The Influence of Learning Environment on Self-Regulated Learning and Learning Outcomes of Students at Ma'had Aly Salafiyah Syafi'iyah Sukorejo

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Abstract: This study aims to analyze the influence of the learning environment on *self-regulated learning* (SRL) and academic achievement of students at Ma'had Aly Salafiyah Syafi'iyah Sukorejo academic year. Using a quantitative approach with a causal associative design, the study involved 163 students. Instruments used include the Indonesian version of the DREEM Short Form to measure the learning environment, the SRL-SRS (Toering et al., 2012) to assess *self-regulated learning*, and academic grades as indicators of learning outcomes. Data analysis was performed using the Generalized Additive Models (GAM) due to the non-normal distribution of the dataset. The results of the study showed that the learning environment significantly influenced SRL ($F = 55.27$; $p < 2e\text{-}16$; adjusted $R^2 = 0.251$) with a positive relationship. However, the learning environment did not significantly influence learning outcomes ($F = 1.95$; $p = 0.123$; adjusted $R^2 = 0.0354$). Other findings showed that SRL significantly influenced learning outcomes ($F = 10.15$; $p < 2e\text{-}16$; adjusted $R^2 = 0.314$). These findings indicate that the learning environment plays an important role in improving SRL among students, and high SRL is associated with better learning outcomes. The study's conclusions confirm that the learning environment plays a dominant role in shaping student independence in learning, which in turn supports their academic achievement. In the context of Islamic boarding schools, strengthening a holistic learning environment is a strategic step in developing independent, critical, and integrated learners

Keywords: Learning Environment, *Self-regulated learning*, and Learning Outcomes

Introduction

In the world of higher education, especially at Ma'had Aly, it is very important to understand the factors that influence mahasantri learning outcomes. Learning outcomes not only show students' academic achievement, but also how effective their learning is (Ash shiddiqi & Safitri, 2023). External factors, the learning environment, play an important role in shaping students' learning experiences

(Tasyirifiah et al., 2023). Learning in a good environment, which includes physical, social, and psychological elements, can help in skill development, information absorption, and character building (Jamaluddin et al., 2021).

A positive learning environment, consisting of physical, social, and emotional elements, has been shown to enhance student participation in academic activities. Ultimately, this has a positive impact on students' learning outcomes (Taylor et al., 1997). The study conducted by Aviva Lutfiana and Rose Mini Agoes Salim (2023) found that there is a correlation between having a positive learning environment and the level of academic achievement (Lutfiana & Salim, 2023).

Internal factors such as self-regulated learning are also important for students' academic success in addition to the learning environment (Raza et al., 2021). University students with high learning autonomy will be able to reach their best potential in an environment that facilitates learning needs and healthy interactions. This will lead to better academic achievement. The interaction between these external and internal factors aligns with the idea that the combination of environment and the individual's active involvement in regulating the learning process influences learning outcomes (Schunk & Zimmerman, 2012).

With self-directed instruction, students tend to have the ability to control their cognition, motivation, and behavior. They also have the responsibility and awareness to manage their own time and evaluate their performance. In Surah Ar-Ra'd, verse 11, the Qur'an says:

﴿ لَه مُعَقِّبٰتٌ مِّنْۢ بَيْنِ يَدَيْهِ وَمِنْ خَلْفِه يَحْفَظُوْنَه مِنْ اَمْرِ اللّٰهِ ۗاِنَّ اللّٰهَ لَا يُغَيِّرُ مَا بِقَوْمٍ حَتّٰى يُغَيِّرُوْا مَا بِاَنْفُسِهِمْ ۗوَاِذَآ اَرَادَ اللّٰهُ بِقَوْمٍ سُوْۤءًا فَلَا مَرَدَّ لَه ۚوَمَا لَهُمْ مِّنْ دُوْنِه مِنْ وَّالٍ ﴾

Meaning:

For man there are angels who accompany him in turn, from in front of him and behind him, guarding him by Allah's command. Verily, Allah does not change the condition of a people until they change what is in themselves. If Allah intends harm for a people, nothing can avert it, and there is no protector for them besides Him. (*QuranKemenagInMsWord_v2*, n.d.)

