

THE EFFECT OF *WORDWALL-BASED GAME LEARNING METHODS* AND *SELF REGULATED LEARNING* ON STUDENT LEARNING ACHIEVEMENT AT SMP NEGERI 2 HUTARAJA TINGGI

Wahyu Nengsih^{1a*}, Arif Rahman^{2b}, Astri Dwi Jayanti Suhandoko^{3c}

¹²³ Open University, Indonesia

E-mail: wahyunengsih301@gmail.com

bE-mail: arifr81@gmail.com

E-mail: astri.dwi@ecampus.ut.ac.id

(*) Corresponding Author

wahyunengsih301@gmail.com

ARTICLE HISTORY

Received : 20-04-2026

Revised : 07-05-2026

Accepted : 15-06-2026

KEYWORDS

Creative Hours;
learning cycle;
entrepreneurial spirit;
character education;
entrepreneurship-based
school;

ABSTRACT

This study aims to describe and analyze the “Creative Hours” learning model centered on a learning cycle as a vehicle for cultivating the entrepreneurial spirit of students in an entrepreneurship-based school. A qualitative approach with a case study design was employed at SMP Santa Ursula Bandung. Data were gathered through participant observation, in-depth interviews with the entrepreneurship team, accompanying teachers, and the principal, as well as documentation, then analyzed through data reduction, data display, and conclusion drawing. The findings show that the “Creative Hours” model rests on three components curriculum, process, and evaluation operationalized through five learning-cycle stages: exploring, planning, doing, communicating, and reflecting. Across these stages the school instills fifteen entrepreneurial values that can be grouped into self-regulation values, creative-innovative values, social-collaborative values, perseverance values, and honesty as a moral anchor. The model’s distinctiveness lies in a 60% weighting for character assessment that exceeds the weighting for knowledge and skills, the integration of the entrepreneurship curriculum with the school’s core values, and the presence of an authentic audience (parents) at the communication stage. The study concludes that a structured, character-oriented learning cycle functions effectively as a vehicle for cultivating entrepreneurial spirit and can serve as a reference model for developing entrepreneurship-based learning in other educational units.

This is an open access article under the CC-BY-SA license.



INTRODUCTION

The era of globalization and the rapid development of information technology presents new challenges in the world of education, especially related to the low involvement of students in the learning process. In the field, many

students show a lack of enthusiasm, passivity, and easily lose focus when participating in learning that is still dominated by conventional methods. This condition has an impact on low learning motivation and has a negative effect on the achievement of student learning outcomes.

This problem is reflected in the results of the 2022 Program for International Student Assessment (PISA) which places Indonesia in 68th place with a score of 379 in mathematics, 398 in science, and 371 in reading. This achievement shows that most Indonesian students still do not achieve the expected competencies, especially in literacy, numeracy, and science skills. In addition, the Covid-19 pandemic since March 2020 has also worsened education conditions through the phenomenon of (Rahmania et al., 2024) *learning loss*, especially in vulnerable student groups. The INOVASI and BSKAP study of the Ministry of Education and Culture in 20 districts/cities shows a decrease in student learning achievement after one year of the pandemic. (Apriyani, 2024)

The decline in learning achievement was also seen in the subject of Islamic Religious Education (PAI) for students in grades IX-1 of SMP Negeri 2 Hutaraja Tinggi for the 2023/2024 school year. Based on the grade level, the average PAI learning outcomes in semester 1 and semester 2 can be seen in the following table:

Table 1. List of Students' Semester Grades

Academic Year	Classes	Semester	Average PAI Score	Remarks
2023/2024	IX-1	Semester 1	80,0	—
2023/2024	IX-1	Semester 2	78,7	Down 1.3 points (≈1.6%)

The data in the table shows that the average PAI score of students decreased from 80.0 in semester 1 to 78.7 in semester 2, with a difference of 1.3 points or around 1.6%. This condition shows that PAI learning achievements in general are still not optimal. One of the important materials in PAI that is also relevant to be improved is zakat material, so learning innovations are needed that are able to encourage student motivation and learning outcomes.

