Implementation of Problem Based Learning Model Through Baamboozle Media to Improve Elementary School English Vocabulary

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ABSTRACT

Language is an important role in human life because language is a tool to convey information, intentions and goals. English is one of the subjects that plays a vital role in developing students' language skills, including at the elementary school level. However, in practice, many elementary students still struggle with mastering English vocabulary due to limited teaching methods and low learning motivation. This study aims to improve students' English vocabulary mastery through the application of a Problem-Based Learning (PBL) model supported by Baamboozle media. The research employed a Classroom Action Research (CAR) approach, conducted in two cycles consisting of planning, action, observation, and reflection stages. The participants were 35 fifth-grade students at UPT SD Negeri 287 Gresik. Data were collected through observations and vocabulary tests.The results indicate that the use of Baamboozle media increased students' engagement, curiosity, and critical thinking in learning English vocabulary in a more enjoyable and meaningful way. The pre-test results showed that only 31% (11 students) met the Minimum Completeness Criteria (KKM), with an average score of 71.60%. After the intervention, vocabulary mastery improved: in Cycle I, 76.70% of students reached the "Sufficient" category (21 students), and in Cycle II, 85% achieved the "Good" category (28 students). These findings demonstrate that implementing the PBL model combined with interactive digital media can effectively enhance English vocabulary learning at the elementary level.

Keywords: *Problem based learning, Baamboozle, Vocabulary, English, Media*

ABSTRACT

Bahasa merupakan hal yang sangat penting karena berfungsi sebagai alat untuk menyampaikan informasi, maksud, dan gagasan. Bahasa Inggris merupakan salah satu mata pelajaran yang memiliki peran penting dalam mengembangkan kemampuan berbahasa siswa, termasuk di tingkat sekolah dasar. Namun, pada praktiknya, banyak siswa sekolah dasar yang masih mengalami kesulitan dalam menguasai kosakata Bahasa Inggris akibat metode pengajaran yang kurang bervariasi dan rendahnya motivasi belajar. Penelitian ini bertujuan untuk meningkatkan penguasaan kosakata Bahasa Inggris siswa melalui penerapan model Problem-Based Learning (PBL) yang

didukung oleh media Baamboozle. Penelitian ini menggunakan pendekatan Penelitian Tindakan Kelas (PTK) yang dilaksanakan dalam dua siklus, masing-masing terdiri dari tahap perencanaan, tindakan, observasi, dan refleksi. Subjek penelitian ini adalah 35 siswa kelas V di UPT SD Negeri 287 Gresik. Pengumpulan data dilakukan melalui observasi dan tes penguasaan kosakata. Hasil penelitian menunjukkan bahwa penggunaan media Baamboozle dapat meningkatkan keterlibatan, rasa ingin tahu, dan keterampilan berpikir kritis siswa dalam belajar kosakata Bahasa Inggris dengan cara yang lebih menyenangkan dan bermakna. Hasil pre-test menunjukkan bahwa hanya 31% siswa (11 siswa) yang mencapai Kriteria Ketuntasan Minimal (KKM) dengan nilai rata-rata 71,60%. Setelah intervensi, penguasaan kosakata mengalami peningkatan: pada Siklus I, 76,70% siswa masuk dalam kategori "Cukup" (21 siswa tuntas) dan pada Siklus II meningkat menjadi 85% dengan kategori "Baik" (28 siswa tuntas). Temuan ini menunjukkan bahwa penerapan model PBL yang dikombinasikan dengan media digital interaktif dapat secara efektif meningkatkan pembelajaran kosakata Bahasa Inggris di tingkat sekolah dasar.

