



THE IMPLEMENTATION OF DISCOVERY LEARNING TO IMPROVE CRITICAL THINKING SKILLS AND LEARNING OUTCOMES OF STUDENTS IN CLASS VII-E SMPN 29 SEMARANG

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Abstract

This research employed a Classroom Action Research approach to enhance critical thinking abilities and student learning outcomes regarding the historical development of Pancasila. This was achieved through a discovery learning model, assisted by Kalpancas Media and Blooket, in Class VII-E of SMP Negeri 29 Semarang. The success of this classroom action research was evaluated using several performance indicators. (1) The mean value of students' knowledge of their ability to play Blooket is at least good, with a daily assessment of at least 80; (2) The mean student attitude score is at least good; (3) The mean student skill score is at least 80; and (4) The mean student learning achievement standard is at least 78, with an average classical learning completion score of 80%. The results of the research demonstrate that students' critical thinking skills, as evidenced by the formative assessment results in the areas of knowledge (assignments), attitudes, and skills, as well as their performance in the Blooket game during Cycle I, exhibited an average of 76.47. This value increased to 90 in Cycle II. The mean score for this item was 58. In the attitude aspect, the mean score in Cycle I was 60.29, which increased to 83.82 in Cycle II. Subsequently, the skill aspect was evaluated. In cycle I, the average was 81.25, and in cycle II, there was an increase of 88.33. In contrast, the mean scores for Blooket in Cycle I were 70, with an increase to 81.17 in Cycle II. In contrast, the pre-cycle student learning outcomes demonstrated a relatively low level of completeness, with only 41.17% (14 children) achieving this outcome. Subsequently, there was an increase of 73.53% (25 children) in Cycle I. In Cycle II, there was an increase of 85.30% (29 children). Consequently, there was an enhancement in both critical thinking abilities and academic outcomes among students enrolled in VII-E at SMP Negeri 29 Semarang.

Keywords:

Critical Thinking Skills, Learning Outcomes, Discovery Learning, Kalpancas, Combination, and Blooket.

INTRODUCTION

Education is a fundamental necessity for individuals to gain knowledge, particularly in the contemporary era (Fajri dan Yusuf, 2021). In addition to technical preparation, 21st-century skills also encompass the ability to adapt to a changing world (Redhana, 2019). In general, 21st-century skills encompass communication, creativity, collaboration, problem-solving, and critical thinking. In light of the aforementioned considerations, it is evident that the contemporary educational landscape must be reoriented towards the objective of enhancing the quality, competitiveness, ethicality, and ethical conduct of the human resources that are generated through the learning process.

However, the reality is that the quality of education in Indonesia today is still below the standard that should be expected. The results of a survey conducted by the Central Statistics Agency (CSA) indicate that Indonesia's education system is ranked 40th in the world in terms of quality (BPS, 2020). In contrast, another survey indicated that Indonesia's education position in 2023 was ranked 67th out of 203 countries (Worldtop20.org, 2023). Several factors contribute to the suboptimal quality of Indonesian education. One such factor is the lack of proficiency in critical thinking and learning outcomes among students. One of the key skills to be developed in the 21st-century learning era is critical thinking. Moreover, this skill has emerged as a significant challenge in recent years (Schmaltz et al., 2017). The objective of teaching critical thinking skills in the learning process is to equip students with the capacity to engage in creative, structured, and responsible problem-solving, thereby enabling them to identify and implement a range of potential solutions (Mareti & Hadiyanti, 2021).

Nevertheless, at this juncture, there persists a cohort of students who have not yet developed the requisite critical skills, which has an impact on their learning outcomes (Safitri & Mediatati, 2021). Conversely, students are also more inclined to place trust in intuition and subjectivity than in objective scientific findings (Lilienfeld et al., 2012). Moreover, students are merely instructed to memorize information without any understanding or correlation with their contextual lives (Mareti & Hadiyanti, 2021). In contrast, the independent curriculum emphasizes the mastery of concepts and the strengthening of competencies as the primary objectives of the learning process for students (Kemdikbud, 2022; Khoirurrijal et al., 2022). This has undoubtedly resulted in suboptimal learning outcomes for students.

The development of robust critical thinking skills is a crucial factor influencing academic performance (Kurniahtunnisa et al., 2016; Puspitaningtyas, 2022). Other research findings indicate that students who demonstrate greater critical thinking abilities tend to achieve more positive learning outcomes (Nurdiana et al., 2023). Sukmadinata posits that the ability to think critically encompasses a series of processes, including analysis, synthesis, interpretation, evaluation, and hypothesis formation (as cited in Rizki & Nugraha, 2023). One of the most significant aspects of learning outcomes is that they provide information on the learning achievements of students in a systematic, structured, and planned manner. This information is used to monitor the process, improve learning, and improve efforts through evaluation activities or assignments from teaching and learning activities (Setianingrum & Wardani, 2018). Following this perspective, learning outcomes can be regarded as data obtained systematically and comprehensively by individuals through activities that result in behavioral changes (Kristin, 2016).

