

Exploring Self-regulated learning Among Indonesian Undergraduates: A Focus on Metacognition, Motivation, and Behavior

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ABSTRACT: Higher education requires students to have strong self-regulated learning (SRL) abilities, which encompass metacognition, motivation, and learning behavior. This study aimed to describe the SRL levels of university students in Bandung City across these three core aspects. Using a quantitative approach with a cross-sectional survey design, data were collected from 235 active students from various universities through the SRL scale developed from Zimmerman's (2000) model and adapted by Gabriela Devi Aninditya (2019). The findings revealed that the majority of students were in the moderate category on all three aspects, with motivation emerging as the lowest component (only 12.3% in the high category). These results indicate that while students generally have sufficient skills in planning and monitoring their learning, internal drive and motivational regulation remain key challenges. This highlights the need for interventions that strengthen motivation to support students' independent learning and long-term academic success. By presenting a comprehensive profile of SRL across its main dimensions, this study provides empirical insights that can inform the development of educational programs and strategies in higher education.

Keywords: Self-Regulated Learning, University Students, Learning Motivation, Independent Learning Strategies.



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INTRODUCTION

College is a time when students have the opportunity to become more independent, explore new values, and grow intellectually. This college experience can be a path to maturity that is very beneficial for students. Student maturity will be realized if they are able to independently face academic, social, and emotional challenges, which are commonly experienced during college. However, many students find it difficult to adapt to academic challenges in college. These academic challenges include a heavy workload and adjusting to a more complex and diverse learning environment. Exams with a high level of difficulty and projects that require high concentration,

such as the application of project-based learning, become challenges to independence and demands in terms of responsibility in the learning process (Al Rivaldi et al., 2024; Santrock, 2019). Other obstacles commonly encountered during college include limited reference sources, difficulty understanding theoretical material, and learning barriers (Hermawan, 2022).

These academic challenges are often not balanced with effective time management skills and managing self- expectations (Purnamasari & Fitriana, 2024). This constant academic pressure will increase the psychological burden on students and will have an impact on student productivity (Hermawan, 2022). In facing various academic challenges in higher education, students are expected to have the ability to manage time, plan learning, and control themselves in order to achieve optimal academic results. Unlike previous levels of education, which were more structured, the higher education learning environment demands a higher level of autonomy, where students are expected to be able to design, organize, and evaluate their own learning activities (Zimmerman, 2002). Thus, the ability to regulate oneself in learning becomes an essential competency that supports academic success and readiness to face future challenges. The ability to regulate oneself in learning activities, or self-regulated learning (SRL), not only determines the extent to which students understand the material, but also reflects their capacity to recognize their strengths and limitations, regulate their emotions, and seek alternative strategies in facing obstacles (Karaca & Bektas, 2022; Yabar & Apaza-Tapia, 2024).

According to Zimmerman (in Mickwitz, et al., 2024), self-regulated learning is generally described as a process of reconstructing one's mental abilities into the skills of planning, engaging in learning, and completing tasks. Self-regulated learning consists of metacognition, motivation, and behavior (Nota et al., 2004; Zimmerman, 2000). The ability of students to plan, monitor, and evaluate the learning process is the metacognitive aspect of self-regulated learning. The next aspect is motivation, where self-efficacy, self-control, and belief in personal competence are abilities that are part of self-regulated learning. In addition to these two aspects, the behavioral aspect relates to the ability to manage the learning environment, utilize external resources, and manage time effectively.

Various studies show that SRL has a positive impact on academic performance. Cleary & Zimmerman, (2001) Revealed that strategies such as goal-setting and self-monitoring can significantly improve academic performance. Students with high SRL generally demonstrate greater academic engagement, resilience to pressure, and more mature adaptability (Komarraju & Nadler, 2013; Zimmerman & Campillo, 2003). Furthermore, self-regulation contributes to students' work readiness by influencing decision-making, career planning, and adaptability in the competitive world of work (Tentama & Riskiyana, 2020; Wahyudi et al., 2020). In fact, SRL has been shown to play a role in reducing academic stress by helping students manage tasks, time, and thoughts and emotions related to learning demands (Pratiwi et al., 2021).

However, the ability of SRL among Indonesian students still faces a number of challenges. Several local studies show that students have difficulty developing independent learning strategies, maintaining learning motivation, and managing time optimally (Hidayah et al., 2022). Based on research conducted by Rinaldi & Rahmatillah, (2022) on 500 students, it was found that 66.8% of

students still lack the ability to plan and evaluate what they have planned. This can refer to the metacognitive aspect of self-regulated learning as described by Zimmerman (2002). Data was also found from research conducted by Daulay et al., (2021) on 460 students, showing that 16.3% had low learning motivation. Additionally, out of 100 students studied by Rizkiyah & Alfin, (2023), 21% were still hesitant to review the lecture material that had been provided. This relates to how students regulate their behavior in learning, which is the third aspect in Zimmerman's (2002) theory of self-regulated learning.

