



Self-Regulation Skills in The Learning Climate of Traditional Muslim Schools in Indonesia

Mukni'ah^{1*}, Agus Fawait²

¹ Kiai Haji Achmad Siddiq State Islamic University, Jember, Indonesia

² At-Taqwa Islamic Institute, Bondowoso, Indonesia



DOI: <https://doi.org/10.46245/ijorer.v5i2.574>

Sections Info

Article history:

Submitted: February 10, 2024

Final Revised: February 19, 2024

Accepted: February 21, 2024

Published: March 7, 2024

Keywords:

Self Regulated Learning;

Regulation Skill;

Traditional Muslim Schools;

Learning.



ABSTRACT

Objective: To develop learning in traditional Muslim schools, this research describes the conditions of learning that develop among traditional Muslim schools; this research aims to reveal, analyze, and find the main ideas of learning theory based on the self-regulation ability of traditional Muslim school students. **Method:** This research uses a qualitative approach, while this type of research is phenomenological. Determination of informants in this study using purposive sampling were selected as informants in this study were 15 students; in this case, students were interviewed using SRLIS. Data were collected through interviews, direct observation, diaries, video recordings, photography, and artifact analysis. **Results:** The results of this study show that students' self-regulation abilities in traditional Muslim schools are more group-based. They use the community to develop themselves; group self-regulation skills are dominant among traditional Muslim school students. **Novelty:** This research shows the self-regulation of traditional Muslim School Students as actors for themselves. The way they learn is through group self-regulation. So, what is new from this research is Group-Based Self-Regulation.

INTRODUCTION

Self-regulation in learning has been a topic of interest in recent years as it reflects the development of learners' behavior and thinking. It has been shown to enhance academic skills and abilities and increase students' self-confidence in social environment, behavior, and cognitive abilities. Self-regulation is a crucial skill for meeting the demands of modern education. Research has shown that self-regulation in learning enables individuals to take control of their learning process and develop cognitive, metacognitive, motivational, behavioral, and environmental processes that learners can apply. In addition, self-regulatory practices can create contextual conditions conducive to practice development (Brenner, 2022).

Self-regulation in learning arises from internal and external factors that stimulate motivation and regulation, such as study groups, work teams, or social networks (Fawait, 2020). This also applies to group self-regulation. This demonstrates that effective self-regulation in students must incorporate social interactions. Previous research has shown that individual learners shift their focus from the initial stages of task comprehension to monitoring activities during group study. Additionally, another study has confirmed that group learning promotes cognitive and regulatory development. Students engage in self-regulatory activities, such as task comprehension and monitoring. High-quality regulation is supported by planning, monitoring, evaluation, and feedback availability. Group regulation can facilitate knowledge construction (Fawait & Safaruddin, 2021) and enhance learning success.

Many researchers have conducted studies on learning in traditional Muslim schools; for example, the pedagogical concept in pesantren integrates science with the art of teaching. Learning in traditional Muslim schools is unique and distinctive. The pesantren teaching model applies a simultaneous, sequential model. Analysis and discovery model for pesantren students (Munifah & Purwaningrum, 2022; Prasetya et al., 2021; Rahman & Yahya, 2022; Supaat & Muslim, 2023). Hard work, honesty, responsibility, tolerance, and sincerity are learning for pesantren students. However, previous studies on learning in traditional Islamic schools have yet to address the issue of students' self-regulation in learning in traditional Islamic schools. Therefore, this study addressed the growing research gap in traditional Islamic schools to determine whether self-regulated learning exists in traditional Islamic schools, given that students in traditional Islamic schools are characterized by a high degree of independence and social cooperation.

Therefore, this research contributes to the search for theories relevant to self-regulation strategies in learning. This will be seen from the aspect of learning variables because, in essence, students' adaptation to learning situations requires cognitive, motivational, and socio-emotional skills (Chiappetta-Santana et al., 2022), which are often more challenging than those used in more conventional and well-structured learning situations, for this reason, teacher quality (empathy, responsiveness, reliability and assurance) has a significant impact on the quality of learning (Theresiawati et al., 2020).

The primary purpose of this study is to complement the shortcomings of previous studies by analyzing the self-regulation skills of students in learning in traditional Muslim schools. The researcher found that the self-regulation skills of traditional Muslim school students can self-regulate in groups. Traditional Muslim school students have established themselves as people who uphold the value of cooperation and groups. For this reason, this study found that group self-regulation is very dominant among traditional Muslim school students. The novelty of this research is to analyze the application of self-regulated learning to students in traditional Muslim schools. Self-regulated learning takes place in groups, where students carry out self-regulation together, which is agreed upon by the students through a group agreement. In other words, students do not necessarily learn under the supervision of a teacher but under shared supervision in agreed groups.