Kata kunci: *Problem Based Learning*, *Baamboozle*, Kosakata, Bahasa Inggris, Media

1. Introduction

English learning is one of the subjects that plays an important role in students' language skills, including at the elementary school level. English learning in elementary schools plays a role in shaping students' habits, attitudes, and basic language skills (Dalilah & Sya, 2022). English language skills, especially vocabulary mastery, are one of the basic competencies that must be mastered by elementary school students in facing the global challenges of the 21st century. In general, language consists of three main components: grammar, vocabulary, and pronunciation. For elementary school children, teaching vocabulary should be prioritized, as a sufficient vocabulary helps them communicate more easily. Pronunciation also plays a crucial role in vocabulary development because it involves recognizing and producing the correct sounds that form words. If students become accustomed to mispronouncing words, they may struggle to convey information clearly (Handayani, 2024).

One of the essential competencies that elementary school students are expected to master is strong language ability (Rachmah, 2023). In English, students must develop four core skills: speaking, listening, reading, and writing ((Emil Biyansyahna & Maulana, 2020). To support these skills, students also need to build a solid foundation of vocabulary knowledge. However, in practice, many elementary students still struggle to master English vocabulary due to limited teaching methods and low learning motivation. Students with weak vocabulary knowledge often find it difficult to follow English texts and conversations (Carmelia et al., 2024).

Learning in the world of education is essentially a process of interaction between students and their learning environment, so that there is a change in behavior for the better (Habsah, Habiby, et al., 2024) . There are two factors that influence students' learning success in school, namely internal factors and external factors. Internal factors include self-confidence, independence, motivation, time management, critical thinking skills and so on. While external factors such as the school environment, parental attention and so on (Setiawan et al., 2024). External factors from teachers include choosing the right type of media and learning strategies for the success of the learning process (Amnisyar et al., 2024). There are many ways that can be done for the success of the learning process, especially in the difficulty of learning elementary school English vocabulary by using interesting media or learning methods (Rachmah, 2023).

Therefore, through an innovative, fun learning approach that will encourage active student involvement, student involvement in learning needs to be increased in the learning process (Wardani & Kiptiyah, 2024). The use of learning models is very important in learning because it greatly determines the process and learning objectives to be achieved (Aryanti et al., 2023). One of the learning

model approaches that has the potential to overcome these problems is the application of *Problem Based Learning* (PBL). The *Problem Based Learning model* is a learning model that is associated with problems that exist in the real world as an initial step for students when learning to obtain information or knowledge (Roni Hamdani et al., 2022). The *Problem Based Learning learning model* is a student-centered learning strategy (Ahmar et al., 2020). The effectiveness of this model is that students are more active in thinking and understanding the material in groups by conducting investigations and inquiries into real problems around them (Rahmat, 2018). Meaningful learning and providing new experiences to students will further build students' knowledge (Puspitasari et al., 2023).

Learning media has a very important role in the learning process. One of the developments of learning media is interactive games in learning (Habsah, Putri, et al., 2024), technology-based media is an alternative in learning English vocabulary by bringing a different perspective (Santosa et al., 2021). *Game games* offer an entertaining and dynamic educational experience for students (Agustina et al., 2024), one of the interactive education-based games is a web application such as *Baamboozle* , a digital platform that presents quizzes and educational games based on teams or independently. *Baamboozle* can make the learning model more effective because the use of online games in groups when studying will balance the material taught by the teacher, train and develop a sense of responsibility and teamwork. (Kajori et al., 2023), in addition, *games* and interactive learning methods have important interactive social benefits for students (Kumar & Lightner, 2007). *Baamboozle* media also has features that make it easy for teachers and students to access as needed. By using this learning media, when giving evaluations, students can increase their interest in learning (Febrianty et al., 2024). In response to the limitations of traditional methods, various innovative approaches have begun to be applied in vocabulary learning, one of which is the use of digital games. Games such as *Baamboozle* offer an interactive and fun learning experience, which not only increases student engagement but also helps improve vocabulary retention through contextual repetition and group collaboration. With team play features and attractive visual displays, *Baamboozle* facilitates challenge-based learning that suits the characteristics of elementary school students.

Based on this background, the problem formulated in this study is: *"How can the application of the Problem-Based Learning (PBL) model assisted by Baamboozle media improve elementary school students' mastery of English vocabulary?"* The purpose of this study is to describe and analyze the effectiveness of using the PBL model combined with *Baamboozle* in enhancing students' English vocabulary. In addition, this study aims to evaluate student responses to the integration of problem-based learning and interactive digital media, and to offer alternative teaching strategies for English language instruction at the elementary level.