The Qur'anic verse (Surah Ar-Ra'd/13:11) explains that individuals play an important role in regulating and directing their goals, and Allah will change their fate if they strive sincerely. This verse relates to self-regulated learning, in which a person's success depends on their own ability to motivate, control, direct, and evaluate their goals.

By investigating the influence of the learning environment on self-regulated learning and the learning outcomes of student Ma'had Aly Sukorejo, this research aims to fill this gap. Therefore, it is hoped that this research will make a theoretical and practical contribution in improving the quality of education in higher education. Various studies have shown that learning environments and self-regulated learning both play an important role in supporting the achievement of learning outcomes. However, the relationship between the two is rarely studied simultaneously, especially in the context of religion-based education such as Islamic boarding schools.

Standardized instruments have been used to collect data through the questionnaires compiled. The validity and credibility of the instrument have been demonstrated. Short version of DREEM (Dundee Ready Education Environment Measure). In addition, a modified tool of the Self-regulated learning Self Report Scale (SRL-SRS), which is based on Barry J's theory. Zimmerman, used to measure learning independence. The results of student learning are represented in the documentation of academic grades.

The source of information for this research comes from active students at Ma'had Aly Sukorejo. Samples were taken

using purposive sampling techniques. Including relevant national and international journals in the fields of education and learning psychology, the latest scientific literature is used to build a theoretical foundation.

Literature Review

The learning environment in a psychopedagogical perspective is understood as students' perceptions of the academic climate they experience during the educational process. This concept is rooted in educational climate theory which emphasizes that the learning environment has a social "personality" that shapes students' learning experiences. Moos (1979) explains that social climate is the typical character of an environment that influences the level of support, independence and control within it. Departing from this framework, Roff et al. (1997) developed the Dundee Ready Education Environment Measure (DREEM) instrument through a grounded theory approach which centered on student perceptions at various medical education institutions across countries. DREEM identifies five main domains, namely perceptions of learning, lecturers, academic atmosphere, social support, and academic perceptions of themselves (Roff et al., 1997). This concept was then strengthened by the psychosocial-constructivist approach which emphasized that learning experiences are shaped by perceptions of the learning context (Zawawi & Elzubeir, 2012).

As it has developed, DREEM has been validated in various countries and educational contexts, not limited to medical education (Vieira et al., 2015). The full version of DREEM consists of 50 items, but Jeyashree et al. (2018) developed a short version (12 items) without reducing the representation of the five main dimensions. In Indonesia, Lutfiana and Salim (2023) adapted and validated the DREEM Short Form through back-translation procedures, expert testing, and Confirmatory Factor Analysis (CFA), with results showing high internal consistency (α = 0.896) and good model feasibility indices (CFI = 0.922; GFI = 0.901; SRMR = 0.055) (Lutfiana & Salim, 2023). Thus, DREEM becomes a comprehensive instrument for measuring the learning environment which includes cognitive, affective, social and structural dimensions, including in the context of religious education such as Ma'had Aly which combines academic, social and spiritual systems.

Apart from environmental factors, learning success is also influenced by students' self-regulation abilities. Self-Regulated Learning (SRL) is defined as an active process in which individuals manage thoughts, motivation, and behavior to achieve learning goals (Schunk & Zimmerman, 2012). Zimmerman (2002) defines SRL as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals," which emphasizes the cyclical and adaptive nature of the self-regulation process. Zimmerman's SRL model consists of three main phases: forethought (goal setting, strategic planning, self-motivation), performance (self-control and self-monitoring), and self-reflection (self-evaluation, cause attribution, and self-reaction) (Zimmerman, 2002). These three phases occur repeatedly and influence each other in increasing learning effectiveness.