Learning achievement is the results obtained by students through the learning process as a form of developing individual potential, both in academic aspects and the development of talents and interests. Therefore, learning achievement is an important indicator to assess the success of the learning process. Learning achievement is influenced by various factors, both external and internal. External factors include the quality of learning, environment, and family support, while internal factors include motivation, self-control, intellectual ability, and the physical and psychological condition of students. (Br Ginting & Br Steps, 2023; Nababan & Sari, 2023) (Asniar et al., 2024)

One of the external factors that greatly determines learning achievement is the quality of learning shown through the teacher's ability to choose learning methods that are in accordance with technological developments. One of the relevant approaches in the digital era is *Games Based Learning* (GBL), which is game-based learning that aims to increase student activities and involvement in learning. Compared to conventional methods, GBL is better able to increase student motivation, participation, and understanding because it utilizes game elements such as challenges, scores, and rewards that make the learning process more interactive and fun. (Ansary, 2023; Practical & Imam, 2022) (Abror, 2022)

One form of *Games Based Learning* that can be applied in schools is Wordwall. Wordwall is a digital learning platform that provides a variety of interactive activities, such as quizzes, matching pairs, and word searches to increase student engagement in learning. The use of Wordwall is very suitable for application at the junior high school level because the characteristics of early adolescent students tend to be active and need interesting learning. Through game elements such as levels, challenges, and scores, Wordwall can increase students' attention, motivation, and learning achievement. (Adriyani et al., 2022)

In addition to the quality of learning, learning achievement is also influenced by an internal factor known as *Self-Regulated Learning* (SRL). defines SRL as the ability of students to actively participate in the learning process through metacognitive, motivational, and behavioral aspects. The SRL component includes the use of cognitive strategies, motivation management, goal setting, self-efficacy, and the ability to evaluate the learning process. This ability is very important for junior high school students because at this stage of development they begin to be required

to learn more independently and be able to manage their own learning activities. Adipat et al. (2021) (Fatta et al., 2019)

Various previous studies have shown that *Wordwall-based Games Based Learning* has a positive effect on student activeness, reading ability, and learning outcomes. Other studies have also found that (Alotaibi, 2024) *Self-Regulated Learning* has a positive effect on learning outcomes, critical thinking skills, and students' interest in learning. However, the research that examines the application of (Amaliyah & Rahmat, 2021; Gustina & Rahayu, 2021) *Wordwall-based Games Based Learning* in Islamic Religious Education learning, especially in zakat materials, considering that the level of *Self-Regulated Learning* of students is still limited, so further research is needed

The novelty of this study lies in testing the interaction between *Wordwall-based Game Based Learning* learning strategies and the characteristics of students in the form of *Self-Regulated Learning* through a 2×2 factorial design. This study not only analyzes the effectiveness of the use of Wordwall, but also explains how students' *Self-Regulated Learning* levels affect the learning achievement of Islamic Religious Education. Therefore, this study aims to explore the influence and interaction of these two variables on student learning achievement at SMP Negeri 2 Hutaraja Tinggi, Hutaraja Tinggi District.

METHOD

This study uses a quantitative approach with a *quasi experiment* type (pseudo experiment) and a 2×2 factorial design. This design was chosen to test the influence of *Wordwall-based Game Based Learning* and *Self-Regulated Learning* methods on student learning achievement, as well as to analyze the interaction between the two variables. The research was carried out at SMP Negeri 2 Hutaraja Tinggi with a population of 50 students in grade IX. The sample was determined using *non-random sampling techniques*, namely class IX-1 as an experimental class (26 students) and class IX-2 as a control class (24 students). In addition to primary data obtained directly from students, this study also utilizes secondary data in the form of attendance lists, student scores, and documents from the student affairs and counseling guidance sections. (Syahrizal & Jailani, 2023; scrape et al., 2025)

The research instruments consist of three types. First, learning achievement instruments that include cognitive domain tests, affective domain questionnaires, and psychomotor domain observation sheets compiled based on Bloom, Krathwohl, and Simpson taxonomy. Second, the *Self-Regulated Learning* questionnaire was developed based on theory to measure aspects of planning, self-monitoring, self-regulation, cognitive control, time management, motivation, and reflection on student learning. The grouping of *Self-Regulated Learning* levels is carried out using the *median split* technique, so that students are grouped into high and low categories. Third, observation sheets are used to monitor the implementation of *Wordwall-based Game Based Learning* methods during the learning process. (Rahman et al., 2026)

The research procedure begins with a preliminary study to identify problems in schools and prepare an experimental design. Furthermore, both classes were given a *pretest* to find out the students' initial abilities. The experimental class received treatment using the *Wordwall-based Game Based Learning* method, while the control class used the expository method. After all treatments were completed, both classes were given a *posttest* to measure student learning achievement. The data obtained was then analyzed to test the influence of learning methods, the level of *Self-Regulated Learning*, and the interaction between the two on student learning achievement.