One of the most frequently observed phenomena in the field of education, particularly in the context of Pancasila Education, is the relatively low learning outcome. This phenomenon is based on the low interest in learning exhibited by students, coupled with their still-developing cognitive abilities (Fajri dan Yusuf, 2021). Abdurrahman has stated that low learning outcomes have an impact on the quality of human resources and changes in their behavior (in Kurniasih & Alarifin, 2015). Pancasila Education is a subject of great importance in the formation of students' identities within their environments. The objective of Pancasila Education is to cultivate students who are capable of critical, creative, and rational thinking in responding to civic issues, and who are actively involved, responsible, and demonstrate intelligent behavior in the implementation of Pancasila values in the context of society, the nation, and the state (Sekariani, 2020). The critical thinking process is essential in the learning of Pancasila Education, as it enables students to comprehend the circumstances or challenges that arise in their immediate environment, thereby facilitating their resolution. Furthermore, in Pancasila Education, critical thinking is also necessary to reinforce a robust mental fortitude in students (Dewi et al., 2023). Consequently, the role of educators in facilitating effective learning environments and engaging teaching materials is of paramount importance for students.

Teachers have been able to educate and present teaching materials appropriately through the use of relevant media, assignments, and question-and-answer sessions. Nevertheless, there are still obstacles to the implementation of learning activities in the classroom, particularly in class VII-E students of SMP Negeri 29 Semarang in the subject of Pancasila Education. The results of observations, diagnostic tests, and daily assessments indicate that the critical thinking skills and learning outcomes of students in class VII-E of SMP Negeri 29 Semarang remain relatively low. The absence of optimal critical thinking skills has resulted in suboptimal learning outcomes. This is not under the expectations of researchers. Consequently, educators must endeavor to enhance critical thinking abilities and academic outcomes, including through the implementation of the discovery learning model.

One of the most intriguing and efficacious learning models, based on the discovery of problems, is discovery learning. This model is particularly suited to students' learning activities. Furthermore, it is posited that discovery-based learning is predicated on the teacher establishing an environment conducive to problem-solving, providing stimuli, and encouraging students to engage in independent inquiry through experimentation (Fransiska et al., 2018). Following this assertion, discovery learning is an active learning process through which students engage in the process of

discovery and investigation, thereby gaining experience (Larasati, 2020).

Moreover, the utilization of learning media is of paramount importance in the educational process of students. Learning media is an instrument employed by educators as a tool in the process of delivering instructional content to students, intending to provide a concrete representation of the subject matter (Puspitasari, 2018). The selection of learning media must also be adjusted to the characteristics and learning styles of students. Under this assertion, the utilization of learning media is capable of furnishing students with facilities that adjust their learning styles, thereby necessitating that teachers cultivate their innovation and creativity abilities to achieve learning outcomes (Wibowo et al., 2022). Consequently, to enhance the development of critical thinking abilities and the academic outcomes of students in the context of Pancasila Education subjects, while simultaneously fostering innovation in pedagogical approaches, the utilization of Kalpancas and Blooket media can be employed.

The *Kalender Pancasila* (Kalpancas) represents a learning media innovation that can be applied to the material on the History of the Birth of Pancasila in the Pancasila Education subject class VII odd semester in the Merdeka Curriculum at the junior high school (SMP) level. The media is conventionally arranged in a manner that presents the flow of the formulation and determination of Pancasila in a visual form, consisting of text and images arranged in the format of a calendar. Furthermore, the presentation of the material in the form of images accompanied by caption text will serve to enhance the appeal of the learning process (Fadli, 2021). Kalpancas represents an additional avenue for enhancing students' critical thinking abilities and academic outcomes.

Moreover, the utilization of Blooket media is conducive to the enhancement of students' critical thinking abilities and academic achievements, particularly in the context of 21st-century learning. This media is designed as a game-based tool for training and testing critical thinking skills, to achieve optimal learning outcomes. Teachers may present a variety of questions in a multiple-choice format (Litman, 2022). Furthermore, educators can enhance this Blooket media by incorporating various features, thereby fostering enthusiasm among students (Lauricella, 2022; Maftuna & Ullibibi, 2023). The game's design facilitates learners' engagement in a critical thinking process, which enables them to comprehend, apply, and evaluate the instructions presented. Subsequently, learners will respond to the quiz questions based on the results of the analysis they have conducted. Consequently, students will be able to enhance their critical thinking abilities and academic outcomes.