These skills can have a direct impact on the optimality or suboptimality of academic achievement (Santika & Sawitri, 2016). Based on this description, this study aims to describe the level of self-regulated learning among students in Bandung, focusing on three main aspects, namely metacognition, motivation, and learning behavior, as a basis for developing more adaptive learning strategies in higher education.

METHOD

Research Type

This study employed a quantitative approach with a cross-sectional descriptive survey design (Creswell & Creswell, 2018), which was appropriate for capturing the profile of self-regulated learning (SRL) at a single point in time without experimental manipulation. A total of 235 active students from various universities in Bandung City participated as respondents. Purposive sampling was applied with specific considerations to include students from both public and private universities, across different study programs, and from various semester levels. Bandung was selected as the research site because it is widely recognized as one of Indonesia's largest higher education hubs, attracting students from diverse regions, cultural backgrounds, and socio-economic conditions. By incorporating respondents from multiple institutions and academic contexts, the sample reflected a broad range of student characteristics. This diversity strengthened the representativeness of the data and provided a reliable basis for mapping SRL levels among undergraduates in the Indonesian higher education context.

Population and Sample/Informants

The population in this study consisted of active undergraduate students from various universities in Bandung City. The inclusion criteria were: (1) active enrollment status, (2) having completed at least one semester, and (3) willingness to participate by signing an informed consent form. Purposive sampling was used with consideration of institutional diversity (public and private), study programs, and semester levels (Sugiyono, 2019). A total of 235 respondents participated in this study. According to Fraenkel & Wallen, (2009), an adequate sample size for survey and correlational research is often in the range of 200–300 participants to ensure stable generalization and sufficient statistical power. Based on this guideline, the number of respondents in this study

is within the acceptable range for descriptive survey research. The sample, drawn from students across different universities and study programs in Bandung, provides useful insights into the SRL profile of undergraduates in this context.

Research Location

The research was conducted in Bandung City, West Java Province, which is known as one of the largest education cities in Indonesia. The city hosts a variety of public and private higher education institutions, with students coming from various regions, cultures, and socio-economic backgrounds. This condition makes Bandung a strategic location to research independent learning skills (SRL) formed in a competitive and diverse educational environment.

Instrumentation or Tools

Data collection was conducted using a self-regulated learning scale questionnaire developed by Gabriela Devi Aninditya (2019) based on Zimmerman's (2000) self-regulated learning model. This scale measures three main aspects of SRL:

- Metacognition, which is measured through an individual's ability to plan, organize, guide, monitor, and evaluate the learning process.
- Motivation, which is measured through an individual's internal drive that includes perceptions of self-efficacy, competence, and autonomy in the learning process.
- Behavior, measured through an individual's efforts in self-regulating, selecting, and using the environment to create situations that support the learning process.

The questionnaire consists of 24 questions with a 4-point Likert scale (1= very unsuitable to 4= very suitable). A 4-point format was selected to avoid a neutral midpoint and encourage respondents to express a clearer tendency in their answers. This format also simplifies decision-making for participants and aligns with the adapted version of the SRL

scale by Aninditya, (2019), which has been validated in the Indonesian student context. The validity test was conducted using the corrected item-total correlation. Items are declared valid if the corrected item-total correlation value ≥ 0.30 in accordance with the standards put forward by Azwar, (2017). Based on the trials that have been carried out on the validity coefficient for the Self-regulated learning scale, the value range is between 0.303 and 0.714.

Data Collection Procedures

Data collection was conducted online using the Google Forms platform during the period of May 2025. The survey link was disseminated through social media, academic WhatsApp groups, and campus networks. Before completing the questionnaire, each respondent was given an informed

consent form explaining the purpose of the study, participant rights, data confidentiality, and the freedom to withdraw at any time without consequences. The average time to complete the questionnaire was 7-10 minutes. The data entered was compiled automatically and anonymized to maintain the privacy of participants.

Data Analysis

The collected data were analyzed using descriptive statistics, which included frequency, percentage, mean, and standard deviation calculations. The results of this analysis were used to describe the level of students' self-regulated learning in three main aspects, namely metacognition, motivation, and learning behavior.