The benefits of this research are expected to be meaningful for both students and teachers. For students, applying the Problem-Based Learning model together with *Baamboozle* media can help increase engagement, curiosity, and critical thinking skills while learning English vocabulary in a more enjoyable and meaningful way. For teachers, the findings can serve as a reference for developing more creative and effective teaching methods and for integrating technology that aligns with the needs of today's digital generation. Overall, this research is expected to contribute to improving English language teaching practices at the elementary school level.

2. Literature Review

According to (Suari, 2018), Problem Based Learning (PBL) model provides opportunities for students to express ideas explicitly, providing experiences related to ideas that students already have. So that students are encouraged to differentiate and combine ideas about challenging phenomena. This PBL learning model encourages students to think creatively, imaginatively, reflectively, about models and theories, introduce ideas at the right time, try new ideas, encourage students to gain self-confidence (Sasya et al., 2024).

Moreover, Rabiatul Adwiah et al., (2023) state that the PBL model guides students to think critically, search for information, process data, and apply essential 21st-century skills such as creativity, communication, problem-solving, and collaboration, creating an active, enjoyable, and meaningful

learning experience that benefits students . In addition to adopting student-centered learning models, teachers can further improve learning quality by selecting and optimizing the use of appropriate learning media (Nurmawati et al., 2024).

Through the PBL assisted by interactive media, it can also make it easier for students to understand learning materials, especially in learning and also make it easier for teachers to teach, where teachers form heterogeneous groups so that students can solve a problem given by the teacher by discussing in their respective groups and exchanging ideas with group members so that other students are able to express their opinions (Wulandari et al., 2024). For this reason, teachers need to apply learning media such as using media in the form of website applications. By using interactive media, students become more active and more receptive to learning which ultimately makes student learning outcomes complete (Larasati et al., 2024).

Based on the reviewed studies, there are several findings related to the use of the Problem-Based Learning (PBL) model supported by interactive media. Asriningtyas et al., (2018) found that PBL is an effective approach that presents students with real problems to solve, which helps develop higher-order thinking skills and improves learning outcomes. Another study (Afriliyani & Permatasari, 2024) showed that students' low ability to remember and pronounce English words is often caused by unvaried learning activities and unengaging lessons that lead to boredom. They demonstrated that applying the PBL model can help address this issue. Agustina et al., (2024) emphasized that critical thinking skills within PBL do not develop automatically but must be nurtured continuously through supportive attitudes and behaviors. Moreover, Fajria et al., (2025) highlighted the importance of incorporating game-based learning in elementary classrooms, as games provide an enjoyable and dynamic learning experience that increases student engagement and motivation while helping them master new vocabulary.

Interactive and engaging learning media have been implemented through various platforms, one of which is *Baamboozle*. Marwah & Ain, (2022) found that using *Baamboozle* not only helps students but also supports teachers in developing more effective and interesting teaching strategies. Training and using *Baamboozle* as an interactive learning tool can enhance teachers' teaching skills. Additionally, *Baamboozle* has been shown to improve students' understanding of concepts, making it easier for them to grasp and remember learning material. Susanti et al., (2024) reported that *Baamboozle* can be used effectively for group quizzes in the classroom, displayed via an LCD projector so all students can see and participate together. In this setting, the teacher acts as a facilitator who guides the quiz and encourages students to collaborate in groups to answer questions. The use of *Baamboozle* has been proven to increase students' intrinsic motivation to learn English in a more enjoyable way.

Meanwhile, (Verina et al., 2024) applied *Baamboozle* within a cooperative learning model of the TGT (Teams-Games-Tournament) type, carried out in two cycles with two meetings each. The TGT model involves steps such as class presentations, group work, tournaments using Baamboozle, and awarding recognition to teams, all aimed at boosting student learning activity. Similarly, Sakdiyah et al., (2024) highlighted that game-based learning with *Baamboozle* positively influences students' behavior during lessons, making them braver and more confident. This indicates that *Baamboozle*-based activities encourage students to participate more actively throughout the learning process (Febrianty et al., 2024).