RESULT AND DISCUSSIONS

RESULTS

This study is a quasi-experimental research with a 2×2 factorial design which aims to analyze the influence of *Wordwall-based Game Based Learning* methods and expository learning models, as well as the level of *Self-Regulated Learning* (high and low) on the learning achievement of Islamic Religious Education students in grade IX of SMP Negeri 2 Hutaraja Tinggi. In addition, this study also examines the interaction between learning methods and *Self-Regulated Learning* on student learning achievement.

Before data collection is carried out, all research instruments are first validated by experts (*expert judgment*) to assess the feasibility of content, construction, and language. The validated instruments included observation sheets for learning implementation, learning achievement tests, and *Self-Regulated Learning* questionnaires. The validation results showed that all instruments were in the category of suitable for use with several minor revisions according to the validator's suggestions, especially related to the clarity of indicators, material suitability, and language use.

The instrument was tested on students outside the research sample to determine its validity and reliability empirically. The validity test of learning achievement test items was carried out using *Product Moment* correlation with the help of SPSS, while reliability was measured using *Cronbach's Alpha coefficient*. The results of the analysis showed that all instruments met the valid and reliable criteria, making them suitable for use in the collection of research data.

The data analyzed in this study included *pretest* and *posttest* scores of student learning achievement in experimental and control classes, as well as data on the level of *Self-Regulated Learning* of students which were grouped into high and low categories. In addition, data were also presented based on a combination of 2×2 factorial design, namely the group of students with a high *Wordwall-based Game Based Learning* and *Self-Regulated Learning* (A1B1), a *Wordwall-based Game Based Learning* and a low *Self-Regulated Learning* (A1B2), a high expository and *Self-Regulated Learning* model (A2B1), as well as an expository model and *Self-Regulated Learning* low (A2B2).

The presentation of the data aims to provide an overview of the difference in average, score distribution, and learning achievement trends in each research group. Furthermore, the data was analyzed through prerequisite test analysis and hypothesis testing using statistical techniques that had been determined in accordance with the research design.

Table 2. *Criteria for Interpreting the Validity of Instruments Based on the Percentage of Expert Assessments*

Percentage	Category
0–20%	Highly Invalid
21–40%	Invalid
41–60%	Quite Valid
61–80%	Valid
81–100%	Highly Valid

The results of expert validation of the research instrument are presented as follows:

Table 3. *Expert Validation of Cognitive Domain Student Learning Achievement Test Instruments*

No	Aspects	Validator 1	Validator 2	Validator 3	Total Score	Percentage	Criteria
1	Indicator Compatibility	25	24	25	74	99%	Highly Valid
2	Language Clarity	22	24	22	68	91%	Highly Valid
3	Clarity and accuracy of the question formulation	22	24	23	69	92%	Highly Valid
4	Key Permissions	24	23	24	71	95%	Highly Valid
5	Ranah Kognitif	25	24	24	73	97%	Highly Valid
Total average		23,6	23,8	23,6	71,0	95%	Highly Valid

Maximum score = 75

Based on the results of expert validation of the cognitive domain learning achievement test instrument in the table above, the average score of the three validators was obtained of 71.0 from a maximum score of 75 with a feasibility percentage of 95%. The value is in the *Very Valid category*. This shows that the test instruments in the cognitive realm have met the aspects of indicator suitability, language clarity, accuracy of question formulation, correctness of answer keys, and suitability of the level of cognitive domain. Thus, the cognitive domain test instrument is suitable for use in research with minor revisions according to the validator's suggestion.