The results of the research indicate that the use of the discovery-learning model can effectively stimulate students' critical thinking skills (Trisna Dwi Jayanti, 2021). This finding is corroborated by other studies, which demonstrate that in Cycle I, 22 children demonstrated critical thinking abilities at a rate of 68.7%, while in Cycle II, there was an increase of 26 students (81.2%) (Handayani et al., 2022). Moreover, the results of other research indicate that the use of the discovery-learning model can enhance the academic performance of Civics class VII C students at SMP Negeri 3 Trenggalek during the 2017/2018 academic year (Sumadyani, 2020). This is evidenced by an increase in the percentage of students who demonstrated learning completeness, from 73.33% in Cycle I to 100% in Cycle II (all students demonstrated learning completeness). In line with this statement, the results of the research concluded that the discovery learning model was able to improve students' critical thinking skills and learning outcomes (Ridwan, 2021). This is evidenced by the results of the data analysis in Cycle I, which revealed that 14 students (56.00%) had achieved critical thinking indicators, while 17 students (68.00%) had achieved knowledge competency learning outcomes. Subsequently, during the implementation of Cycle 2, the number of students who had achieved critical thinking indicators and learning outcomes increased to 22 individuals (88.00%) and 21 individuals (84.00%), respectively.

Furthermore, the utilization of media serves as a conduit for the enhancement of critical thinking abilities and student learning outcomes. The findings indicated that the utilization of digital calendars had a positive impact on the intellectual and attitudinal development of individuals (Fadli, 2021). This is because it is supported by the presence of image media that provides stimulus to students. Other research has also demonstrated that image media can enhance student learning outcomes (Maroa et al., 2013). The findings of this research indicated that teachers frequently utilize

gamification web media, such as Quizizz, Blooket, and others, to enhance student learning outcomes (Lauricella, 2022). Moreover, the findings of other studies indicate that the utilization of GIM Blooket media can enhance student interest in learning (Nugroho & Romadhon, 2022). This is further corroborated by the findings which indicate that the utilization of gamification-based media represents a viable solution for educators to enhance learner engagement and activity (Mohd et al., 2023). In light of the preceding background information and the findings of previous research, it is deemed necessary to conduct further research into the implementation of discovery learning to improve critical thinking skills and learning outcomes of students in class VII E SMP Negeri 29 Semarang.

RESEARCH METHOD

This research employs a Classroom Action Research (PTK) design. The subjects of this study were students in class VII-E of SMP Negeri 29 Semarang during the 2023/2024 academic year, with a total of 34 children. In this study, the PTK design was based on the theory developed by Kemmis and McTaggart. The PTK model scheme from Kemmis and McTaggart comprises the following five stages: observation, planning, action, reflection, and re-planning. These stages form the basis for problem-solving.

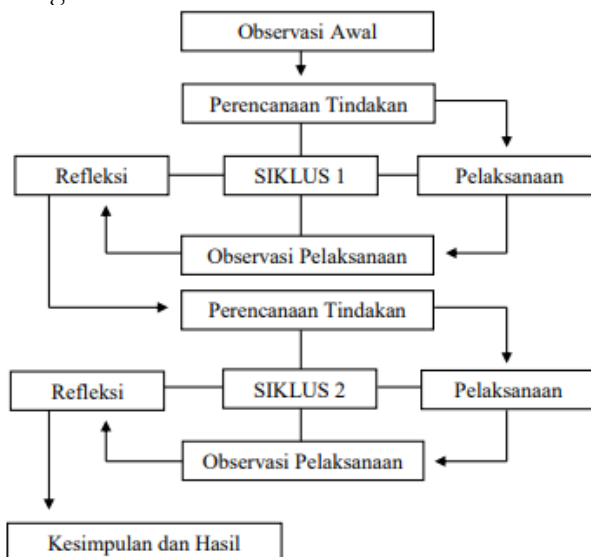


Figure 1: PTK cycle of Kemmis and Mc. Taggart Model. Source: (Arikunto, 2010)

The instruments utilized in this study include (1) Knowledge, attitude, and skill assessment sheets for students; (2) Practitioner and student observation sheets; (3) Learner Worksheets (LKPD); (4) pre-and post-test questions; and (5) Learning media. To assess the success of this class action research, several performance indicators have been developed. (1) The mean value of student knowledge as assessed via the formative assessment and their ability to play Blooket is at least good, specifically ≥ 80 ; (2) The mean value of student attitudes is at least good, specifically ≥ 80 ; (3) The mean value of student skills is ≥ 80 ; and (4) The standard of student learning achievement is ≥ 78 with an average classical learning completeness value of 80%. In addition, the categories of the success indicators for this class action research are as follows.