In its operationalization, Toering et al. (2012) developed the Self-Regulation of Learning Self-Report Scale (SRL-SRS) which measures six dimensions of SRL, namely planning, self-monitoring, evaluation, reflection, effort, and self-efficacy (Toering et al., 2012). This instrument is based on the Zimmerman framework and is designed for the context of higher education, making it relevant for measuring students' self-regulatory behavioral tendencies. These dimensions reflect cognitive, metacognitive and motivational aspects which play an important role in determining the quality of student involvement in the learning process.

Learning outcomes conceptually refer to changes in behavior as a result of learning experiences, which include cognitive, affective and psychomotor domains (Bloom et al., 1956). Bloom's taxonomy classifies the cognitive domain into six levels of thinking, starting from knowledge to evaluation, which was later revised by Anderson and Krathwohl (2001) to remember, understand, apply, analyze, evaluate, and create. In addition, the Mastery Learning model emphasizes that learning outcomes are influenced by student characteristics, teaching quality, and the learning environment (Bloom, 1968). In the context of higher education, learning outcomes are generally measured through quantitative indicators such as academic grades or GPA which represent students' cognitive achievements. Thus, theoretically there is a relationship between the quality of the learning environment, the level of self-regulated learning, and student learning outcomes.

Research Method

This research uses a quantitative approach with a causal associative (explanatory) type of research. A quantitative approach was chosen because it allows measuring variables in numerical form, statistical analysis, and objective interpretation based on empirical data (Creswell, 2012). This research aims to examine the relationship and influence between the learning environment (X), self-regulated learning (Y1), and learning outcomes (Y2). As associative research, this study not only identifies relationships between variables, but also explains the structure of influence both directly and indirectly (Abdussamad, 2021). The causal nature of this research emphasizes testing cause and effect, namely how the learning environment influences self-regulated learning and how both contribute to learning outcomes.

Based on the results of the analysis prerequisite tests, the data shows a tendency for a non-linear relationship and does not fully meet the assumptions of classical linear regression, including multivariate normality. Therefore, this research uses the Generalized Additive Model (GAM), namely the development of linear regression which allows modeling non-parametric relationships through a smoothing function (Brockett et al., 2014). The advantage of GAM lies in its ability to capture non-linear relationship patterns without determining the form of function a priori, is flexible to various data distributions, and still produces clear quantitative interpretations (Wood, 2024). This model is considered appropriate for analyzing complex relationships between perception-based educational variables and academic achievement (Souza & Debs, 2024).

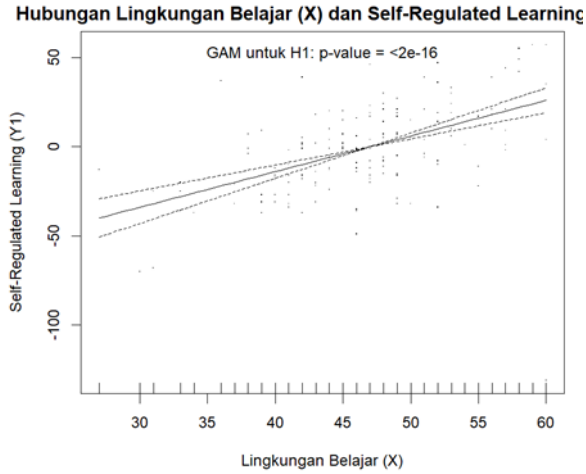
This research involved 163 Islamic boarding school students who were selected using purposive sampling technique. The learning environment was measured using the Indonesian version of the Dundee Ready Education Environment Measure (DREEM) Short Form instrument which has been validated by Lutfiana and Salim (2023), while self-regulated learning was measured using

the Self-Regulation of Learning Self-Report Scale (SRL-SRS) developed by Toering et al. (2012). Learning outcomes are obtained from student academic scores as an indicator of cognitive achievement. All analyzes were carried out using RStudio software with the mgcv package for GAM analysis and lavaan for testing structural regression-based mediation models, thus enabling comprehensive modeling of linear and non-linear relationships.