The integration of the PBL model with digital media such as *Baamboozle* offers a strategic opportunity to enhance learning effectiveness. As an active learning approach, PBL encourages students to solve real or contextual problems, which helps deepen their understanding and application of vocabulary in authentic situations. In the local context, using PBL together with *Baamboozle* addresses the limitations of conventional teaching methods and provides a relevant alternative that aligns with technological developments and the learning needs of today's students.

Therefore, this study aims to explore the use of the PBL model supported by *Baamboozle* media as an effort to improve elementary school students' mastery of English vocabulary. The focus is on how combining active learning strategies with interactive digital media can create a more engaging, meaningful, and effective learning environment for building basic English language skills at the elementary level. Based on the identified issues and supporting literature, Classroom Action Research

(CAR) was designed to investigate this approach in the context of English learning in elementary schools.

3. Method

3.1 Research Design

This research employed a Classroom Action Research (CAR) design. CAR is a form of practical research conducted by teachers in their own classrooms to systematically improve the quality of learning. This approach involves designing, implementing, observing, and reflecting on instructional practices. By following this cycle, teachers can identify learning problems, develop appropriate solutions, and test their effectiveness directly in real classroom situations. CAR also encourages teachers to reflect critically on their teaching methods, modify them as needed, and strengthen their understanding of the teaching and learning process as a basis for continuous improvement.

In CAR, the teacher serves a dual role as both the researcher and the instructor, implementing lessons according to carefully designed modules. This study was structured in two cycles, each comprising four stages: planning, implementation, observation, and reflection. The primary objective was to improve students' English vocabulary mastery through the application of the Problem-Based Learning (PBL) model integrated with the *Baamboozle* interactive digital media. Figure 1 shows The CAR cycle scheme.

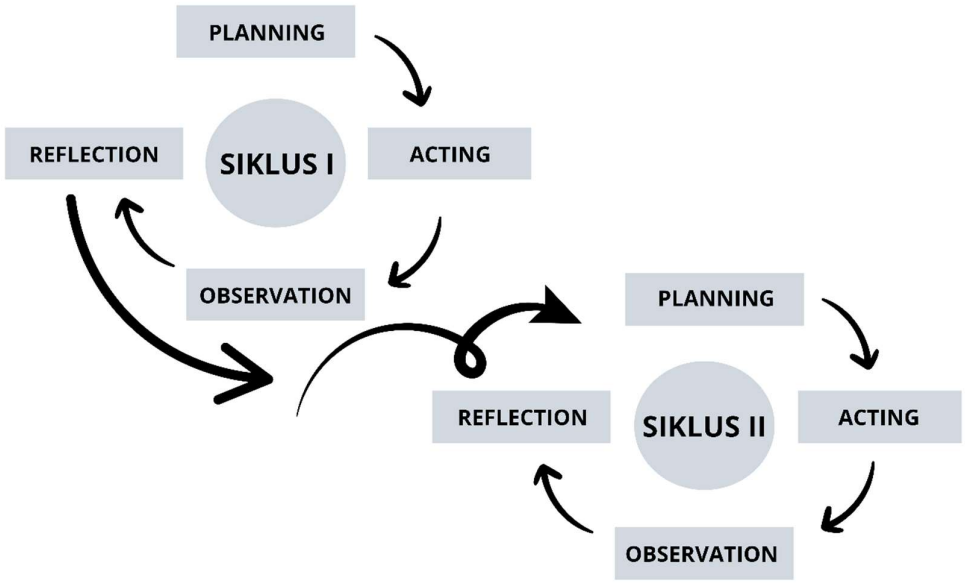

Figure 1. Classroom Action Research Design

3.2. Research Context and Participants

The study was conducted at UPT SD Negeri 287 Gresik. The participants were 35 fifth-grade students, consisting of 16 boys and 19 girls. The students came from middle socio-economic backgrounds and had varied levels of English proficiency. The school provides basic technology facilities adequate to support the use of simple digital media in classroom activities.

