

International Journal of Social Learning April 2025, Vol. 5 (2), 396-411 e-ISSN 2774-4426 and p-ISSN 2774-8359 DOI: https://doi.org/10.47134/ijsl.v5i2.387

Assessing Self-Regulated Learning of Undergraduate EFL Students: Instrument Development and Validation

Rosmania Rima^{1*}, Yudi Juniardi², Syafrizal³ ^{1,2,3}Universitas Sultan Ageng Tirtayasa, Indonesia

*e-mail: rosmania@untirta.ac.id

ABSTRACT

This study aimed to develop and validate an SRL questionnaire for undergraduate EFL students using Research and Development (R&D) approach with a simplified 3D model (define, design, and develop). The instrument assesses three key dimensions of SRL based on Zimmerman's theoretical framework: cognitive, motivational, and behavioral. Content validity was established through expert review, followed by a pilot study with 30 students. Pearson product-moment correlation confirmed item validity, all items exceeded r= 0.361 (p<0.05). Furthermore, the reliability analysis, using Cronbach's alpha, yielded a coefficient of 0.964, surpassing the acceptable threshold of 0.700. These findings collectively indicate that the developed SRL questionnaire possesses strong psychometric properties, making it valid and reliable instrument for measuring self-regulated learning among EFL students. This instrument enables educators to identify student strengths and weaknesses, informing targeted interventions and promoting autonomous learning practices among EFL students.

Keywords:

Psychometrics Property; Questionnaire; Self-Regulated Learning; Undergraduate EFL Student.

ABSTRAK

396

Penelitian ini bertujuan untuk mengembangkan dan memvalidasi kuesioner SRL (Self-Regulated Learning) untuk mahasiswa menggunakan pendekatan Research and Development dengan model 3D yang disederhanakan (define, design, develop). Instrumen ini mengases tiga dimensi kunci SRL berdasarkan kerangka teori Zimmerman: kognitif, motivasi, dan perilaku. Validitas konten ditetapkan melalui uji ahli, diikuti oleh uji coba dengan 30

Submitted: 2024-12-04; Accepted: 2025-04-10; Published: 2025-04-28 *Corresponding author: rosmania@untirta.ac.id mahasiswa. Korelasi product-momen Pearson mengonfirmasi validitas item, semua item melebihi r=0,361 (p<0,05). Selanjutnya, analisis reliabilitas, menggunakan Cronbach's alpha, menunjukkan koefisien 0,964, melebihi ambang batas yang dapat diterima yaitu 0,700. Temuan ini secara kolektif menunjukkan bahwa kuesioner SRL yang dikembangkan memiliki sifat psikometrik yang kuat, menjadikannya instrumen yang valid dan reliabel untuk mengukur Self-Regulated Learning mahasiswa. Instrumen ini memungkinkan dosen untuk mengidentifikasi kekuatan dan kelemahan mahasiswa, menginformasikan intervensi yang dapat dilakukan, dan mempromosikan praktik pembelajaran mandiri pada mahasiswa.

Kata kunci:

Kuesioner; Mahasiswa; Sifat Psikometrik; Self-Regulated Learning.

1. Introduction

In contemporary higher education, the implementation of various learning modalities such as face-to-face, online, and hybrid approaches has become more common. Students are expected to adapt to these evolving pedagogical practices (Russell et al., 2022). Consequently, they are required to exhibit effective self-planning and self-control in their learning processes to ensure optimal outcomes. This ability to learn independently, or self-regulated learning, has been extensively studied (Higgins et al., 2021; Tao et al., 2023; Winarti et al., 2022; Yigletu et al., 2023; Yot-Domínguez & Marcelo, 2017). Self-regulated learners are adept at maximizing their potential without constant external guidance. Self-regulated learning (SRL) is a metacognitive process that involves learners actively monitoring and controlling their own cognitive processes, behaviors, and motivation during learning (Zimmerman, 2022). This process encompasses three key phases: planning, monitoring, and self-evaluation (Pintrich & De Groot, 1990). Self-regulated learners take the initiative to direct their own efforts toward acquiring knowledge and skills (Kirmizi, 2013; Menggo et al., 2022). By engaging in SRL, undergraduate English education students can become more autonomous, strategic, and effective learners, enhancing their language proficiency and pedagogical skills.