Discussion

The Influence of the Learning Environment on Learning Independence (Self-regulated learning)

Figure 1.1 Generalized Additive Model (GAM) Plot of the Relationship between Learning Environment and Self-Regulated Learning



Source: Research data processed using RStudio

Based on the results of analysis using Generalized Additive Models (GAM), the F value = 55.27 with p-value < 2e-16. This shows that there is a statistically significant relationship between the learning environment (X) and self-regulated learning (Y1). The R-squared (adj) value of 0.251 indicates that the learning environment variable is able to explain 25.1% of the variation in self-regulated learning in student students. The visualization of this relationship is depicted in a nonlinear regression graph, which shows the direction of the positive relationship between X and Y1.

The average of each aspect of the learning environment, such as Students Perception of Learning (SPoL), Academic Self-Perception, and Social Self-Perception, shows a consistent average value of 4. The highest coefficient of variation (CV) is found in the social aspect (Social Self-Perception), namely 28.28%, which indicates the diversity of students' perceptions in this aspect. On the other hand, SRL aspects such as planning, monitoring, evaluation, reflection, effort, and self-efficacy also show good averages, with an overall average of 4 and the highest CV value in the effort domain of 26.02%.

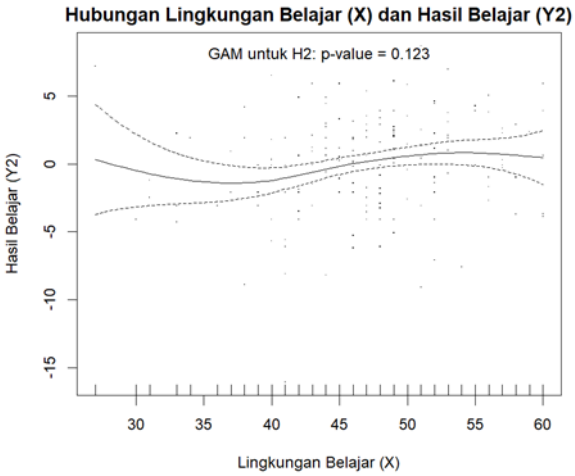
These results are in line with the theory of self-regulated learning according to Zimmerman (2002), which states that a positive learning environment can facilitate the process of self-regulation, including planning, monitoring and evaluating learning (Zimmerman, 2002). When students feel the support of a conducive environment in terms of atmosphere, lecturers and social interactions, they are more encouraged to actively organize and monitor their learning process independently. This finding is also in line with previous studies (Aviva Lutfiana & Rose Mini Agoes Salim, 2023) which underscore the importance of perceptions of the learning environment in shaping student learning experiences, especially in the context of value-based higher learning (Lutfiana & Salim, 2023).

In the context of Islamic boarding schools, these results contain the lesson that building a conducive learning environment not only functions as academic support, but also as a medium for fostering independence and personal responsibility. The values of sincerity, discipline and example that are instilled in Islamic boarding school life become social capital that helps strengthen

the students' self-regulated learning. Therefore, it is important for education managers in Islamic boarding schools to continue to pay attention to the holistic dimensions of the learning environment, both physical, social and psychological, in order to encourage the growth of learners who are independent, resilient and responsible for their own learning process.

The Influence of the Learning Environment on Learning Outcomes

Figure 1.2 GAM plot of the relationship between learning environment and learning outcomes



Source: Research data processed using RStudio

Based on analysis using the Generalized Additive Model (GAM), the values obtained were F = 1.95 and p = 0.123, which means there is no significant relationship between the learning environment and learning outcomes. R squared (adj) of 0.0354 indicates that variability in the learning environment only explains around 5.4% of the variation in learning outcomes. The scatterplot graph shows a flat pattern, without a clear trend. The average student learning outcome is 76 with a standard deviation of 3.75, and a coefficient of variation (CV) of 4.92%, illustrating the stability of the data. Meanwhile, students' perceptions of the previous learning environment showed an average of 4, with higher variations (CV between 20–28%).