The national standard for English language learning follows Indonesia's independent curriculum, but many schools still face obstacles such as limited instructional time, insufficient resources, and traditional teaching methods that are less contextual. To address these challenges, this study tested an innovative, activity-based approach through the PBL model combined with *Baamboozle*.

3.3. Implementation Procedure

The CAR was conducted in two cycles, with each cycle covering two lesson hours (2 × 30 minutes). Students participated in both individual and group activities designed to develop vocabulary in context. Cycle I focused on introducing basic English vocabulary through contextual problems supported by the *Baamboozle* media. Learning activities began with presenting simple problems, followed by small-group discussions, exploration of new words, and interactive evaluation using *Baamboozle* as a feedback tool. Students worked in groups to solve tasks related to the target vocabulary. Figure 2 shows an example of the *Baamboozle* "Game Preview" interface used to deliver vocabulary tasks in an engaging, game-like format. Evaluation was conducted through vocabulary quizzes delivered via *Baamboozle* and through observation sheets documenting student participation. Reflection at the end of Cycle I indicated good engagement but noted that some students remained passive.

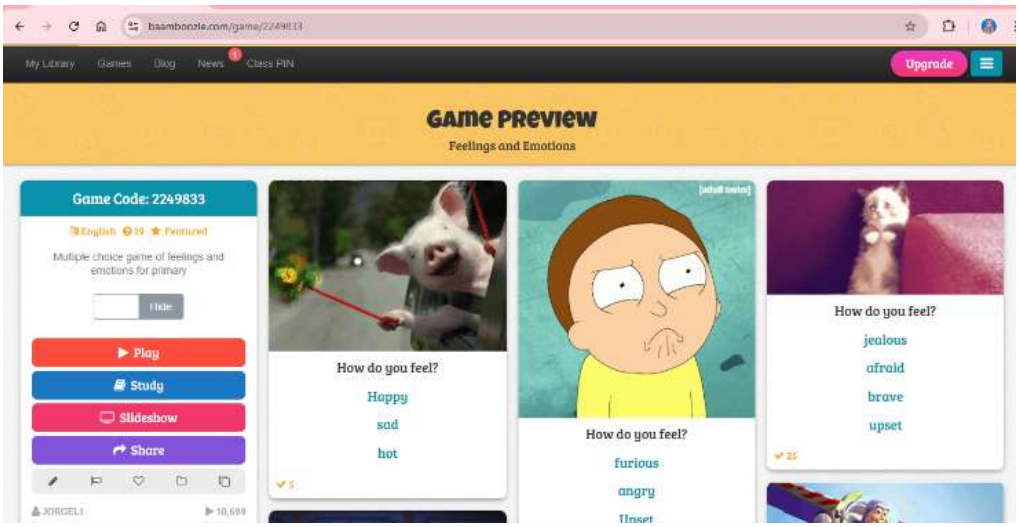

Figure 2. *Baambozle* Media "Game Preview"

Cycle II aimed to deepen vocabulary mastery and enhance collaboration skills. The tasks involved more complex problems requiring students to apply the vocabulary they had learned. *Baamboozle* was again used as an interactive evaluation and reflection tool. Figure 3 illustrates the *Baamboozle* "Study" mode that supported individual practice and small group review in Cycle II. Activities continued to emphasize contextual problem-solving and collaborative group work. Student performance was evaluated using *Baamboozle* quizzes and observation sheets. Reflection after Cycle II showed improved student engagement and greater active participation.