Table 1. Interval Categories of Indicators of Success in Classroom Action Research

Level of Completion	Category
90-100	Excellent
80-89	Good
78-79	Fair
<78	Poor

RESULTS AND DISCUSSION

This research was conducted from pre-cycle to cycle II. Where each cycle is carried out with two meetings. Based on the data obtained, there was an increase in the average value of critical thinking skills obtained from the assessment of knowledge, attitudes, and skills as well as playing the Blooket quiz. Not only that, the data on student learning outcomes obtained also increased from cycle I to cycle II. The results of critical thinking skills and learning outcomes of students in class VII-E SMP Negeri 29 Semarang. The data of students' critical thinking skills in cycle I can be described through the following table:

Table 2. Data on Students' Critical Thinking Skills in Review of Average Results from the Aspects of Knowledge Attitude, Skills, and Playing Blooket Cycle I

	Knowledge	Attitude	Skills	Blooket
Mean	76,47	60,29	81,25	70
Percentage (%)	76,47	64,70	80	52,94

(Source: Data Processing Results)

Table 2 above provides an explanation of the data on students' critical thinking skills in terms of the results of the average value of both aspects of knowledge, attitudes, skills, and performance on the first cycle Booklet quiz. The results of the average value of student knowledge in working on formative assessments (assignments) are 76.47 (76.47%). The mean score for the class on the material of the formulation of Pancasila in the subject of Pancasila Education is still below the mean value of the learning achievement standard of 80, indicating that the class score has not yet reached the average value of classical learning completeness of 80%. The mean student attitude assessment was obtained at 60.29 (60.70%). This indicates that the average attitude assessment is significantly below the achievement indicator of 80, which is considered to be within the "good" category. Therefore, it can be concluded that the average attitude assessment of students in class VII-E of SMP Negeri 29 Semarang is 60.29, which indicates that it has not met the standard performance indicators, and thus has not achieved the predicate of "good."

Additionally, researchers administer skills assessments to students. The aforementioned skills assessment is obtained during the students' participation in discussion and presentation activities. In this assessment of skills, researchers concentrated on process and final assessments. The process assessment encompasses discussion and presentation activities. Furthermore, the final assessment is represented by the results of discussion activities. The results of the data processing indicated that the average data obtained from the student skills assessment was 81.25 (80%). It can be concluded that the standard assessment indicators have been achieved with a good predicate.

Moreover, the researchers administered Blooket quiz activities to foster students' critical thinking abilities. In the initial cycle, the educational game Blooket was employed to facilitate the comprehension of Pancasila. The mean score of students who worked on the Blooket educational game was 70 (52.94%). It can be concluded that the class average value on the material of the Pancasila formulation in the Pancasila Education subject is still below the average value of the learning achievement standard of 80, indicating that the class value is still not at the classical learning completeness of 80%. Furthermore, the results of the data analysis related to the assessment of student learning outcomes in class VII-E of SMP 29 Semarang are presented below. The students' learning outcomes were obtained through a post-test administered during the first cycle. The student learning outcomes can be demonstrated by the following table:

Table 3. Data on Student Learning Outcomes Score Based on the Average Score on Post-Test Cycle I

	Learning Outcomes Score
Mean	75,29
Percentage (%)	73,53

(Source: Data Processing Results)

Table 3 above provides insight into the learning outcomes of students, as evidenced by the average score on the first-cycle post-test. The figure in question is 75.29, which represents a percentage of 73.53. The post-test was developed based on the material on the formulation of Pancasila within the context of Pancasila Education. Consequently, these outcomes have not reached the established learning achievement standard of >78 and have not met the classical learning completeness value of 80%.

The results of the reflection conducted by researchers on the data from Cycle I related to critical thinking skills have not met the performance indicators established for the average value of the knowledge aspect, attitude, and participation in the Booklet quiz. The assessment of the skill aspect has met the performance indicators. Consequently, the average student learning outcome was 75.29 (73.53%), which is below the target success indicator of 80%. The non-achievement of the success indicator can be attributed to the following factors: (1) Students had not yet become accustomed to the application of the discovery learning model; (2) Students had not yet developed the confidence to formulate and answer questions; and (3) Students were still observed to be less focused when delivering teaching materials and joking with their friends. Consequently, the researcher opted to proceed with Cycle II. In Cycle II, the researcher implemented improvements to the learning process initiated in Cycle I. These included the incorporation of learning media in the form of infographics and videos.

In Cycle II, two meetings were held with different materials, namely the establishment of Pancasila. The implementation in Cycle II is largely consistent with that of Cycle I, with the exception of the incorporation of infographic media and videos to differentiate the treatment and enhance the learning process. Following the implementation of Cycle II, data pertaining to critical thinking skills and student learning outcomes were obtained. The data on critical thinking skills in Cycle II can be presented in the following table:

Table 4. Data on Students' Critical Thinking Skills in Review of the Mean Scores from the Aspects of Knowledge Attitude, Skills, and Playing Booklet Cycle II

	Knowledge	Attitude	Skills	Booklet
Mean	90,58	83,82	88,33	81,17
Percentage (%)	91,18	94,12	83,33	82,35

(Source: Data Processing Results)