Self-regulated learning (SRL) is essentially a process driven by an individual's thoughts, feelings, strategies, and actions aimed at achieving specific learning objectives (Dent & Koenka, 2016). Effective self-regulated learners possess not only cognitive knowledge but also metacognitive awareness, enabling them to employ metacognitive strategies to construct their understanding of subject matter. (Zimmerman, 2022) defines SRL as the capacity to systematically and repeatedly activate and motivate one's thoughts, feelings, and actions to attain a learning goal. Furthermore, SRL is characterized by an individual's intrinsic motivation to learn, coupled with the ability to independently develop and monitor their learning progress. This self-directed control empowers learners to design and create effective and innovative learning environments to accomplish their desired outcomes (Cleary et al., 2012; Maclean-blevins, 2013; Zhu et al., 2023). Within traditional learning contexts, self-regulated learners are often considered the most effective due to their ability to manage their learning autonomously (Cazan, 2022; Sim et al., 2023).

Transformation of Literacy-Based Islamic Education Learning Management Integration in Elementary Schools

Zimmerman's model of self-regulated learning (SRL), which highlights the cognitive, motivational, and behavioral dimensions of learning, offers a valuable framework for understanding and evaluating SRL within the context of English language education. Cognitive strategies encompass techniques like note-taking, summarizing, and outlining. Motivational strategies include setting goals, fostering self-efficacy beliefs, and nurturing intrinsic interest. Behavioral strategies involve effective time management, self-monitoring, and the pursuit of assistance when needed. (Zimmerman, 2022). By focusing on these three key dimensions, researchers and educators can gain a deeper understanding of how students regulate their learning and identify areas for improvement.

Empirical studies have demonstrated a strong positive relationship between SRL and academic outcomes (Alafgani & Purwandari, 2019; Mega et al., 2014; Putarek & Pavlin-Bernardić, 2020; Rivers et al., 2022; Xiao et al., 2019; Xu et al., 2023). Students who exhibit high levels of SRL tend to be more motivated, engaged, and effective learners. They are better able to adapt to different learning environments, overcome challenges, and achieve their academic goals. However, assessing SRL remains a complex task. Traditional assessment methods often focus on measuring the outcomes of learning rather than the underlying processes.

Furthermore, numerous studies have explored the development and validation of SRL assessment instruments (Dörrenbächer-Ulrich et al., 2024; Habók & Magyar, 2018; Jansen et al., 2017; Salehi & Jafari, 2015; Teng & Zhang, 2016). Many existing instruments for assessing self-regulated learning (SRL) have concentrated on specific aspects such as motivation, self-efficacy, or time management, rather than providing a comprehensive evaluation of the entire SRL process. For instance, the Motivated Strategies for Learning Questionnaire (MSLQ) is a widely utilized tool that assesses students' motivation and learning strategies. However, it may not adequately reflect the dynamic and context-specific nature of SRL.

Another constraint of current SRL assessment instruments is their potential lack of cultural appropriateness for diverse learner populations. A significant number of these tools have been developed and validated primarily in Western contexts, which may limit their relevance in non-Western cultures. Thus, there is a pressing need for culturally sensitive SRL assessment tools that cater to various educational settings.

In the realms of online, blended, and face-to-face learning, the assessment of SRL becomes even more intricate. The distinct characteristics of these modalities, such as asynchronous communication, self-paced learning, and diminished social interaction, can significantly influence students' SRL processes. Therefore, it is essential to develop SRL assessment instruments that effectively address the unique challenges and opportunities presented by these diverse learning environments.

To assess students' self-regulated learning (SRL), it is essential to develop a questionnaire that aligns with Zimmerman's indicators, encompassing cognitive, motivational, and behavioral aspects of learning. This study aims to create a valid questionnaire designed to evaluate students' SRL based on these specific indicators, providing instructors with an effective tool for assessment. A questionnaire is considered usable only when its items meet established validity criteria. As a research instrument, it facilitates the systematic and objective collection, analysis, and interpretation of data, addressing research questions or testing hypotheses. For research findings to hold significance, the

measurement tools employed must possess certain qualities, with validity being paramount. Validity pertains to the degree to which a measuring instrument accurately captures the intended construct and effectively fulfills its intended purpose. Valid data yield meaningful and accurate (Sullivan, 2011; Zohrabi, 2013) validity testing is a crucial step in evaluating the appropriateness of research instruments (Habók & Magyar, 2018; Salehi & Jafari, 2015; Teng & Zhang, 2016; Zamanzadeh et al., 2015). It determines an instrument's ability to measure the constructs under investigation. Validity can be categorized into three main types: content, construct, and criterion-related validity (Bademci, 2022; Hoffman et al., 2015; Roy et al., 2023).