Student Learning Achievement through Wordwall-based Game Based Learning Method and Low Self-Regulated Learning

Based on the results of data analysis, it was found that the average learning achievement of students with *low Self-Regulated Learning* taught using the *Wordwall-based Game Based Learning* method was 61.50, higher than that of students taught by the expository method of 44.58. However, the difference was not statistically significant ($p > 0.05$).

Descriptively, these results show that the use of *Wordwall-based Game Based Learning* is able to increase student involvement in the learning process, especially in students with *low levels of Self-Regulated Learning*. Learning that utilizes elements of games, challenges, and direct feedback can attract students' attention so that they are more active in participating in learning. This condition occurs because students with *low Self-Regulated Learning* generally have limitations in planning, monitoring, and evaluating the learning process independently. Therefore, they need external stimuli that can help increase focus, motivation, and participation during learning. (Azhar et al., 2024; Nurhalisa et al., 2025)

These findings are in line with the opinion of James Paul Gee (2003) who stated that game-based learning can increase students' motivation and active involvement in learning. In addition, Zimmerman (1990) asserts that students with *low levels of Self-Regulated Learning* tend to need external support to help control their learning process. The results of this study are also supported by research that shows that the use of Wordwall can increase student activity and learning outcomes. Cortes & Carreño-Bolivar (2024)

Thus, it can be concluded that the use of *the Wordwall-based Game Based Learning* method in students with *low Self-Regulated Learning* shows an increase in the average learning achievement descriptively, but the increase has not shown a statistically significant difference.

Student Learning Achievement through Wordwall-based Game Based Learning Method and High Self-Regulated Learning

Based on the results of data analysis, it was found that the average learning achievement of students with *high Self-Regulated Learning* taught using the *Wordwall-based Game Based Learning* method was 73.18, higher than students taught using the expository method of 50.00. However, the difference was not statistically significant ($p > 0.05$).

Descriptively, these results show that the use of *Wordwall-based Game Based Learning* is able to increase student involvement in the learning process, including in students who have a high level of *Self-Regulated Learning*. Interactive learning provides opportunities for students to be more active in exploring the material and utilizing the various learning strategies they have.

This condition occurs because students with *high Self-Regulated Learning* have good abilities in planning, monitoring, and evaluating their learning process independently. With the support of interesting and interactive learning media, students can optimize their self-regulation skills so that their understanding of learning materials becomes better.

This finding is in line with Zimmerman's (1990) theory which states that *Self-Regulated Learning* is the ability of individuals to actively manage the learning process through planning, monitoring, and self-evaluation. In addition, James Paul Gee (2003) explained that game-based learning can increase students' motivation and involvement in

learning. The results of this study are also supported by Adipat et al. (2021) who found that *Game Based Learning* can improve learning outcomes, especially in students who have a good level of learning independence. (Br Ginting & Br Steps, 2023; Hasibullah, 2023)

Thus, it can be concluded that the use of *the Wordwall-based Game Based Learning* method in students with high *Self-Regulated Learning* shows an increase in average learning achievement descriptively, but the increase has not shown a statistically significant difference so the results cannot be generalized widely.

Student Learning Achievement through Expository Methods and Low Self-Regulated Learning

Based on the results of data analysis, it was found that the average learning achievement of students with *low Self-Regulated Learning* who were taught using the expository method was 44.58, lower than students who were taught using the *Wordwall-based Game Based Learning* method. However, the difference was not statistically significant ($p > 0.05$).

Descriptively, these results show that expository methods tend to be less effective in increasing student engagement, especially in students with low levels of *Self-Regulated Learning*. Learning dominated by the teacher's explanation causes students to play more roles as recipients of information so that active participation in the learning process is limited.

This condition occurs because students with *low Self-Regulated Learning* generally have limitations in concentrating, planning learning activities, and evaluating their understanding of the material. In one-way learning, students tend to be passive and lack stimuli that can encourage optimal learning engagement. (Faber et al., 2024; Fatta et al., 2019)

These findings are in line with the opinion that the expository method emphasizes the delivery of material directly by the teacher so that the active involvement of students is relatively limited. In addition, Zimmerman (1990) explains that students with *low Self-Regulated Learning* require external support to increase engagement in learning. The results of this study are also supported by those who show that teacher-centered learning tends to be less effective in increasing the activity and learning outcomes of students with low levels of learning independence. Noushad (2024)

Thus, it can be concluded that in students with *low Self-Regulated Learning*, the use of the expository method results in lower learning achievement descriptively compared to *Wordwall-based Game Based Learning*, although the difference has not shown statistical significance.