RESEARCH METHOD

This research uses a qualitative approach because the data presented is in words, is derived from extensive descriptions, and includes explanations of the processes that occur. Researchers explore information and data directly in the field without engineering or manipulating the situation and field conditions. Researchers explore and understand the meaning of the problem (Creswell, 2013) and intend to understand the phenomena that occur and the meaning of the events.

While this type of research is phenomenological. Because it starts from the assumption that social reality is rooted in the subject's point of view and describes the ordinary meaning of several individuals to the life experiences of different participants related to concepts or phenomena (Creswell, 2014), the determination of informants in this study using purposive sampling, those selected as informants in this study were 15 students consisting of 8 male students and seven female students.

The students were interviewed using the SRLIS (Erdogan & Senemoglu, 2016) to obtain information about students' self-regulation strategies in boarding schools, such as planning and solving learning problems. This instrument was used because of its relevance to the research topic. The existence of this instrument is also closely related to the implementation of self-regulated learning. A complete context description can be found in Zimmerman and Martinez-Pons, as in Table 1.

Table 1. Self-regulated learning interview schedule (SRLIS).

| Number | Strategy categories | Definition |
|--------|-------------------------------|--|
| 1 | Self-evaluation | Statements indicating student-initiated evaluation of the quality or progress of their work. |
| 2 | Organizing and transformation | Statements indicating student-initiated open or closed reorganization of teaching materials to improve learning. |
| 3 | Goal setting and planning | Statements indicating the setting of student educational goals or sub-goals and planning for the sequence, timing, and completion of activities related to those goals. |
| 4 | Seeking information | Statements indicating student-initiated efforts to secure further task information from non-social sources when performing the task. |
| 5 | Record keeping and monitoring | For example, statements indicating student-initiated efforts to record events or outcomes: "I took notes on class discussions. "I kept a list of the words I picked up." |
| 6 | Structuring the environment | Statements indicating student-initiated efforts to choose or organize physical settings to make learning easier. |
| 7 | Self-consequence | Statements indicating student arrangement or imagination of rewards or punishments for success or failure. |
| 8 | Practice and memory | Statements indicating student-initiated efforts to memorize material by open or secret practice. |
| 9-11 | Seeking social support | Statements indicating student-initiated efforts to license help from peers (9), teachers (10), and adults (11), e.g., "If I have a problem with a math assignment, I ask a friend to help me." |
| 12-14 | Reviewing records | Statements indicating student-initiated efforts to reread tests (12), notes (13), or textbooks (14) to prepare for class or further testing. |
| 15 | Others | Statements indicating learning behaviors initiated by others, such as teachers or parents, and all vague verbal responses. |

Data collection in this study was carried out through participant observation, in-depth interviews, and documentation. In participant observation, the researcher participates in various activities in the traditional Muslim school. In this case, the researcher tries to participate in the observations and carefully integrate with the subject in a formal and non-formal atmosphere.

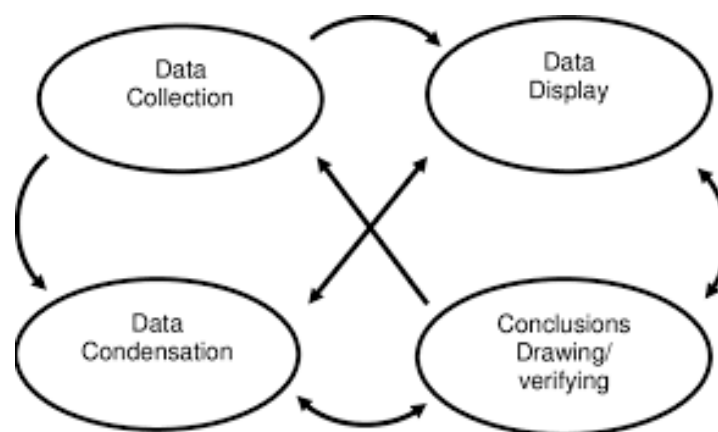


Figure 1. Components of data analysis interactive model (Miles et al., 2016)

In order to obtain accurate findings, the researcher conducted in-depth interviews. This method is used to collect as much information as possible, as well as other documents that can support the research data. The documentation method by researchers is intended to collect data by taking data through existing documents at Pesantren Nurul Jadid Probolinggo. This research uses the interactive model of data analysis. This data analysis goes through several stages, namely data condensation, data display, and conclusion drawing/verifications (Miles et al., 2016), as shown in Figure 1. This study uses the criteria of levels of trust (credibility) as a measure of data validity, in this case, using data triangulation with types of source triangulation, triangulation techniques, and time (Campbell et al., 2020). Researchers use triangulation to check data with two or more sources of information, including repeated checks with the interview process by asking the same questions to the same informants at different times and cross-checking.