Ethical Considerations

This study followed standard ethical research procedures involving human participants. Before completing the questionnaire, all respondents received an informed consent form explaining the purpose of the study, the voluntary nature of participation, and the guarantee of confidentiality and anonymity of their responses. Students were informed that they could withdraw at any time without penalty. No identifying information was collected, and data were stored securely for research purposes only. These steps ensured that the study complied with ethical principles of respect for autonomy, beneficence, and justice in educational research.

RESULT AND DISCUSSION

The results of this study show that the majority of students in Bandung City are in the moderate category in terms of self-regulated learning ability, namely 73.6% of the 235 students who were respondents (Figure 1).

Figure 1. Distribution of Students' Self-Regulated Learning Levels

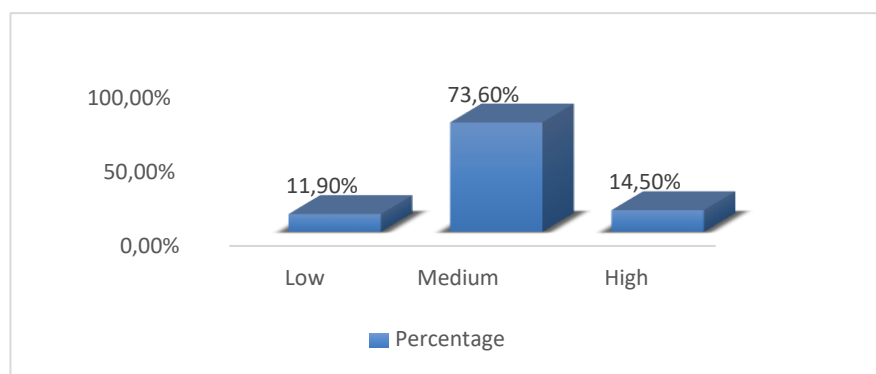
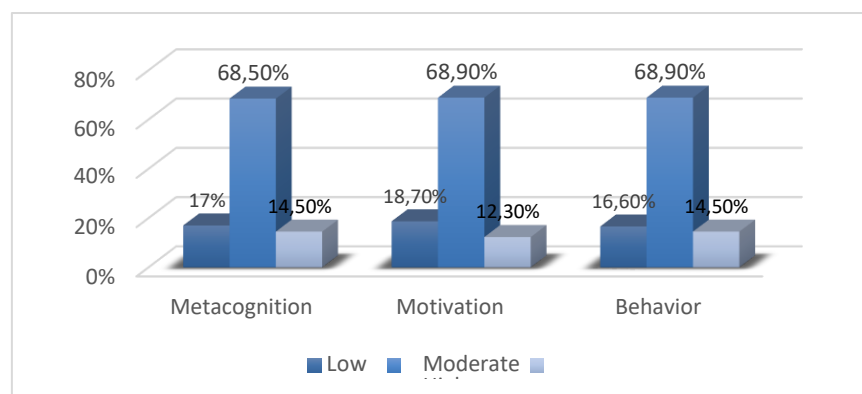


Figure 2. Self-Regulated Learning (SRL) by Aspect



The research results shown in Figure 2 indicate that the majority of students consistently fall into the moderate category in all aspects, namely metacognition, motivation, and behavior. However, it can be seen that the motivation aspect has a higher proportion of low categories (18.7%) and lower high categories (12.3%) compared to other aspects. This pattern indicates that although students are relatively capable of managing cognitive and behavioral strategies in learning, consistency in maintaining learning enthusiasm remains a weak point that requires special attention.

The aspect of student motivation, which shows that 18.7% of students are in the low category and only 12.3% are in the high category, indicates that self-confidence, learning autonomy, and internal motivation to learn are still not in line with academic demands in higher education. When faced with a high academic load, such as a heavy workload and high standards, exams with a high level of difficulty, and learning projects that must be completed at the same time, students view these as difficult tasks. This weakens their sense of self-efficacy, making students reluctant to face academic challenges. According to Zimmerman's theory (2002), motivational regulation is the main driver that determines the consistency of students in implementing planned learning strategies. With low motivation, even if metacognitive strategies are available, students are prone to a decline in learning enthusiasm.

Meanwhile, in terms of behavior, most students were also in the moderate category (68.9%). This means that they were quite capable of managing their learning environment and using external resources, but 16.6% still had difficulty creating conducive learning conditions. According to Zimmerman (2002), this situation shows the ability of students to ensure that metacognitive and motivational strategies can be implemented effectively in learning activities.