Student Learning Achievement through Expository Methods and Self-Regulated Learning as well as the Interaction between Learning Methods and Self-Regulated Learning

Based on the results of data analysis, it was found that the average learning achievement of students with *high Self-Regulated Learning* who were taught using the expository method was 50.00, lower than that of students who were taught using the *Wordwall-based Game Based Learning* method. However, the difference was not statistically significant ($p > 0.05$).

These results show that the expository method has not been able to optimally increase student involvement in the learning process, including in students who have a high level of *Self-Regulated Learning*. Although students in this category have the ability to organize, monitor, and evaluate the learning process independently, expository learning characteristics that tend to be one-way cause students' active involvement to be limited.

This condition results in the potential for learning independence that students have not been able to develop optimally. Students with *high Self-Regulated Learning* need a learning environment that allows them to actively participate, explore knowledge, and use a variety of learning strategies to achieve better learning outcomes.

This finding is in line with Zimmerman's (1990) theory which states that *Self-Regulated Learning* is an active process in managing learning activities independently. However, a less interactive learning environment can limit the optimization of these abilities. In addition, it states that teacher-centered learning methods tend to limit students' active involvement in learning. Faza & Sustainable (2025)

The results of this study are also supported by those who show that less interactive learning methods tend not to be able to optimize student learning outcomes even though students have a high level of learning independence. Thus, in students with high Anisah (2022) *Self-Regulated Learning*, the use of the expository method showed lower learning achievement descriptively, although the difference was not statistically significant.

Furthermore, the results of the two-track ANOVA test showed a significance value of $p = 0.331 > 0.05$, which means that there was no significant interaction between the learning method and *Self-Regulated Learning* on student learning achievement. This shows that the influence of learning methods on learning achievement tends to be consistent in students with *high and low Self-Regulated Learning*.

The absence of significant interactions indicates that learning methods and *Self-Regulated Learning* exert a relatively independent influence on students' learning achievement. In other words, differences in the level of *Self-Regulated Learning* do not significantly change the influence of learning methods on learning outcomes. Descriptively, there are indeed average differences between groups, but these differences are not strong enough to show a superior combination of treatments. (Chung & Lo, 2025; de Carvalho & Coelho, 2022)

This finding is in line with Zimmerman's (1990) theory which states that the effectiveness of *Self-Regulated Learning* is still influenced by external factors, including learning methods. In addition, various previous studies have generally found the influence of learning methods and *Self-Regulated Learning* separately, but not many have shown an interaction between the two. Therefore, it can be concluded that there is no significant interaction between the (Fauzi & Widjajanti, 2018) *Wordwall-based Game Based Learning* method and *Self-Regulated Learning* on student learning achievement.

CONCLUSION

Based on the results of the research, it can be concluded that the *Wordwall-based Game Based Learning method* has an effect on the learning achievement of Islamic Religious Education students in grade IX of SMP Negeri 2 Hutaraja Tinggi. This method has been shown to be more effective than the expository method in improving student learning achievement, which is shown by the difference in learning outcomes between the experimental class and the control class after being given treatment. This study also shows that *Self-Regulated Learning* (SRL) has an effect on student learning achievement. Students who have a high level of *Self-Regulated Learning* have better learning achievement than students with a low level of *Self-Regulated Learning*. These findings confirm that students' ability to organize, monitor, and evaluate their learning process plays an important role in academic success. However, the results of the study showed that there was no significant interaction between learning methods and *Self-Regulated Learning* on student learning achievement. This means that the influence of learning methods on learning achievement is not influenced by the high or low level of *Self-Regulated Learning* of students. Thus, learning methods and *Self-Regulated Learning* work independently in influencing students' learning achievement.

