70	Passed
34	YS	90	Passed
	Average	76,76	
	Minimum Completeness Criteria	70	
	The total of students who've passed	32	
	The total of students who didn't pass	2	
	Learning Completeness	94,11%	

The ability of students in numeracy in cycle II with an average class score of 76.76 with details of students who scored < 70 as many as 2 students or 5.89% included in the category of incomplete, and students scored ≥ 70 as many as 32 students or 94.11% included in the category of complete.

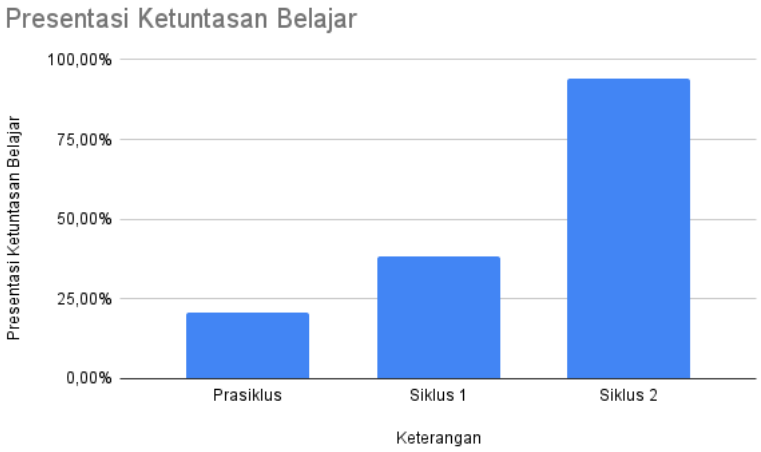

Diagram 1. Learning Completeness Presentation

The findings of this study demonstrate a significant increase in learning completeness across the cycles of implementation, aligning with the anticipated outcomes of the Project-based Learning method. The pre-cycle, utilizing traditional teaching methods, yielded a low learning completeness of 20.58%, indicating a significant gap in students' understanding and application of numeracy skills within the context of procedural texts. This finding resonates with Ayu et al. (2023) that studying with the Project-based Learning (PjBL) method has a substantial influence on the numeracy abilities of class V students at SDN Sidotopo Wetan 1 Surabaya.

The implementation of Project-based Learning in Cycle 1 led to a substantial improvement, with learning completeness reaching 38.24%. This initial increase can be attributed to the increased student engagement and active learning fostered by PjBL. By involving students in hands-on projects, such as cooking recipes or assembling models, they were able to connect abstract mathematical concepts to real-world applications, making learning more meaningful and memorable. This observation aligns with Dewi et al. (2024) the study concluded that the PjBL model significantly improves students' numeracy skills in class V of SDN Pangkalan.

The most significant improvement occurred in Cycle 2, where learning completeness surged to 94.11%. This remarkable increase suggests that the refinements made to the PjBL approach based on the findings of Cycle 1 were highly effective. This finding supported by Fajri et al. (2024) that numeracy literacy abilities employing the PjBL approach produce positive results. Additionally, the PjBL approach can enhance learning outcomes and 21st century capabilities.

Furthermore, this study provides empirical evidence for the effectiveness of PjBL in enhancing numeracy skills within the context of English language learning, specifically with procedural texts; the use of a cyclical approach allowed for continuous improvement and refinement of the PBL intervention, leading to more impactful results; and the focus on student engagement and active learning aligns with contemporary pedagogical approaches that emphasize student-centered learning.

On the other hand, the sample size may be considered limited, potentially impacting the generalizability of the findings; the study primarily focused on learning completeness, while other aspects of student learning, such as critical thinking, problem-solving, and creativity, could have been further explored; the long-term impact of the PBL intervention on student learning outcomes needs further investigation.

In conclusion, this study provides valuable insights into the potential of PjBL to enhance numeracy skills within the English language classroom. While further research is warranted to address the identified limitations, the findings strongly suggest that incorporating PjBL into the curriculum can significantly improve student learning outcomes, particularly for challenging topics like numeracy within procedural texts.

Figure 1: Learners using digital scales.

Figure 2: Learners using a measuring cup.

Figure 3. Learners carry out the procedure text project.