RESULTS AND DISCUSSION

Result

Learning in traditional Muslim schools develops in line with the demands of modern society but does not lose the traditions that characterize traditional Muslim schools. In the learning process, students must fulfill existing requirements and goals and the demand to master religious knowledge. For this reason, students are expected to be highly motivated, active learners, and creative. Students spend more time, attention, and interest in learning and searching for new information relevant to their chosen science.

Based on the data collection results, students' self-regulation strategies in traditional Muslim schools are more based on group arrangements. They use the community to develop themselves in self-evaluation, organization and transformation, goal setting and planning, information search, document search and monitoring, environment building, self-consequences, training and memorization, seeking social support, and checking reports. The field observations show that the pupils organize their learning by recording personal study schedules and lesson material without teacher instruction and arranging study time outside the formal lesson schedule. The results of interviews with students in traditional Muslim schools corroborate this:

"We learn with self-awareness; even if the teacher does not tell or supervise us, we still learn. We do not need to note down the material, but we need to take notes ourselves".

The teacher also said:

"We have accustomed our students to manage their study time because, in Islamic boarding schools, no one supervises them 24 hours a day; they are also far from their parents. So what we emphasize is their awareness of their studies. It is just that we guide them in organizing themselves in their studies".

As observed, the students prefer to study in groups; they form small groups to learn. The teacher does not supervise group learning, but the students themselves initiate the learning groups. According to the results of an interview with one of the students that:

"In studying, the average student in this Islamic boarding school prefers to study in groups, and there are no rules from the Islamic boarding school administration. This grouping comes from the students' awareness of forming small groups in learning, and we do this outside the study schedule of formal schools or those programmed in Islamic boarding schools".

The essence of the interview results can be explained as shown in Table 2.

Table 2. Students' self-regulation strategy in a traditional Muslim school

| Strategy category | Interview Results |
|-------------------------------|---|
| Self-evaluation | Students evaluate themselves independently and in groups. |
| Organizing and transformation | Students evaluate learning independently and in groups. |
| Goal setting and planning | The purpose of students studying in pesantren is to integrate general science and religious science and independence. |
| Seeking information | Students seek information in a scientific way from both the teacher and their peers. |
| Record keeping and monitoring | Students make notes on the material studied in the form of special notes and notes on the book's page. |
| Environmental organization | Pupils adapt to the learning environment and determine and seek a more conducive and enjoyable learning atmosphere. |
| Self-consequences | Pupils feel happier and more enthusiastic about learning when they receive rewards and punishments. |
| Practicing and remembering | Pupils discuss a lot in front of the hut programmatically and independently. |
| Seeking social support | Students independently ask peers and pesantren administrators about learning difficulties. |
| Reviewing records | Students learn by looking at study notes, both special notes and notes on the side of the book. |

From Table 2, it is found that students' self-regulation in learning in pesantren is more focused on learning independence in carrying out self-evaluation, organization, and transformation, goal setting and planning, searching for information, keeping records and monitoring, structuring the environment, self-consequences, practicing and remembering, seeking social assistance.

Discussion

Zimmerman's three-phase model has developed as a learning system in the context of learning in traditional Muslim schools. Students deliberately develop strategies to self-

regulate their cognition, behavior, and physical and social environment. Self-regulation involves a series of processes, from planning to achieving goals (Cleary & Russo, 2024).

Referring to the previous chapter, student self-regulation comprises two phases: forward-thinking, task analysis, and self-motivation. Self-regulated learning (SRL) involves forethought, performance, and self-reflection. SRL effectively increases SRL activities and course engagement (Wong et al., 2021). Students can independently manage the three phases of SRL (Dignath & Veenman, 2021). There are differences among students in their application of learning strategies (Fawait et al., 2020). Therefore, the classical book learning approach has not been able to achieve the target of the general objectives of the boarding school. However, it is generally possible to implement self-regulation among students through collaborative, forward-thinking. In this regard, students can design effective self-development programs (Fawait & Safaruddin, 2021). This is evidenced by how students set goals and plan their progress in improving their ability to read and understand classical literature. However, good self-motivation only sometimes supports the ability to analyze tasks. This is because motivational strategies employed by students are often general, and only a few students can direct their motivation effectively. To improve students' abilities in self-regulation, it is necessary to train them in critical thinking skills, which must be continuously practiced (Anggraeni et al., 2021).