REFERENCES

- Abror, M. H. (2022). Self-Regulated Learning on Students' Mathematics Learning Outcomes. *Plusminus: Journal of Mathematics Education*, 2(2), 233–242. <https://doi.org/10.31980/plusminus.v2i2.1676>
- Adipat, S., Laksana, K., Busayanon, K., Ausawasowan, A., & Adipat, B. (2021). Engaging Students in the Learning Process with Game-Based Learning: The Fundamental Concepts. *International Journal of Technology in Education*, 4(3), 542–552. <https://doi.org/10.46328/ijte.169>
- Adriyani, F. N., Anggraeni, A., Prasetyani, D., & Siregar, S. S. (2022). The Effectiveness of Using Wordwall-Based Digital Game Based Learning to Improve Chinese Learning Outcomes in Class X SMKN 2 Semarang. *Longda Xiaokan: Journal of Mandarin Learning and Teaching*, 5(2). <https://doi.org/10.15294/longdaxiaokan.v5i2.40907>
- Akbar, M. D., Arbeni, W., Balqis, U., Hetiara, R., & Ramadhan, T. I. (2026). Taxonomy of Educational Objectives. *Eductum: Journal Research*, 5(1), 1–4. <https://doi.org/10.56495/EJR.V5I1.1433>

- Alotaibi, M. S. (2024). Game-Based Learning in Early Childhood Education: A Systematic Review and Meta-Analysis. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1307881>
- Amaliyah, A., & Rahmat, A. (2021). Development of students' self-potential through the educational process. *Attadib: Journal of Elementary Education*, 5(1), 28. <https://doi.org/10.32507/attadib.v5i1.926>
- Anisah, L. (2022). Utilizing “Wordwalls” as an Assessment Tool for Indonesian Junior High School Students. *English Review: Journal of English Education*, 10(3), 831–842. <https://doi.org/10.25134/erjee.v10i3.6472>
- Ansary, K. (2023). Study on Achievement Motivation and Academic Achievement of The Higher Secondary School Students. *The Social Science Review*, 1(1), 1–10.
- Apriyani, N. (2024). Self-Regulated Learning in the School Mathematics Learning Process. *Trigonometry: Journal of Mathematics*, 1(1), 1–5. <https://doi.org/10.30599/trigonometri.v1i1.3253>
- Asniar, Dilfa, Ismail, L., Nasir, & Sahirah, S. (2024). The Influence of Game-Based Learning Wordwall Learning Media on Student Learning Outcomes in Informatics Subjects. *Didactic: PGSD Scientific Journal STKIP Subang*, 10(04), 280–287. <https://doi.org/10.36989/DIDAKTIK.V10I04.4449>
- Azhar, M. N., Nurmahanani, I., & Rosmana, P. S. (2024). Application of Wordwall-Assisted Game-Based Learning Method in Improving Reading Comprehension Skills in Grade VI Students. *Pendas: Scientific Journal of Basic Education*, 9(3), 918–925. <https://doi.org/10.23969/JP.V9I3.14897>
- B. R. Ginting, N., & B. B. Sitepu, R. W. (2023). The Influence of the Wordwall Type Game Based Learning Model on the Understanding of Social Studies of Ethnic and Cultural Diversity Materials in Elementary 020254 Binjai City. *Journal of Curere: Scientific Journal of the Faculty of KIP University of Quality*, 7(2), 95–102. <https://doi.org/10.36764/JC.V7I2.1195>
- Chung, B., & Lo, N. (2025). A Comparative Study of Self-Regulated English Learning Through Mobile Language-Learning Applications in Post-Pandemic Hong Kong and South Korea. *Smart Learning Environments*, 12(1), 42. <https://doi.org/10.1186/s40561-025-00399-w>
- Cortes, M. A. N., & Carreño-Bolivar, L. (2024). Virtual Game-Based Learning Environments to Promote Self-Regulated Learning Skills in Foreign Language Learners. *F1000Research*, 13, 1541. <https://doi.org/10.12688/f1000research.157746.1>
- de Carvalho, C. V., & Coelho, A. (2022). Game-Based Learning, Gamification in Education and Serious Games. *Computers*, 11(3), 36. <https://doi.org/10.3390/computers11030036>
- Faber, T. J. E., Dankbaar, M. E. W., van den Broek, W. W., Bruinink, L. J., Hogeveen, M., & van Merriënboer, J. J. G. (2024). Effects of Adaptive Scaffolding on Performance, Cognitive Load and Engagement in Game-Based Learning: A Randomized Controlled Trial. *BMC Medical Education*, 24(1), 943. <https://doi.org/10.1186/s12909-024-05698-3>
- Fatta, H., Maksom, Z., & Zakaria, M. H. (2019). Game-based Learning and Gamification: Searching for Definitions. *International Journal of Simulation: Systems, Science & Technology*, 19(6), 1–10. <https://doi.org/10.5013/IJSSST.a.19.06.41>
- Fauzi, A., & Widjajanti, D. B. (2018). Self-Regulated Learning: The Effect on Student’s Mathematics Achievement. *Journal of Physics: Conference Series*, 1097, 012139. <https://doi.org/10.1088/1742-6596/1097/1/012139>
- Faza, A., & Lestari, I. A. (2025). Self-Regulated Learning in the Digital Age: A Systematic Review of Strategies, Technologies, Benefits, and Challenges. *The International Review of Research in Open and Distributed Learning*, 26(2), 23–58. <https://doi.org/10.19173/irrodl.v26i2.8119>
- Gustina, I., & Rahayu, W. D. (2021). Factors Affecting the Learning Achievement of Students of the Department of Accounting, Faculty of Economics and Business, University of Riau. *Journal of Accounting and Finance*, 9(2), 1–11. <https://doi.org/10.32520/jak.v9i2.1361>
- Hasibullah, M. U. (2023). Learning Innovation Using Wordwall Website Application. *Incare: International Journal of Educational Resources*, 4(3), 238–246. <https://doi.org/10.59689/INCARE.V4I3.726>