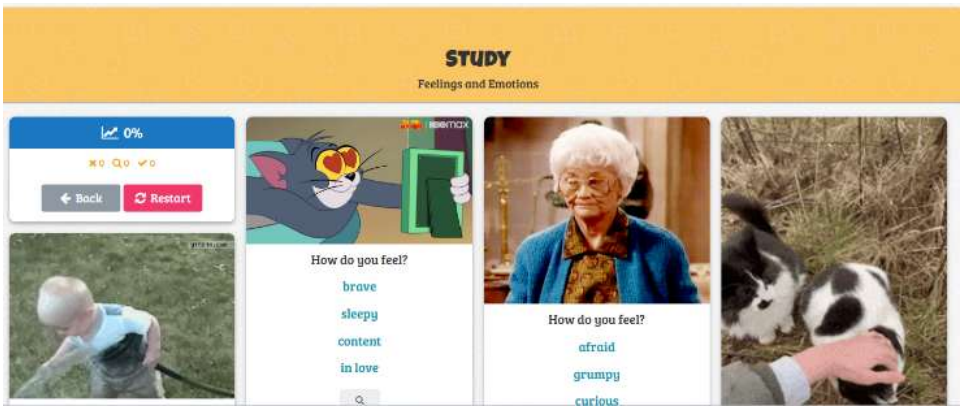

Figure 3. *Baambozle* Media "Study"

3.4. Structure of the Problem-Based Learning Model

The PBL model in this research followed these main steps:

1. Problem Orientation. The teacher presents real or contextual situations that stimulate students' curiosity.
2. Problem Identification. Students identify unfamiliar words or concepts related to the presented problems.
3. Exploration and Discussion. Students work individually or in groups to find solutions and clarify the meaning and use of new vocabulary.
4. Utilization of *Bamboozle*. The teacher facilitates an interactive quiz game using *Bamboozle*, featuring questions designed to test students' understanding of the vocabulary. This activity is competitive, collaborative, and engaging.
5. Presentation and Reflection. Students present their group findings and reflect on what they have learned and how they solved the problems.

This learning structure supports not only vocabulary mastery but also encourages active participation, collaboration, and the development of critical thinking skills through problem-solving.

The national benchmark for English language learning in schools follows the national curriculum standard, namely the independent curriculum. Many schools face obstacles such as limited time, inadequate teaching resources, and conventional and less contextual teaching methods. Therefore, an innovative and activity-based approach is needed to improve learning effectiveness, one of which is through the Problem-Based Learning (PBL) model combined with the use of media. This study aims to implement a media-assisted PBL model to improve elementary school students' English vocabulary mastery. The expected contributions of this study include improving the quality of teacher teaching practices, significantly improving student learning outcomes, and providing insight to elementary education policy makers regarding effective and contextual learning models.

4. Results and Discussion

The findings highlight students' initial performance, progress during each cycle, and the overall impact of the intervention. The English vocabulary mastery of fifth-grade students before the implementation of the Problem-Based Learning (PBL) model assisted by the Baamboozle educational game was still relatively low. This is evident from the pre-test results, which show that more students scored below the Minimum Completeness Criteria (KKM) than those who met it. The KKM requires students to achieve a minimum score of 75.

Figure 4 shows the results of students' vocabulary tests during the pre-action stage (pre-cycle), where most students scored below the KKM (Minimum Completion Criteria). The diagram indicates that only about 31% of students (approximately 11 out of 35) achieved scores above the KKM, while 69% (about 24 students) did not meet the standard. This result highlights the need for an intervention to improve students' initial English vocabulary mastery.

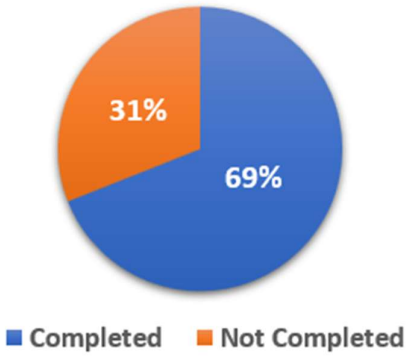

Figure 4. Results of the Pretest of Students' Initial Abilities

To measure vocabulary mastery, individual formative tests were administered by the teacher using the *Baamboozle* digital platform. These tests included short questions assessing students' understanding of word meanings, contextual use, and correct spelling. In addition, student engagement during learning activities was assessed using an observation sheet with indicators such as attention to tasks, participation in group discussions, enthusiasm when using *Baamboozle*, and frequency of asking or answering questions. Data were collected by the teacher together with an external observer during the implementation of each cycle. The implementation of the PBL model supported by the *Baamboozle* educational game helped students improve their understanding and mastery of English vocabulary in a more engaging and enjoyable way.