The majority of students in Bandung City are in the moderate category in terms of self-regulated learning (SRL) ability, namely 73.6% of 235 students in Bandung City who were respondents. This condition indicates that students have the basic capacity to regulate their learning process, but their consistency is not yet optimal. This finding is in line with Syaf et al., (2017), who researched students and found that 65% of students were at a moderate level in overall SRL. This is also in line with the research by Putri & Mutia, (2020), who also found that students tend to have a moderate level of SRL. However, in the study by Putri and Mutia (2020), the low level was in the

ability to plan and evaluate learning, which is included in the aspect of metacognition. Meanwhile, in this study, the metacognitive aspect of students shows that they are relatively capable of planning and monitoring their learning. This is in line with the views of Zimmerman (2000) and Mickwitz (2024) that developed metacognitive aspects will help students realize their cognitive abilities and make more effective learning decisions (Mickwitz et al., 2024).

The SLR aspect in this study that is still relatively low is student motivation. It appears that this aspect places the majority of students in the moderate category in terms of self-regulated learning ability. This is because, without strong motivational drive, metacognitive strategies cannot be implemented consistently. Low motivation is related to weak academic self-efficacy or self-confidence in achieving academic success (Bandura, 1997; Schneider & Preckel, 2017).

When self-confidence is fragile, students tend to be inconsistent in regulating their attention, maintaining self-control, and delaying gratification when completing college assignments, even though these skills are very important for academic progress (Duckworth et al., 2019). Low self-efficacy is often triggered by negative feelings arising from a heavy academic workload. When students are faced with numerous exams, projects, and challenging academic demands, they are more prone to anxiety, boredom, or feelings of being overwhelmed. If not managed properly, these negative emotions can undermine students' belief in their own abilities and cause them to focus more on threats than on coping strategies (Derakshan et al., 2009).

This situation can reduce student engagement in the learning process, cause disengagement, and even hinder learning outcomes (Pekrun et al., 2010 ; D'Mello & Graesser, 2012, as cited in Buono et al., (2020). This situation is part of the behavioral aspects influenced by motivation in learning. Continuous disengagement behavior can also increase maladaptive behavior, namely non-productive coping (Collie & Martin, 2019). According to Sirois and Kitner (2015), non-productive coping is a form of behavior that delays task completion or procrastination. Instead of completing tasks, students choose to procrastinate as a temporary avoidance strategy, but this ultimately worsens their academic and psychological conditions. Thus, SRL achievement that is only at a moderate level can be understood as a chain reaction: low motivation stemming from weak self-efficacy, self-efficacy disrupted by negative feelings due to heavy academic burdens, and negative emotions that ultimately encourage the use of maladaptive coping strategies in the form of procrastination.

Although this study provides useful insights into the level of self-regulated learning among students in Bandung, there are several limitations that need to be considered. First, the descriptive and cross-sectional research design limits the ability to draw causal conclusions between SRL and other factors such as academic achievement or psychological well-being. Second, the data were collected online through self-report questionnaires, so the results are prone to subjective bias and respondents' desire to give answers that are considered socially "acceptable" (social desirability bias). Third, although the number of respondents was sufficient, the distribution of respondents from various universities did not necessarily fully represent the diversity of higher education contexts in Bandung, especially in terms of study programs or socioeconomic backgrounds. Fourth, aspects such as the influence of the learning environment, family support, or parenting experiences were not measured directly, even though these factors can affect SRL levels.

Therefore, the results of this study should be interpreted with caution and serve as a basis for further studies with more in-depth and diverse approaches.

Based on the limitations identified, further research is recommended to use a longitudinal design to observe the development of students' self-regulated learning (SRL) over time and the causal relationship between SRL and academic and psychosocial outcomes. In addition, the use of mixed methods that combine quantitative and qualitative data can provide a deeper understanding of the internal and external factors that influence SRL, such as social support, teaching strategies of lecturers, or the emotional dynamics of students. Regarding students' emotional states, subsequent research could also explore the interrelationships between variables related to emotions in various aspects, such as procrastination, emotion regulation, self-compassion, etc. In addition, it is also important to consider demographic variables such as socioeconomic background, type of study program, and academic year, which have the potential to moderate SRL levels. Thus, further research can provide a more comprehensive contribution to designing educational policies and adaptive self-directed learning strategies tailored to the context of Indonesian students.

Interpretation of Key Findings

The findings of this study reveal that most university students in Bandung City have a moderate level of self-regulated learning (SRL), both in the aspects of metacognition (68.5%), motivation (68.9%), and behavior (68.9%). The proportion of students who have high SRL is still relatively low, especially in the motivation aspect which only reaches 12.3%. This data shows that although students are able to plan and monitor their learning process in general, internal drives such as self-efficacy and learning autonomy still need to be strengthened. Furthermore, based on the

cross-tabulation, it was found that female students tended to have a slightly larger proportion of high SRL than males (9 vs. 7 people), which could indicate a difference in the tendency to manage independent learning based on gender. These results emphasize the importance of designing SRL enhancement programs that consider differences in individual characteristics and social factors, and target motivational aspects as a key intervention area to support students' academic success.