Table 4 above presents the results of data processing of students' critical thinking skills in terms of the average value of aspects of knowledge, attitudes, skills, and participation in the Booklet quiz, as well as the difference in treatment by adding infographic media and videos in Cycle II. These results appear to meet the success indicators. The data indicate that the average value for the knowledge aspect was 90.58 (91.18%). Regarding the attitude aspect, the average score was 83.82 (94.12%). In contrast, the students achieved an average score of 88.33 (83.33%) for the skill aspect. Moreover, the results of the Booklet quiz indicated an average value of 81.17 (82.85%). It can be concluded that the critical thinking skills of students in class VII-E of SMP Negeri 29 Semarang in Cycle II have met the success indicator with an average score of >80 or a good predicate and achieved 80% classical learning completeness.

This was accompanied by data on the learning outcomes of students in class VII-E of SMP Negeri 29 Semarang. The student learning outcomes were obtained through a posttest in Cycle II. The student learning outcomes can be demonstrated in the following table:

Table 5. Data on Student Learning Outcomes Score Based on the Average Score on *Post-Test* Cycle II

Learning Outcomes Score	
Mean	81,17
Percentage (%)	85,30

(Source: Data Processing Results)

Table 5 above provides insight into the learning outcomes of students, as evidenced by the average score on the second-cycle posttest. The figure in question is 81.17 (85.30%). The post-test II was developed based on the material on the determination of Pancasila within the context of

Pancasila Education. Consequently, these outcomes have achieved the learning achievement standard of >78 and have not yet reached the classical learning completeness value of 80%.

DISCUSSION

This class action research was carried out with a discovery learning model assisted by Kalpancas media combined with Blooket on the material of the history of the birth of Pancasila. Where the model was applied both in cycle I and II. Critical thinking skills and student learning outcomes have increased from pre-cycle to cycle II and have met the success indicators. The development of critical thinking skills from cycle I to II can be seen in the following table:

Table 6. The Development of Students' Critical Thinking Skills in terms of the Acquisition of the Mean Scores in Aspects of Knowledge, Attitude, Skills, and Playing Blooket Inter-Cycle

	Knowledge		Attitude		Skills		Blooket	
	Cycle I	Cycle II	Cycle I	Cycle II	Cycle I	Cycle II	Cycle I	Cycle II
Mean	76,47	90,58	60,29	83,82	81,25	88,33	70	81,17
Percentage (%)	76,47	91,18	64,70	94,12	80	83,33	52,94	82,35

(Source: Data Processing Results)

Table 6 above indicates that there has been an increase in students' critical thinking skills, as evidenced by the average value of the aspects of knowledge, attitudes, skills, and performance on the Booklet quiz. The integration of the discovery learning model, facilitated by Kalpancas Media in conjunction with Blooket, has been demonstrated to enhance students' critical thinking abilities. This is demonstrated by the observed increase in the average value of the knowledge aspect, from 76.47% in Cycle I to 90.58% in Cycle II. The attitude aspect also demonstrated an improvement, with a rise from 60.29% (64.70%) in Cycle I to 83.32% (94.12%) in Cycle II. In accordance with the aforementioned observations, the skill aspect also exhibited an increase in the average value, rising from 81.25 (80%) to 88.33 (83.33%). Moreover, the mean score obtained from the Booklet quiz increased from 70 (52.94%) to 81.17 (82.35%). For further insight, the evolution of students' critical thinking abilities can be illustrated through the following graph.

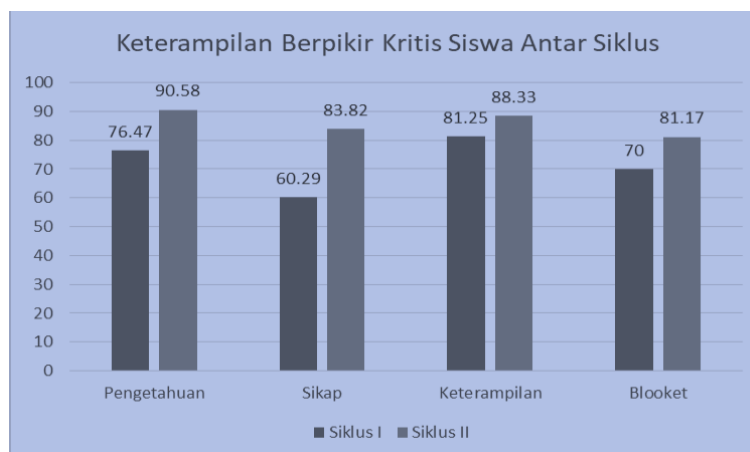


Figure 2. Comparison Chart of Mean Student Critical Thinking Skills Acquisition Scores Inter-Cycle

A comparison of the results of the average value of students' critical thinking skills between cycles, as illustrated in Figure 2, reveals an increase in the data. It can be posited that the implementation of the discovery learning model, facilitated by Kalpancas Media in conjunction with Blooket, has the potential to enhance students' critical thinking abilities.