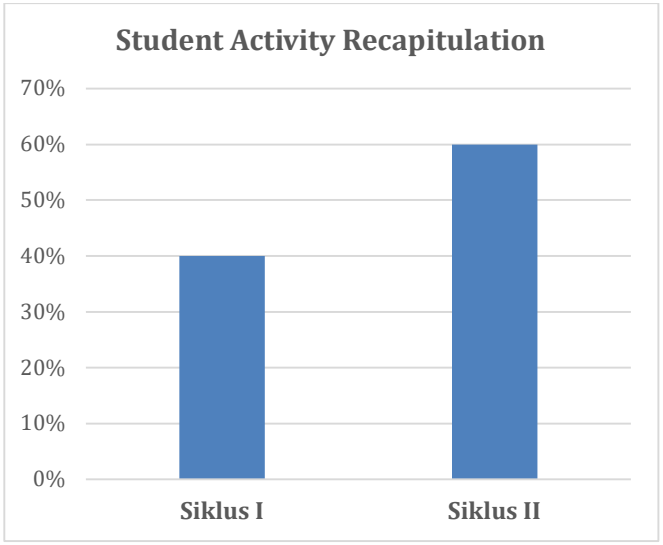

Figure 5. Student Recapitulation Results

Figure 5 shows the results at the end of Cycle I, indicating an increase in students' average scores. The graph also illustrates that student activity increased from Cycle I to Cycle II. In Cycle I, the percentage of active student participation was 40%, with most students categorized as "sufficient." In Cycle II, student activity rose to 60%, which falls into the "good" category according to the school's assessment criteria. This suggests that student activity in English learning improved noticeably after implementing the PBL model with *Baamboozle*.

Figure 6 shows the recapitulation of the average scores of students' English vocabulary mastery in each cycle. The results indicate a significant improvement by the end of the cycles. Based on the graph, the average score in the pre-cycle stage shows that only 71.6% of students (11 students) met the Minimum Completeness Criteria (KKM). In Cycle I, this percentage increased to 76.7% (21 students), demonstrating greater enthusiasm during the learning process. Compared to Cycle I, the results in Cycle II show further progress, with 85% of students (28 students) achieving scores above the KKM.

This improvement reflects not only better vocabulary mastery but also increased student engagement, as seen in their greater willingness to answer questions, collaborate in groups, and participate actively in digital learning activities. These findings suggest that student involvement and learning outcomes in English vocabulary improved significantly after implementing the Problem-Based Learning model supported by the *Baamboozle* educational game.