During the performance phase, students demonstrate good self-control. They employ a balanced approach to self-control strategies, whether they face success or failure. They employ a balanced approach to self-control strategies, whether they face success or failure. They employ a balanced approach to self-control strategies, whether they face success or failure. However, students need help to provide a structured self-evaluation. To enhance the effectiveness of this process, it is recommended to utilize the proposed framework that integrates goal-setting and planning strategies, self-monitoring, and self-evaluation (Ateş Akdeniz, 2023; Guven & Babayigit, 2020; Mou, 2021; Tran & Tran, 2020; Wong et al., 2021).

When implementing the three phases of self-regulation, students rely on them to guide their actions. They start by setting goals and then strategically plan relevant strategies to achieve them. Self-regulation has a significant effect on students' learning activities and learning motivation (Çebi & Güyer, 2020; Guven & Babayigit, 2020; Tanti et al., 2020; Yan et al., 2020; Zheng et al., 2021). To achieve optimal learning results, students deliberately motivate themselves by remembering the initial goal of participating in learning (Purwoko et al., 2024). However, it is essential to note that the teacher plays a crucial role in implementing SRL. The teacher's ability to apply SRL is a key indicator of student success in learning (Vosniadou et al., 2024). During its development, SRL and various learning formats through SRL have effectively improved student achievement and learning motivation (Tinajero et al., 2024). However, learning independence is fostered through self-regulated learning (SRL), primarily influenced by environmental factors (Suwarman et al., 2024).

Regarding self-regulation, students employ various learning strategies but typically rely on self-control and self-observation techniques, such as time management, environmental organization, and seeking assistance. Furthermore, they evaluate their use of these strategies through self-assessment. The research of Widiartini et al. found significant differences between students who could evaluate their learning skills and understanding independently and those who did not self-evaluate (Widiartini et al., 2023). Independent learning, as practiced by students through organizations or groups,

enables them to regulate their behavior, maintain their achievements, and gain experience outside of formal learning (Lestari & Zahra, 2024).

The students' self-regulation in the three phases was supported by the social communication that developed in the pesantren. This text fragment demonstrates that students' self-regulation adheres to Zimmerman's framework of four levels of self-regulation development (Cleary & Russo, 2024). Nonetheless, it also highlights variations among students in their employment of learning strategies.

CONCLUSION

Fundamental Findings: The results of this research indicate that students' self-regulation strategies in traditional Islamic schools are more group-based. They use the community to develop themselves in self-evaluation, organization and transformation, goal setting and planning, information seeking, document searching and monitoring, environment building, self-consequencing, training and memorizing, seeking social support, and checking reports. Thus, this research found that group self-regulation skills determine the learning success of students in traditional Islamic schools.

Implications: The results of this research will be used as reference material in the development of learning in traditional Islamic schools for both managers and educators. They can improve the existing learning governance and provide space for students to learn through optimal self-regulation.

Limitations: This research is limited to examining the results of student self-regulation in learning in traditional Islamic schools. **Future research:** To improve the quality of learning and the quality of students in Islamic boarding schools, further research is needed to develop self-regulated learning with more emphasis on research that focuses on socially regulated learning in traditional Muslim schools.

ACKNOWLEDGEMENTS

We want to thank UINKHAS Jember and IAI At-Taqwa Bondowoso for supporting this research program by providing financial support and time to carry out the research.