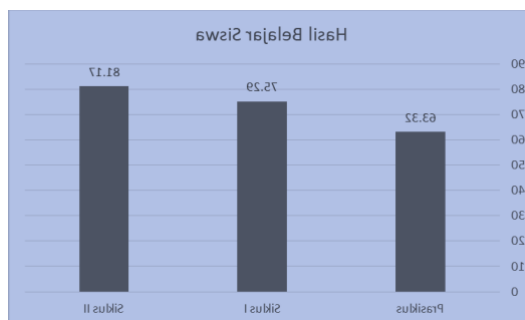
An enhanced capacity for critical thinking among students also has an impact on learning outcomes. The student learning outcomes are measured based on the results of the pre-cycle, cycle I, and cycle II. The implementation of learning steps in conjunction with the discovery learning model, assisted by Kalpancas media and the Blooket combination, has been demonstrated to enhance student learning outcomes. This is demonstrated by the evolution of student learning outcomes, as illustrated in the following table.

Table 7. Results of Improvement in Student Learning Outcomes Inter-Cycle

	Pre-Cycle	Cycle I	Cycle II
Mean	63,32	75,29	81,17
Percentage (%)	41,17	73,53	85,30

(Source: Data Processing Results)

Table 7 above indicates that there was an increase in the average value of student learning outcomes between cycles. The initial average value of the pre-cycle was 63.32 (41.17%), which increased to 75.29 (73.53%) in Cycle I and further to 81.17 (85.30%) in Cycle II. For further insight, the results of the development of student learning outcomes can be presented in the form of a graph.

**Figure 1. Graph of the Mean Scores of Student Learning Outcomes**

The data presented in Figure 3 above provides insight into the comparison graph of the average value of student learning outcomes, which demonstrates an increase from pre-cycle to cycle 2. It can be concluded that the application of the discovery learning model, assisted by Kalpancas Media combined with Blooket, can improve student learning outcomes. In conclusion, the implementation of the discovery learning model can enhance critical thinking and student learning outcomes. The results of the study indicate a significant relationship between critical thinking skills and student learning outcomes in civics subjects (Nurdiana et al., 2023). Following this assertion, the findings of the research indicated that the discovery learning model was capable of enhancing students' critical thinking abilities and academic outcomes (Ridwan, 2021).

The results of the data analysis in Cycle I demonstrate that 14 students (56.00%) achieved critical thinking indicators, while 17 students (68.00%) demonstrated knowledge competency learning outcomes. Subsequently, during the implementation of Cycle 2, the number of students who had achieved critical thinking indicators and learning outcomes increased to 22 individuals (88.00%) and 21 individuals (84.00%), respectively. Furthermore, another study has demonstrated that the implementation of the discovery learning model's steps can enhance students' critical thinking abilities and learning outcomes (Prasasti et al., 2019). The data indicates that there has been a notable enhancement in students' critical thinking abilities. This can be observed from the initial 38% in the pre-cycle, which increased to 73% in Cycle I and subsequently to 81% in Cycle II. The enhancement of critical thinking abilities has a discernible impact on student learning outcomes. This is evidenced by the fact that, in the pre-cycle, there was a 35% increase, which then rose to 77% in cycle I and to 85% in cycle II. Furthermore, the findings of the study indicate that the utilization of Calendar media has the potential to enhance the intellectual and attitudinal development of individuals (Fadli, 2021). It is posited that the utilization of Calendar media can enhance the knowledge and attitudes of individuals. Furthermore, other research indicates that image media can enhance student learning outcomes (Maroa et al., 2013). Furthermore, the integration of Blooket media has been demonstrated to enhance learning outcomes and student engagement in critical thinking (Lauricella, 2022; Maftuna & Ullibibi, 2023).

CONCLUSION

The results of the research and discussion conducted indicate that the application of the discovery learning model, assisted by Kalpancas media in conjunction with Blooket, can enhance

students' critical thinking abilities and academic outcomes. Previous studies on the application of the discovery learning model in improving critical thinking skills and student learning outcomes did not provide sufficient detail on the use of learning media and did not accommodate the combination of conventional and digital-based media. The researcher recommends the consideration of the application of the discovery learning model assisted by Kalpancas media combined with Blooket as an alternative for the improvement of critical thinking skills and student learning outcomes. Furthermore, future research should be more selective in the utilization of gamification-based media, taking into account both its advantages and disadvantages.