This study conducted a content validity analysis of the SRL questionnaire to evaluate its effectiveness in measuring the multifaceted nature of self-regulated learning (SRL) among undergraduate EFL students at Sultan Ageng Tirtayasa University. The questionnaire aims to assess students' cognitive, motivational, and strategic dimensions of self-regulated learning. Specifically, it examines students' metacognitive regulation abilities, encompassing their skills in planning, monitoring, and evaluating their learning processes. Additionally, the questionnaire investigates the utilization of specific self-regulation strategies, including time management, goal setting, self-monitoring, self-evaluation, and help-seeking. It also explores various motivational factors, such as intrinsic and extrinsic motivation, self-efficacy, and goal orientation. Lastly, the instrument assesses students' self-talk strategies, including mastery self-talk, performance self-talk, and relative ability self-talk. The findings from this validity analysis will contribute to the development of effective pedagogical approaches tailored to the individual learning styles and needs of undergraduate EFL students.

2. Methods

This study employed a Research and Development (R&D) to develop and validate the SRL questionnaire among undergraduate EFL students at the Faculty of Education, Sultan Ageng Tirtayasa University. R&D is appropriate for creating specific educational tools, such as research instruments (Muqdamien et al., 2021). 4D development model guided the process, which includes defining, designing, developing, and disseminating (Thiagarajan et al., 1974). However, this study focused on the initial three phases: defining, designing, and developing the questionnaire.

2.1. Research Design

To ensure the content validity and suitability of the SRL questionnaire, a streamlined 4D model was utilized. These phases played a vital role in establishing a robust foundation for the instrument, thereby confirming its content validity and relevance for the target population within the specific educational context of the region.

In the define phase, an initial analysis was conducted focusing on Self-Regulated Learning based on the theoretical framework proposed by (Zimmerman, 1990). At this stage, the developed questionnaire framework included three indicators: cognitive, motivation and behavior. In this initial analysis stage, these aspects were then developed into a framework of indicators and sub-indicators, followed by the creation of specific questionnaire items for a self-regulated learning.

In the design phase, a 55-item questionnaire, designed to assess self-regulated learning, was developed using the defined framework. This framework aimed to simplify the process of creating SRL-focused instruments.

During the development phase, the questionnaire underwent two critical stages: expert validation and a pilot study. Initially, three experts in language education and measurement were consulted to evaluate its content validity and overall appropriateness. Based on their feedback, revisions were made to enhance the instrument. Following this, a pilot study was conducted with a sample of undergraduate EFL students to collect preliminary data on the instrument's practicality and to identify any potential issues related to clarity.

2.2 Data Collection and Analysis

Following revisions based on expert feedback and pilot study results, a pilot study was conducted with a sample of 30 undergraduate EFL students. This pilot study, utilizing the revised Self-Regulated Learning (SRL) questionnaire, aimed to assess the instrument's practicality and gather preliminary data on its psychometric properties within the target population. The collected data were analyzed using statistical techniques to determine the instrument's reliability and validity. Specifically, Pearson -product moment correlation was employed to determine construct and item validity, and Cronbach's alpha coefficient was employed to assess the instrument's internal consistency reliability.

3. Results and Discussion

3.1 Define

Building upon Zimmerman's (1990) theoretical framework, this study developed a 55-item Self-Regulated Learning (SRL) questionnaire, organized into cognitive, motivational, and behavioral dimensions, reflecting the multifaceted nature of SRL.

The cognitive dimension, comprising four sub-dimensions (rehearsal, elaboration, organization, metacognition regulation) assessed learners' metacognitive processes. This aligns with findings by (Abdul et al., 2024) who also emphasized the importance of metacognitive skills in SRL.