- Nababan, D., & Sari, P. M. (2023). The Influence of Expository Learning Models on Student Learning Outcomes. *Journal of Social Education and Humanities*, 2(2), 792–800. <https://publisherqu.com/index.php/pediaqu/article/view/186>
- Noushad, P. P. (2024). Taxonomies of Educational Objectives. In *esigning and Implementing the Outcome-Based Education Framework* (pp. 43–82). https://doi.org/10.1007/978-981-96-0440-1_2
- Nurhalisa, N., Rizal, R., Aqil, M., Lagandesa, Y. R., & Fasli, M. (2025). The Effect of Problem Based Learning (PBL) Model with the Help of Wordwall Media on Student Learning Outcomes in Indonesian Language Subjects. *Attadrib: Journal of Madrasah Ibtidaiyah Teacher Education*, 8(1), 151–159. <https://doi.org/10.54069/attadrib.v8i1.867>
- Pratiwi, A. F., & Imami, A. I. (2022). Analysis of Self-Efficacy in Mathematics Learning in Junior High School Students. *Axiom: Journal of Mathematics and Mathematics Education*, 13(3), 403–410. <https://doi.org/10.26877/aks.v13i3.13973>
- Rahman, F., Al-Musyarrif, M. S., Moulana, M. R., & Pradita, E. K. (2026). HOTS-Based Assessment Instrument Development Techniques Refer to Anderson's Taxonomy & Krathwohl: Literature Studies 2015–2025. *Journal of Window Education*, 6(01), 59–65. <https://doi.org/10.57008/jjp.v6i01.2132>
- Rahmania, A., Suwangsih, E., & Rosmana, P. S. (2024). The Effect of Games Based Learning Quizziz on the Learning Outcomes of Mixed Counting Operations Ability of Grade VI Students. *Scientific Journal of Educational Vehicles*, 10(16), 25–33. <https://doi.org/10.5281/ZENODO.13761232>
- Syahrizal, H., & Jailani, M. S. (2023). Types of Research in Quantitative and Qualitative Research. *QOSIM Journal of Social Education & Humanities*, 1(1), 13–23. <https://doi.org/10.61104/jq.v1i1.49>
- Waruwu, M., Pu'at, S. N., Utami, P. R., Yanti, E., & Rusydiana, M. (2025). Quantitative Research Methods: Concepts, Types, Stages and Advantages. *Scientific Journal of the Education Profession*, 10(1), 917–932. <https://doi.org/10.29303/jipp.v10i1.3057>