Within the theoretical framework of Bloom's Taxonomy, learning outcomes are not only determined by perceptions of the external environment, but also by cognitive achievements at various levels, starting from remembering, understanding, applying, to analyzing, evaluating, and creating (Sohail, 2015). A study by Johnson & Doran (2016) shows that achievement at a higher-order level (analyzing–creating) is more closely related to in-depth teaching methods, not solely a product of the learning environment (Thompson & Lake, 2023).

In the context of Islamic boarding schools, these results invite us to reflect that a conducive learning environment remains important, but needs to be followed up with teaching and assessment strategies that encourage achievement at a high cognitive level. Preparing students to think critically and creatively is the key to making learning outcomes meaningful and in line with Islamic values such as tafakkur and tadabbur.

The Influence of the Learning Environment on Self-regulated learning and Learning Outcomes

Figure 1.3. GAM Plot of the Relationship between Self-Regulated Learning and Learning Outcomes

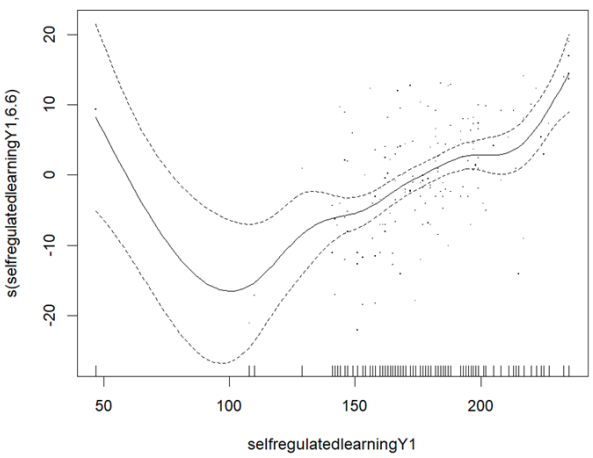


Figure 1.3. GAM Plot of the Relationship between Self-Regulated Learning and Learning Outcomes

The test results using the Generalized Additive Model (GAM) on the third hypothesis show that self-regulated learning (Y1) has a significant influence on learning outcomes (Y2), with an F value = 10.15 and a p-value < 2e-16. The adjusted R-squared value of 0.314 indicates that the model is able to explain 34.1% of the variation in learning outcomes through self-regulated learning variables. The relationship graph shows a nonlinear pattern, where an increase in the SRL score indicates an increase in learning outcomes in a certain score range.

In this model, the learning environment (X) is included together with Y1 as an additional variable, but the main significance lies in the self-regulated learning variable. This means that the role of X on Y2 is not directly strong, but is important as a factor that encourages the growth of SRL, which then has an impact on learning outcomes. This is also reinforced by the findings from the previous hypothesis, where X has a significant effect on Y1, but not directly on Y2.

These results indicate that there is an indirect effect from the learning environment on learning outcomes through the mediation of self-regulated learning. In this context, Zimmerman's (2002) theory regarding SRL is very relevant, that learning independence develops from the interaction between the external environment (such as the learning atmosphere, social support, and learning facilities) and students' internal regulations. This means that when the learning environment is supportive, student students tend to develop independent learning habits, which in turn improve their academic results (Zimmerman, 2002).

These findings provide an important message in Islamic boarding school learning: learning outcomes are not just the final product, but a reflection of a deep and conscious learning process. A quality learning environment will produce students who are not only cognitively intelligent, but also able to manage their time, emotions and learning goals well. Therefore, improving the learning environment must continue to be a concern, not only on physical aspects, but also relational, spiritual and pedagogical.

Conclusion

The learning environment has a significant influence on students' self-regulated learning (SRL), with a value of F = 55.27 and p < 2e-16. This shows that a conducive learning environment can foster learning independence. These results are in line with the Dundee Ready Education Environment Measure (DREEM) theory which emphasizes that students' perceptions of the learning environment, both in terms of lecturer support, academic atmosphere, and available resources, will influence the way they manage their learning process. In the context of Ma'had Aly, a learning environment that is integrated with Islamic boarding school values has been proven to foster internal motivation, discipline and self-regulation strategies in learning. This confirms that efforts to create a positive learning climate not only have an impact on comfort, but also on the growth of students' learning independence.