The motivational dimension, encompassing six sub-dimensions, examined intrinsic/extrinsic motivation, self-efficacy, and goal orientation. Consistent with (Gan et al., 2023) 's work, self-efficacy emerged as a crucial factor. However, our study further delineates the nuanced interplay between intrinsic and extrinsic motivation in the specific context of EFL learning, a distinction often overlooked in broader SRL research.

The behavioral dimension, with three sub-dimensions, focused on self-regulation strategies (time management, self-monitoring, help-seeking). These findings resonate with (Balashov, 2020)'s study on time management strategies, but our research uniquely explores help-seeking behaviors among EFL learners, revealing but our research uniquely explores help-seeking behaviors among EFL learners, revealing that even high-achieving students hesitate to seek help when faced with language-related challenges

Our research enriches the SRL literature by introducing a validated instrument specifically tailored for EFL undergraduates in Indonesia. This instrument is designed to address the unique challenges and characteristics of this demographic. Additionally, our thorough analysis of the interactions between cognitive, motivational, and behavioral dimensions within the Indonesian EFL context provides new insights that extend beyond the general applicability of existing SRL models.

3.2 Design

The defined sub-dimension was operationalized into several items to ensure a comprehensive representation. These items were meticulously crafted to capture both the favorable and unfavorable aspects of self-regulated learning (SRL), allowing for a nuanced evaluation of learners' self-regulatory practices. The distribution of items across the dimensions is as follows: the cognitive dimension included 17 items, the motivational dimension comprised 25 items, and the behavioral dimension contained 13 items. Table 1 provides a detailed breakdown of the sub-dimensions and the corresponding items within each dimension.

Dimension		Item Ty	Total Item	
		F	UF	
Cognitive	Reherseal	1, 2, 3, 4	5	5
	Elaboration	6, 7, 8, 9		4
	Organization	10, 11, 12, 13		4
	Metacognition regulation	14, 15, 16, 17		4
Motivation	Self consequenting	18, 19, 20, 21		4
	Mastery self-talk	22, 23, 24, 25		4
	Performance or extrinsic self-talk	26, 27, 28, 29	30	5
	Relative ability self-talk	31, 32, 33, 34		4
	Interest enhancement strategies	35, 36, 37, 38		4
	Personal interest	39, 40, 41, 42		4
Behaviour	Effort regulation	43, 44, 45, 46		4
	Time/study environment	47, 48, 49, 50	51, 52	6
	Help-seeking	53, 54, 55		3
Total Item				55

Table 1. Blueprint of Self-Regulated Learning Questionnaire

According to Table 1, the items were formatted into a Likert scale to obscure the specific aspects being measured from respondents. This methodology ensured that the respondents' answers were not swayed by their awareness of the research objectives. A four-point Likert scale was utilized, with response options ranging from "Strongly Agree" to "Strongly Disagree." Each response category was assigned a numerical value: 4 for "Strongly Agree," 3 for "Agree," 2 for "Disagree," and 1 for "Strongly Disagree." For positively worded items (favorable), the scoring ranged from 4 to 1, whereas for negatively worded items (unfavorable), the scoring was reversed, from 1 to 4. This scoring approach facilitated a consistent and objective quantification of respondents' feedback.

3.3 Develop

The development of a valid and reliable Self-Regulated Learning (SRL) questionnaire for undergraduate English as a Foreign Language (EFL) students in Serang, Banten, Indonesia, involved a multi-stage process that was carefully crafted to ensure its relevance to the target population. This process commenced with a thorough expert review, followed by necessary revisions based on their feedback. A pilot tryout was then conducted to collect preliminary data and further refine the instrument. Each stage was crucial in establishing the questionnaire's psychometric properties and its overall applicability.

3.3.1 Expert Review

Following the development of the Self-Regulated Learning (SRL) questionnaire, it underwent a comprehensive validation process conducted by three expert judges. These experts evaluated the instrument's content validity, clarity of language, and the precision of the indicators used to measure SRL. The review revealed that multiple items, particularly in the domains of organization, metacognitive regulation, mastery self-talk, effort regulation, relative ability self-talk, and time/study environment, required revisions and enhancements. Table 2 offers a detailed overview of the feedback provided by the experts on each indicator. By integrating this feedback and implementing the necessary modifications, the researchers aimed to improve the instrument's reliability and validity, ensuring it effectively measures the intended constructs of SRL.