REFERENCES

- Anggraeni, R. P., Hariyono, E., & Erman, E. (2021). The analysis critical-thinking skills of junior high school students on geoscience. *IJORER: International Journal of Recent Educational Research*, 2(3), 293–304. <https://doi.org/10.46245/ijorer.v2i3.102>
- Ateş-Akdeniz, A. (2023). Exploring the impact of self-regulated learning intervention on students' strategy use and performance in a design studio course. *International Journal of Technology and Design Education*, 33(5), 1923–1957. <https://doi.org/10.1007/s10798-022-09798-3>
- Brenner, C. A. (2022). Self-regulated learning, self-determination theory and teacher candidates' development of competency-based teaching practices. *Smart Learning Environments*, 9(1), 1-23. <https://doi.org/10.1186/s40561-021-00184-5>
- Campbell, R., Goodman-Williams, R., Feeney, H., & Fehler-Cabral, G. (2020). Assessing triangulation across methodologies, methods, and stakeholder groups: The joys, woes, and politics of interpreting convergent and divergent data. *American Journal of Evaluation*, 41(1), 125–144. <https://doi.org/10.1177/1098214018804195>
- Çebi, A., & Güyer, T. (2020). Students' interaction patterns in different online learning activities and their relationship with motivation, self-regulated learning strategy and learning performance. *Education and Information Technologies*, 25(5), 3975–3993. <https://doi.org/10.1007/s10639-020-10151-1>
- Chiappetta-Santana, L. H. B., Jesuino, A. D. S. A., & Lima-Costa, A. R. (2022). Learning

- motivation, socioemotional skills and school achievement in elementary school students. *Paideia*, 32, 1–12. <https://doi.org/10.1590/1982-4327e3232>
- Cleary, T. J., & Russo, M. R. (2024). A multilevel framework for assessing self-regulated learning in school contexts: Innovations, challenges, and future directions. *Psychology in the Schools*, 61(1), 80–102. <https://doi.org/10.1002/pits.23035>
- Creswell, J. W. (2013). *Penelitian kualitatif dan desain riset, memilih diantara lima pendekatan*. Pustaka Pelajar.
- Creswell, J. W. (2014). *Research design, pendekatan kualitatif, kuantitatif dan mixed*. Pustaka Pelajar.
- Dignath, C., & Veenman, M. V. J. (2021). The role of direct strategy instruction and indirect activation of self-regulated learning—Evidence from classroom observation studies. *Educational Psychology Review*, 33(2), 489–533. <https://doi.org/10.1007/s10648-020-09534-0>
- Erdogan, T., & Senemoglu, N. (2016). Development and validation of a scale on self-regulation in learning (SSRL). *SpringerPlus*, 5(1), 1–12. <https://doi.org/10.1186/s40064-016-3367-y>
- Fawait, A. (2020). Analisis social share regulated learning bagi santri di pesantren. *Dudeena: Journal of Islamic Religious Education*, 4(2), 73–82. <https://jurnal.iainkediri.ac.id/index.php/edudeena>
- Fawait, A., & Safaruddin, S. (2021). Factors affecting self-regulation of students in indonesian traditional muslim schools. *IJORER: International Journal of Recent Educational Research*, 2(6), 721–730. <https://doi.org/10.46245/ijorer.v2i6.66>
- Fawait, A., Setyosari, P., & Ulfa, S. (2020). Identification of factors affecting of character education program on high school students ' self-regulation skills. *Journal for the Education of Gifted Young Scientists*, 8, 435–450. <http://dx.doi.org/10.17478/jegys.6831551>
- Guven, M., & Babayigit, B. B. (2020). Self-regulated learning skills of undergraduate students and the role of higher education in promoting self-regulation. *Eurasian Journal of Educational Research*, 20(89), 47–70. <http://dx.doi.org/10.14689/ejer.2020.89.3>
- Lestari, V. D., & Zahra, A. A. (2024). Self-regulated learning for active organizational students of the faculty of psychology and humanities. *Journal of Islamic Communication and Counseling (JICC)*, 3(1), 1–12. <https://doi.org/10.18196/jicc.v3i1.52>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2016). Qualitative data analysis a methods sourcebook. *Nursing Standard*, 30(25), 1–24. <https://doi.org/10.7748/ns.30.25.33.s40>
- Mou, T. Y. (2021). Online learning in the time of the COVID-19 crisis: Implications for the self-regulated learning of university design students. *Active Learning in Higher Education*, 24(2), 185–205. <https://doi.org/10.1177/146978742111051226>
- Munifah, M., & Purwaningrum, S. (2022). Leadership strategy: Developing school culture through digital Turats learning. *Cypriot Journal of Educational Sciences*, 17(1), 68–80. <https://doi.org/10.18844/cjes.v17i1.6682>
- Prasetia, S. A., Khalidiyah, T., & Arif, S. (2021). Technological pedagogical content knowledge: A new pedagogical approach in islamic education in the pandemic era. *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, 12(2), 291–317.
- Purwoko, A. A., Sani, A., & Hadisaputra, S. (2024). Motivation , laboratory activities , and self regulated learning: How are they related. *ICSCHEM 2023*, 1–8. <https://doi.org/10.1051/e3sconf/202448104005>
- Rahman, M. S. A., & Yahya, M. S. (2022). The variety of tauhid education methods at al-amien islamic boarding school purwokerto wetan banyumas. *International Journal of Education, Vocational and Social Science*, 1(1), 270–289. <https://doi.org/10.99075/ijevss.v1i01.115>
- Supaat, S., & Muslim, M. (2023). The implementation of salih-akram character education at matholiul falah islamic boarding school of pati. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 8(7), 43–51. <https://doi.org/10.47405/mjssh.v8i7.2358>
- Suwarman, R. F., Rofiki, I., & Inayah, S. (2024). After almost 2 years of the pandemic: Self-regulated online learning of secondary high school students. *AIP Conference Proceeding*, 3049 (1), 1–7. <https://doi.org/10.1063/5.0193654>
- Tanti, T., Maison, M., Syefrinando, B., Daryanto, M., & Salma, H. (2020). Students' self-