Comparison with Previous Studies

The results of this study show that most university students in Bandung City are in the moderate category in self-regulated learning (SRL) ability. This finding is in line with Syaf, Kariadinata, & Widiastuti (2017) who studied university students where 65% of students were at a moderate level in overall SRL. This is also in line with Putri and Mutia's (2020) research, which also found that students tend to have a moderate level of SRL, especially the ability to make plans and evaluate learning. However, compared to the study by Moradi et al. (2020), which showed a significant increase in SRL after self-regulation and self-compassion training interventions, it can be concluded that without systematic interventions, students tend to remain at a moderate level of SRL, especially in the aspect of motivation. Furthermore, Rozali's (2014) study, which found a relationship between low SRL and low academic achievement, supports the importance of improving self-learning skills as a supporting factor for study success. In addition, the findings

regarding the proportion of female students who have a high level of SRL being slightly greater than that of males (9 compared to 7 people) enrich Irwanto, (2024) findings. Furthermore, Rinawati & Adyani, (2020) highlighted the importance of the possible role of gender in terms of the formation of self-regulation. Thus, the results of this study not only strengthen existing empirical evidence, but also provide new contributions related to the condition of students' SRL in the local context in Indonesia, especially in Bandung City.

Limitations and Cautions

Although this study provides a useful picture of the level of self-regulated learning among university students in Bandung City, there are some limitations that need to be considered. First, the descriptive and cross-sectional design of the study limits the ability to draw causal inferences between SRL and other factors such as academic achievement or psychological well-being. Second, the data was collected online through a self-report questionnaire, making the results susceptible to subjective bias and respondents' desire to provide answers that are considered socially desirable (social desirability bias). Third, although the number of respondents is sufficient, the distribution of respondents from various universities does not necessarily fully represent the entire diversity of the higher education context in Bandung City, especially in terms of study programs or socioeconomic backgrounds. Fourth, aspects such as the influence of the learning environment, family support, or parenting experience were not directly measured, even though these factors can influence the level of SRL. Therefore, the results of this study should be interpreted with caution and serve as a basis for further studies with a more in-depth and diverse approach.

Recommendations for Future Research

Based on the limitations identified, future research is recommended to use a longitudinal design to look at the development of students' self-regulated learning (SRL) over time and the causal relationship between SRL and academic and psychosocial outcomes. In addition, the use of mixed methods that combine quantitative and qualitative data can provide a deeper understanding of the internal and external factors that influence SRL, such as social support, lecturers' teaching strategies, or students' emotional dynamics. Future research could also explore the effectiveness of local culture-based SRL intervention or training programs to see the extent to which these skills can be systematically improved. In addition, it is also important to consider demographic variables such as socioeconomic background, type of study program, and academic year, which could potentially moderate the level of SRL. Thus, further research can make a more comprehensive contribution in designing educational policies and self-directed learning strategies that are adaptive to the context of Indonesian students.

Implications for Practice

The findings of this study have practical implications for higher education institutions. Since motivation emerged as the lowest aspect of self-regulated learning (SRL), universities and lecturers

should design targeted interventions to strengthen students' self-efficacy, learning autonomy, and persistence. Integrating SRL strategies such as goal setting,

time management, and self-monitoring into coursework can encourage students to regulate their learning more effectively. Academic support programs, mentoring, or workshops that specifically address motivational regulation may help reduce the tendency to remain at a moderate SRL level. At the policy level, embedding SRL development into student orientation and academic services would support long-term learning independence and better prepare undergraduates for academic and professional challenges.

CONCLUSION

This study describes the state of self-regulated learning (SRL) among students in Bandung and aims to describe students' abilities in the aspects of metacognition, motivation, and independent learning behavior. The findings show that the majority of students are in the moderate category for all three aspects of SRL, with the lowest proportion in the aspect of motivation. This highlights that although students have basic abilities in planning and managing learning, internal drive and motivation regulation remain major challenges. In particular, this study provides a contextual contribution by showing a tendency for differences in SRL levels based on gender, as well as the importance of considering local factors in understanding SRL. These findings emphasize the importance of contextually designed educational interventions to strengthen students' self-regulated learning skills, especially in terms of motivational regulation. Although this study provides useful insights, there are several limitations such as the cross-sectional design, the use of self-report data, and limitations in population representation. Further research is recommended to use a longitudinal approach and mixed methods to broaden the understanding of SRL dynamics and develop more effective and adaptive learning policies and practices.

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