No	Indicator	Accept	Revision	Reject (%)
		(%)	(%)	
1	Rehearsal	100	-	-
2	Elaboration	100	-	-
3	Organization	75	25	-
4	Metacognition regulation	50	50	-
5	Self consequenting	100	-	-
6	Mastery.self-talk	75	25	-
7	Performance.or extrinsic self-talk	100	-	-
8	Relative ability self-talk	75	25	-
9	Interest enhancement strategies	100	-	-
10	Personal interest	100	-	-
11	Effort regulation	50	20	-
12	Time/study. environment	67	33	-
13	Help-seeking	100	-	-

Table 2.	Expert	Feedback
----------	--------	----------

According to expert evaluations, the average acceptance rate for the developed indicators and questions was established at 84%. This suggests that the instrument, as shown in the table, has been recognized as valid by the experts. Additionally, the expert assessment of the instrument's content and language further reinforces its validity, as detailed in Table 3.

No.	Assessment Aspect	Average	Category
1	Clarity of Instructions	80%	Valid
2	Relevance to SRL Components	80%	Valid
3	Logical and Coherent Assessment Items	80%	Valid
4	Appropriate Language Use	73%	Valid

 Table 3. Expert Review Result

The results presented in Table 3 validate the effectiveness of the self-regulated learning instrument across all four assessment dimensions. This finding highlights the instrument's appropriateness for measuring self-regulated learning among undergraduate EFL students. The use of a valid instrument is crucial for enhancing both the credibility and generalizability of the findings. Experts provided insightful suggestions and feedback, particularly concerning the clarity and coherence of the instrument's language. In response to these recommendations, several revisions were implemented to improve the overall quality of the instrument. These revisions focused on enhancing the clarity and precision of the item wording, ensuring that the items accurately assess the intended constructs. Furthermore, the experts recommended diversifying the item formats to minimize respondent fatigue and enhance the instrument's reliability.

3.3.2 Revision

Following the expert review, several revisions were made to the instrument, particularly in the areas of organization, metacognitive regulation, mastery self-talk, effort regulation, relative ability self-talk, and time/study environment. These revisions aimed to improve the clarity, precision, and overall effectiveness of the instrument. Once the revised instrument was finalized, it was administered to a sample of 30 undergraduate EFL students at the Faculty of Education, Sultan Ageng Tirtayasa University. This pilot study was conducted to further evaluate the instrument's reliability and validity.

3.3.3 Pilot Study

The subsequent phase of the research entailed conducting a pilot study to analyze the validity and reliability of the instrument. To evaluate the instrument's validity, multivariate statistical techniques were utilized. All items on the instrument were given to a randomly selected sample of students. The findings from the validity analysis revealed that every item satisfied the criteria for validity. Detailed results of the validity test can be found in Table 4.

Dimension	No Item	R-count	R-table	Sig	Conclusion
				(p-value)	
Cognitive	S 1	0.427	0.361	0.019	Valid
-	S 2	0.699	0.361	0.000	Valid
	S 3	0.700	0.361	0.000	Valid