- regulation and motivation in learning science. *International Journal of Evaluation and Research in Education*, 9(4), 865–873. <https://doi.org/10.11591/ijere.v9i4.20657>
- Theresiawati, T., Seta, H. B., Hidayanto, A. N., & Abidin, Z. (2020). Variables affecting e-learning services quality in Indonesian higher education: Students' perspectives. *Journal of Information Technology Education: Research*, 19, 259–286. <https://doi.org/10.28945/4489>
- Tinajero, C., Mayo, M. E., Villar, E., & López, Z. M. (2024). Classic and modern models of self-regulated learning: integrative and componential analysis. *Educational Psychology*, 15-27. <https://doi.10.3389/fpsyg.2024.1307574>
- Tran, T. Q., & Tran, T. N. P. (2020). Vietnamese EFL high school students' use of self-regulated language learning strategies for project-based learning. *International Journal of Instruction*, 14(1), 459–474. <https://doi.org/10.29333/IJI.2021.14127A>
- Vosniadou, S., Bodner, E., Stephenson, H., Jeffries, D., Lawson, M. J., Darmawan, Ig. N., Kang, S., Graham, L., & Dignath, C. (2024). The promotion of self-regulated learning in the classroom: a theoretical framework and an observation study. *Metacognition and Learning*. Springer US. <https://doi.org/10.1007/s11409-024-09374-1>
- Widiartini, N. K., Sudirtha, I. G., & Sukerti, N. W. (2023). *The effect of self-assessment and motivation toward students' performance in practicum classroom*. Atlantis Press SARL. https://doi.org/10.2991/978-2-494069-35-0_128
- Wong, J., Baars, M., de Koning, B. B., & Paas, F. (2021). Examining the use of prompts to facilitate self-regulated learning in Massive Open Online Courses. *Computers in Human Behavior*, 115, 1-19. <https://doi.org/10.1016/j.chb.2020.106596>
- Wong, J., Baars, M., He, M., de Koning, B. B., & Paas, F. (2021). Facilitating goal setting and planning to enhance online self-regulation of learning. *Computers in Human Behavior*, 124, 1-13. <https://doi.org/10.1016/j.chb.2021.106913>
- Yan, Z., Chiu, M. M., & Ko, P. Y. (2020). Effects of self-assessment diaries on academic achievement, self-regulation, and motivation. *Assessment in Education: Principles, Policy & Practice*, 27(5), 562–583. <https://doi.org/10.1080/0969594X.2020.1827221>
- Zheng, B., Chang, C., Lin, C.-H., & Zhang, Y. (2021). Self-Efficacy, Academic Motivation, and Self-Regulation: How Do They Predict Academic Achievement for Medical Students? *Medical Science Educator*, 31(1), 125–130. <https://doi.org/10.1007/s40670-020-01143-4>
-

***Mukni'ah (Corresponding Author)**

Doctoral Program in Islamic Religious Education Studies, Faculty of Tarbiyah and Education Sciences,
Kiai Haji Achmad Siddiq State Islamic University, Jember, Indonesia,
Jl. Mataram, Jember 68136, Indonesia
Email: mukniah@uinkhas.ac.id

Agus Fawait

Educational Management Masters Study Program, Faculty of Science Education
At-Taqwa Islamic Institute, Bondowoso, Indonesia
Jl. Hosokroaminoto Kademangan Bondowoso, Indonesia
Email: agusfawid87@gmail.com