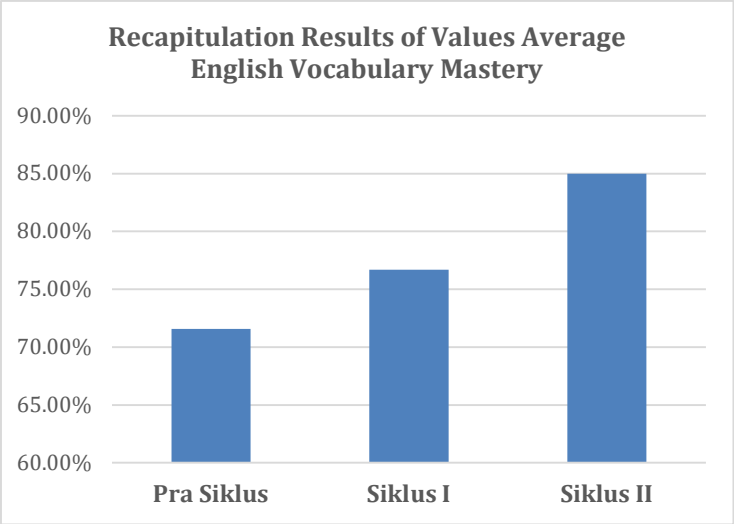

Figure 6. Average Value Results Students' English Vocabulary Mastery

Analysis of the observation sheets indicates that students who were more active in group discussions, answered questions, and participated in media-based activities generally showed greater improvements in their test scores compared to students who were more passive. This finding suggests that learning engagement contributes positively to learning outcomes. Active participation helps create a more meaningful learning environment and strengthens memory through social interaction and problem-solving. However, some students who were highly active did not show proportional improvements in their test results. This may have been influenced by non-academic factors such as test anxiety, lack of focus during assessments, or gaps in understanding despite their active involvement.

The success of this intervention can be attributed to several main factors. First, the interactivity of *Baamboozle* presents vocabulary exercises in a competitive and visually engaging game format, making students more interested and less overwhelmed, which helps strengthen vocabulary retention. Second, the contextual structure of the PBL approach exposes students to everyday problems that make word meanings more functional and relevant, rather than relying on rote memorization. This aligns with the principle of meaningful learning in constructivist theory. Third, the combination of problem-based learning and *Baamboozle* encourages student collaboration, which strengthens intrinsic motivation through teamwork and shared challenges. This social and emotional engagement has a positive impact on learning outcomes.

These findings are consistent with previous research. For example, Sakdiyah et al., (2024) found found that using game-based learning with Baamboozle positively influenced students' behavior, making them braver and more confident, which encouraged more active participation. Similarly, Sasya et al., (2024) highlighted that *Baamboozle*-based activities sustain student engagement throughout the learning process. Wulandari et al., (2024) also emphasized that problem-based learning supported by interactive media makes it easier for students to grasp lesson content and enables teachers to form heterogeneous groups, allowing students to solve problems collaboratively and share ideas freely. Together, these findings confirm that PBL is effective in enhancing conceptual understanding and language mastery through active, student-centered learning.

In this study, these improvements were observed through several indicators, including positive feedback from students collected through a simple post-learning questionnaire, increased active participation during group discussions and classroom games, and direct observations by teachers of student enthusiasm, such as their willingness to answer questions and collaborate in teams.

Despite the encouraging results, several challenges were encountered during implementation. Limited access to technological devices in the classroom sometimes hindered students' optimal use of *Baamboozle*. Additionally, differences in students' ability to understand instructions in English required teachers to adapt strategies by providing concrete examples or using gestures to clarify tasks. Finally,

teachers' adjustment to the PBL method was an initial challenge, especially when designing problem scenarios that were appropriate for the developmental level of elementary school students.

5. Conclusion

Based on the analysis and discussion of the data, it can be concluded that the English vocabulary learning activities of fifth-grade students at SD Negeri 287 Gresik improved through the implementation of a problem-based learning (PBL) model supported by the Baamboozle educational game. Observations of student activities during learning showed an increase from 60% in Cycle I to 80% in Cycle II. Similarly, students' English vocabulary mastery improved significantly: in Cycle I, 76.7% of students (21 students) met the completion criteria, while in Cycle II this increased to 85% (28 students). These results indicate that applying the PBL model with Baamboozle effectively enhanced students' engagement and vocabulary mastery.

This study has several limitations. First, it was conducted in only two relatively short cycles, so it does not measure the long-term impact of the PBL model. Second, student engagement was assessed mainly through observation, which may contain subjective bias. Third, the media used was limited to simple visual and digital tools and did not yet integrate more advanced application-based or online learning technologies.

Future research should consider conducting long-term studies to evaluate the sustainability of student learning outcomes. More objective and quantitative instruments, such as Likert-scale questionnaires or video analysis, could be used to assess student engagement more accurately. Researchers are also encouraged to explore the use of the PBL model with more advanced technology, such as gamification, virtual reality, or mobile learning applications.

Declaration of Interest

The authors declare that there are no potential conflicts of interest related to this article's research, writing, and/or publication.

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