The observation results of 34 students in Class IX A Semester I at SMP Negeri 8 Kandis indicate that the application of the Project-based Learning (PjBL) method significantly improved their numeracy skills within the context of learning procedural text material. This finding aligns with previous research that has demonstrated the effectiveness of PjBL in enhancing various learning outcomes, including numeracy skills. For example, Yunita et al. (2021) found that PjBL significantly improved students' mathematical problem-solving abilities. Similarly, Nurhayati et al. (2021) observed that PBL fostered deeper engagement and improved language learning outcomes, which can indirectly contribute to enhanced numeracy skills within language-based tasks.

The observation of students' activities effectively using scales to measure weight and measuring cups to measure volume during PjBL activities provides concrete evidence of their improved numeracy skills. These practical applications demonstrate a transfer of knowledge from theoretical concepts to real-world scenarios, a key strength of the PBL approach. This aligns with the findings from Taufik et al. (2024) that PjBL can effectively improve numeracy abilities in programming situations.

The study demonstrates the effectiveness of PjBL in fostering real-world application of numeracy skills, which is crucial for students' future success; by focusing on the specific context of procedural text material, the study provides valuable insights into the application of PjBL within a particular area of English language learning; the use of observational data provides valuable qualitative insights into student learning and behavior during PjBL activities, complementing quantitative data that may be collected in future studies.

The study is limited to a single class and a specific school, which may limit the generalizability of the findings to other contexts. The observations were conducted by researchers, which may introduce potential observer bias. The findings of this study provide strong evidence for the effectiveness of the PjBL method in improving student numeracy skills within the context of learning procedural text material. While further research is needed to address the identified limitations and explore the broader implications of these findings, the observed positive impact of PjBL on student learning has significant implications for educational practice.

CONCLUSION

This study aimed to investigate the effectiveness of the Project-based Learning (PjBL) model in enhancing the numeracy ability of students in SMP Negeri 8 Kandis in learning procedural text material within the English subject. The findings revealed that the PjBL approach significantly improved students' numeracy skills compared to traditional teaching methods. The initial problem identified was that students faced difficulties in understanding and applying mathematical concepts within the context of English language learning, particularly when dealing with procedural texts that often involve measurements, calculations, and sequencing. This study demonstrated that PjBL, with its emphasis on real-world projects, active learning, and collaborative work, effectively addressed this challenge. By engaging students in hands-on projects related to procedural texts, the PjBL method provided a meaningful context for applying mathematical concepts. Students were actively involved in planning, executing, and evaluating their projects, leading to a deeper understanding of both the English language and mathematical principles. In conclusion, the findings of this study strongly suggest that the Project-based Learning method is a valuable pedagogical approach for enhancing numeracy skills within the English language classroom. By incorporating Project-based

Learning into the curriculum, educators can create a more engaging and effective learning environment that fosters both language proficiency and mathematical understanding.

Suggestions and hopes from researchers to improve the quality of Indonesian education are as follows: 1) teachers reflect on every learning activity they have done individually or together with the principal, peers, parents and children, 2) problems that exist in the classroom should motivate teachers to continue to learn and collaborate so that learning in the classroom is truly meaningful and has an impact on students, 3) various teaching and learning activities in the classroom can be combined with practical activities, so as to enable students to learn realistically and provide real experiences that are memorable for children, 4) teach students to identify problems, seek information and evaluate various solutions, 5) train students to collect, analyze and interpret data and encourage students to make decisions based on relevant data and information. In addition, improving Indonesia's educational quality necessitates a holistic approach that addresses the interconnected issues of teacher development, curriculum reform, equal access, and effective leadership. By investing in human capital, embracing innovation, and cultivating a culture of lifelong learning, Indonesia can realize its full potential and create a brighter future for future generations. The researcher also hope for another researcher to (1) compare the effectiveness of different learning methods, such as problem-based learning, or inquiry-based learning, in improving students' numeracy skills, (2) analyze the role of teachers in facilitating learning, including teachers' knowledge of mathematics, their ability to design learning activities, and the support they provide to students, (3) develop an evaluation instrument that can comprehensively measure students' numeracy skills, both in the context of procedure texts and in a broader context, (4) analyze how contextual factors, such as curriculum, resources and school culture, affect successful numeracy integration. By conducting more in-depth and comprehensive research, researchers can make significant contributions to improving the quality of math and language learning around the world.

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