REFERENCES

- Arikunto, S. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Rineka Cipta.
- Badan Pusat Statistik. (2020). *Potret Pendidikan Indonesia*.
- Dewi, I. L., Utami, R. E., Prasetyowati, D., & Nuriafuri, R. (2023). *Penggunaan Model Problem Based Learning dengan Berbantuan Media “Mihak Sersan” untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik Pada Mata Pelajaran PKn*. 7(2), 305–317.
- Fadli, A. (2021). *Pengaruh Media Kalender Belajar Obat Bebas Terbatas Terhadap Pengetahuan dan Sikap Remaja dalam Mewujudkan Gema Cermat*. 2(9), 1–23.
- Fransiska, L., Subagia, I. W., & Sarini, P. (2018). Pengaruh Model Pembelajaran Guided Discovery Terhadap Keterampilan Proses Sains Siswa Smp Negeri 3 Sukasada. *Jurnal Pendidikan dan Pembelajaran Sains Indonesia (JPPSI)*, 1(2), 68. <https://doi.org/10.23887/jppsi.v1i2.17214>
- Handayani, N., Basariah, B., & Sawaludin, S. (2022). Penerapan Model Discovery Learning untuk Meningkatkan Kemampuan Berpikir Kritis Siswa. *Jurnal Pendidikan Indonesia*, 3(6), 542–552. <https://doi.org/10.36418/japendi.v3i6.993>
- Kemdikbud. (2022). Buku Saku Kurikulum Merdeka. *Kementerian Pendidikan dan Kebudayaan*, 1–50.
- Khoirurrijal, Fadriati, Sofia, Makrufi, A. D., Gandi, S., Muin, A., Tajeri, Fakhrudin, A., Hamdani, & Suprapno. (2022). *Pengembangan Kurikulum Merdeka*. CV. Literasi Nusantara Abadi.
- Kristin, F. (2016). Efektivitas Model Pembelajaran Kooperatif Tipe Stad Ditinjau Dari Hasil Belajar Ips Siswa Kelas 4 Sd. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, 6(2), 74. <https://doi.org/10.24246/j.scholaria.2016.v6.i2.p74-79>
- Kurniahtunnisa, Kusuma Dewi, N., & Rahayu Utami, N. (2016). Pengaruh Model Problem Based Learning Terhadap Kemampuan Berpikir Kritis Siswa Materi Sistem Ekskresi. *Journal of Biology Education*, 5(3), 50229. <http://journal.unnes.ac.id/sju/index.php/ujbe>
- Kurniasih, A. N., & Alarifin, D. H. (2015). Penerapan Ice Breaking (Penyegaran Pembelajaran) Untuk Meningkatkan Hasil Belajar IPA Siswa Kelas VIII A MTs AN-NUR Pelopor Bandarjaya Tahun Pelajaran 2013/2014. *Jurnal Pendidikan Fisika*, 3(1). <https://doi.org/10.24127/jpf.v3i1.29>
- Larasati, D. A. (2020). Pengaruh Model Discovery Learning Berbasis Higher Order Thinking Skill Terhadap Kemampuan Berpikir Kritis. *VOX EDUKASI: Jurnal Ilmiah Ilmu Pendidikan*, 11(1), 39–47. <https://doi.org/10.31932/ve.v11i1.684>
- Lauricella, S. (2022). *Equitable Assessment in Online Environments*. A Guide for Busy Educators. <https://ecampusontario.pressbooks.pub/aguideforbusyeducators/chapter/qualities-of-assessment-in-online-environments/>
- Lilienfeld, S. O., Ammirati, R., & David, M. (2012). Distinguishing science from pseudoscience in school psychology: Science and scientific thinking as safeguards against human error. *Journal of School Psychology*, 50(1), 7–36. <https://doi.org/10.1016/j.jsp.2011.09.006>
- Litman. (2022). *The whole enchilada, a game for teaching mathematical fluency*. In D. Seelow (Ed.), *Teaching in the game-based classroom: Practical strategies for grades*. Routledge.
- Maftuna, P., & Ullibibi, S. (2023). *Gamification Method in Teaching*. 2(3), 1–23.
- Mareti, J. W., & Hadiyanti, A. H. D. (2021). Model Problem Based Learning Untuk Meningkatkan Kemampuan Berpikir Kritis dan Hasil Belajar IPA Siswa. *Jurnal Elementaria Edukasia*, 4(1), 31–41. <https://doi.org/10.31949/jee.v4i1.3047>
- Maroa, P. P., Kapile, C., & Hamid, A. (2013). Penerapan Pembelajaran PKn Dengan Media Visual