The learning environment does not have a direct effect on students' learning outcomes, as shown by the value of F = 1.95 and p = 0.123. This means that although the learning environment is important, it is not the sole factor in determining academic achievement. These findings indicate that learning outcomes are determined more by students' internal factors, especially their ability to organize themselves for learning. Zimmermann's theory of self-regulated learning explains that academic achievement

is not only influenced by external factors, but also how individuals are able to set goals, monitor progress, and evaluate their learning outcomes. Therefore, the learning environment at Ma'had Aly needs to be seen as a supporting factor, not the sole determinant of academic achievement. A conducive environment must be balanced with the students' internal readiness to take advantage of available learning opportunities.

Self-regulated learning has a significant effect on learning outcomes ($F = 10.15$; $p < 2e\text{-}16$; adjusted $R^2 = 0.314$). These findings confirm that learning independence is an important factor in supporting the academic success of students. These results strengthen the view that students who are able to manage time, control motivation, and use appropriate learning strategies will achieve better academic results. In the context of Islamic boarding schools, SRL is very relevant because the dense and highly disciplined learning system requires students to be independent and actively manage their learning. Thus, although the learning environment is important, the SRL factor proves to be a more decisive bridge in achieving academic achievement.

References

Ash shiddiqi, M. H., & Safitri, S. (2023). Kebiasaan Belajar Siswa Berprestasi melalui Pemanfaatan Jam Belajar Efektif di SMA Negeri 1 Keruak. *Palapa*, *11*(1), 592–601. https://doi.org/10.36088/palapa.v11i1.3316

Jamaluddin, N. S., Abd. Kadir, S., Alias, S. N., & Abdullah, A. (2021). A Review of Psychosocial Learning Environment. *International Journal of Academic Research in Progressive Education and Development*, *10*(3), 804–808. https://doi.org/10.6007/ijarped/v10-i3/11189

Lutfiana, A., & Salim, R. M. A. (2023). Indonesian Version of DREEM Short Form Construct Validity Test in Measuring Student Perception of Distance Learning Environment. *Psikostudia : Jurnal Psikologi*, *12*(2), 295. https://doi.org/10.30872/psikostudia.v12i2.11049

QuranKemenagInMsWord_v2. (n.d.).

Raza, S. A., Qazi, W., & Yousufi, S. Q. (2021). The influence of psychological, motivational, and behavioral factors on university students' achievements: the mediating effect of academic adjustment. *Journal of Applied Research in Higher Education*, *13*(3), 849–870. https://doi.org/10.1108/JARHE-03-2020-0065

Schunk, D. H., & Zimmerman, B. J. (2012). Self-Regulation and Learning. *Handbook of Psychology, Second Edition*. https://doi.org/10.1002/9781118133880.hop207003

Sohail, S. (2015). Journal of Education and Educational Development. *Journal of Education and Educational Development*, *4*(1), 94–110.

Tasyirifiah, T., YS, A., & Wibisono, Z. M. (2023). Peranan Teori Belajar Humanistik dalam Keberhasilan Belajar di Abad 21. *Anwarul*, *3*(4), 777–787. https://doi.org/10.58578/anwarul.v3i4.1345

Taylor, P. C., Fraser, B. J., & Fisher, D. L. (1997). Monitoring constructivist classroom learning environments. *International Journal of Educational Research*, *27*(4), 293–302. https://doi.org/10.1016/S0883-0355(97)90011-2

Thompson, A. R., & Lake, L. P. O. (2023). Relationship between learning approach, Bloom's taxonomy, and student performance in an undergraduate Human Anatomy course. *Advances in*

Health Sciences Education, *28*(4), 1115–1130. https://doi.org/10.1007/s10459-023-10208-z

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, *41*(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2