- Untuk Meningkatkan Hasil Belajar Pada Siswa Kelas V SD Inpres 012 Bajawali Kecamatan Lariang Kabupaten Mamuju Utara. *Jurnal Kreatif Tadulako*, 3(2).
- Mohd, C. K. N. C. K., Shahbodin, F., & Mohamad, S. N. M. (2023). *A Review of Gamification Tools to Boost Students' Motivation and Engagement*. April.
- Nugroho, F. H., & Romadhon, S. (2022). *Minat peserta didik MTS N 3 Banyuwangi dalam GIM Blooket pada pembelajaran Bahasa Indonesia*. 10(2).
- Nurdiana, Atikah, C., & Nulhakim, L. (2023). *Hubungan Berpikir Kritis dengan Hasil Belajar Pada Mata Pelajaran Pendidikan Pancasila dan Kewarganegaraan Kelas VIII di SMP N 15 Kota Serang*. 49(1), 154–168. <https://doi.org/10.53090/jlinear.v7i1.414>
- Prasasti, D. E., Koeswanti, H. D., & Giarti, S. (2019). Peningkatan Keterampilan Berpikir Kritis dan Hasil Belajar Matematika melalui Model Discovery Learning di Kelas IV SD. *Jurnal basicedu*, 5(6), 6349_6356.
- Puspitaningtyas, A. R. (2022). Pengaruh Kemampuan Berpikir Kritis Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Matematika Kelas Iv Di Sdn 3 Agel Kecamatan Jangkar Situbondo Tahun Pelajaran 2021 / 2022. *Jurnal Purnama Media*, 1(1), 64–71.
- Puspitasari, P. (2018). *Pengaruh Penggunaan Media Manipulatif dalam Pembelajaran Proyek Terhadap Kemampuan Mengenal Bentuk Geometri Pada Anak Usia 5-6 Tahun di Paud Harapan Mandiri T.A 2017/2018*. Unimed.
- Redhana, I. W. (2019). Mengembangkan Keterampilan Abad Ke-21 Dalam Pembelajaran Kimia. *Jurnal Inovasi Pendidikan Kimia*, 13(1).
- Ridayani, Fajri, I., & Yusuf, R. (2021). *Application Of Project Citizen Learning Model: Descriptive Analysis Of 21ST Century Skills Of High*. 9(3), 789–800.
- Ridwan, S. L. (2021). Peningkatan Kemampuan Berpikir Kritis dan Hasil Belajar Peserta Didik Melalui Model Pembelajaran Discovery Learning. *Jurnal Didaktika Pendidikan Dasar*, 5(3), 637–656. <https://doi.org/10.26811/didaktika.v5i3.201>
- Rizki, N. J., & Nugraha, H. M. S. (2023). Pengaruh Pembelajaran Berbasis Berpikir Kritis Terhadap Peningkatan Prestasi Belajar PAI Di SDIT Adzkie 1 Sukabumi. *Jurnal Arjuna: Publikasi Ilmu Pendidikan ...*, 1(4), 166–180. <https://journal.aripi.or.id/index.php/Arjuna/article/view/93>
- Safitri, W. C. D., & Mediatati, N. (2021). Penerapan Model Discovery Learning Dalam Pembelajaran IPA untuk Meningkatkan Kemampuan Berpikir Kritis dan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Basicedu*, 5(3), 1321–1328. <https://jbasic.org/index.php/basicedu/article/view/925>
- Schmaltz, R. M., Jansen, E., & Wenckowski, N. (2017). Redefining Critical Thinking: Teaching Students to Think like Scientists. *Frontiers in Psychology*, 8, 1–4. <https://doi.org/10.3389/fpsyg.2017.00459>
- Sekariani, N. K. (2020). Penerapan Model Pembelajaran Discovery untuk Meningkatkan Hasil Belajar Pkn pada Siswa. *Mimbar Pendidikan Indonesia (MPI)*, 1(3), 55–60. <https://doi.org/10.31949/educatio.v6i1.209>
- Setianingrum, S., & Wardani, N. S. (2018). Upaya Peningkatan Hasil Belajar Tematik Melalui Discovery Learning Siswa Kelas 1 Sekolah Dasar. *Jurnal Pendidikan Dasar*, 9(2), 149–158. <https://journal.unj.ac.id/unj/index.php/jpd/article/view/9519>
- Sumadyani, T. A. (2020). Peningkatan Hasil Belajar PPKn Materi Perumusan dan Penetapan Pancasila sebagai Dasar Negara melalui Model Pembelajaran Discovery Learning di SMPN 3 Trenggalek. *Jurnal Pendidikan Cerdik Cendekia*, 3(6), 47–62. <http://jurnal.pgrisukoharjo.id/index.php/pgri/article/view/57>
- Trisna Dwi Jayanti, I. A. M. (2021). The Use of Discovery Learning in Improving Students' Critical Thinking Ability. *The Art of Teaching English as a Foreign Language*, 2(1), 12–16. <https://doi.org/10.36663/tatefl.v1i2.100>
- Wibowo, A., Rahman, A., Ishaq, M., & Yus, A. (2022). *Analisis Efektifitas Media Pembelajaran PKN Terhadap Gaya Belajar Kelas III SD*. 1(1), 1–8.
- Worldtop20.org. (2023). *International Education Database*. <https://worldtop20.org/education-database/>