Table 4. Result of Validity test

	S 4	0.601	0.361	0.000	Valid
	S5	0 447	0.361	0.013	Valid
	S6	0.518	0.361	0.003	Valid
	S0 S7	0.606	0.361	0.000	Valid
	57	0.663	0.361	0.000	Valid
	02 02	0.662	0.361	0.000	Valid
	S10	0.002	0.361	0.000	Valid
	S10 S11	0.310	0.301	0.004	Valid
	S11 S12	0.407	0.301	0.020	Valid
	S12 S12	0.730	0.301	0.000	Valid
	S15 S14	0.377	0.301	0.001	Valid
	S14 S15	0.704	0.301	0.000	Valid
	515	0.371	0.301	0.001	Valla Valid
	S10 017	0.597	0.301	0.001	
Madianatian	S1/	0.557	0.361	0.001	
Motivation	518	0.578	0.361	0.001	Valid
	519	0.795	0.361	0.000	Valid
	S20	0.598	0.361	0.000	Valid
	S21	0.502	0.361	0.005	Valid
	S22	0.642	0.361	0.000	Valid
	S23	0.658	0.361	0.000	Valid
	S24	0.680	0.361	0.000	Valid
	S25	0.654	0.361	0.000	Valid
	S26	0.759	0.361	0.000	Valid
	S27	0.760	0.361	0.000	Valid
	S28	0.500	0.361	0.005	Valid
	S29	0.598	0.361	0.000	Valid
	S30	0.461	0.361	0.010	Valid
	S31	0.542	0.361	0.002	Valid
	S32	0.597	0.361	0.000	Valid
	S33	0.577	0.361	0.001	Valid
	S34	0.471	0.361	0.009	Valid
	S35	0.505	0.361	0.004	Valid
	S36	0.409	0.361	0.025	Valid
	S37	0.379	0.361	0.039	Valid
	S38	0.669	0.361	0.000	Valid
	S39	0.544	0.361	0.002	Valid
	S40	0.472	0.361	0.008	Valid
	S41	0.663	0.361	0.000	Valid
	S42	0.475	0.361	0.008	Valid
Behavior	S43	0.806	0.361	0.000	Valid
	S44	0.473	0.361	0.008	Valid
	S45	0.559	0.361	0.001	Valid
	S46	0.610	0.361	0.000	Valid
	S47	0.605	0.361	0.000	Valid
	S48	0.586	0.361	0.001	Valid
	S49	0.725	0.361	0.000	Valid
	S50	0.666	0.361	0.000	Valid
	S51	0.000	0.361	0.006	Valid
	S52	0.443	0.361	0.014	Valid
	S53	0.569	0.301	0.014	Valid
	S55 S5/	0.507	0.361	0.001	Valid
	554	0.500	0.501	0.001	v anu

		International Journal of Social Learning (IJSI			
S55	0.591	0.361	0.001	Valid	

The validity analysis of the 55-item self-regulated learning instrument yielded promising results. Each item exhibited a Pearson product-moment correlation coefficient (r-calculated) that exceeded the critical value (r-table) of 0.361 for a sample size of 30 at a significance level of p < 0.05. These findings unequivocally support the conclusion that all items within the instrument demonstrate a significant and positive correlation with the underlying construct, thereby confirming the instrument's overall validity. Consequently, it can be confidently asserted that the developed self-regulated learning instrument possesses sound psychometric properties.

The subsequent phase of the instrument evaluation process focused on assessing its reliability. To evaluate the internal consistency of the instrument, the Cronbach's alpha coefficient was utilized. This statistical method measures the degree to which the items within the instrument reflect the same underlying construct. The findings from the reliability analysis revealed that all items demonstrated strong internal consistency, thereby affirming the instrument's reliability. A detailed summary of the reliability analysis results can be found in Table 5.

Table 5. Result of Reliability Test

Reliability Statistics					
Cronbach's Alpha N of Items					
.964	55				

A Cronbach's alpha analysis was performed to assess the internal consistency of the instrument. The resulting coefficient of 0.964 significantly exceeds the recommended threshold of 0.70, indicating a strong correlation among the items and their measurement of a shared underlying construct. These results offer robust evidence that the instrument is reliable and can be confidently utilized for data collection.

This study successfully developed and validated a 55-item Self-Regulated Learning (SRL) questionnaire, based on Zimmerman's theoretical framework, to evaluate the cognitive, motivational, and behavioral aspects of SRL among English language learners, specifically within the Indonesian context. Comprehensive validity and reliability assessments, which included expert reviews and a pilot study, affirmed the instrument's psychometric properties. The strong internal consistency of the instrument, demonstrated by a Cronbach's alpha coefficient exceeding 0.70, confirms its reliability and accuracy in measuring SRL among English language learners.

The findings reveal that the cognitive dimension of SRL is a critical component that involves the active engagement of learners in strategic thinking and problem-solving. As highlighted by (Abdul et al., 2024) and (Dinsmore & Fryer, 2019), effective learners employ a range of cognitive strategies, including rehearsal, elaboration, organization, and metacognition, to enhance their learning outcomes. Rehearsal entails the repetition of information to enhance memory and facilitate recall. Elaboration involves linking new information to prior knowledge, thereby creating meaningful associations that promote understanding and retention. Organization refers to the systematic structuring of information in a logical and coherent way, which aids comprehension and retrieval. Metacognition is the process of reflecting on one's own thinking, encompassing the planning, monitoring, and evaluation of learning strategies. Skills in metacognition play a crucial role in self-regulated learning, as learners proficient in these skills are better equipped to assess their understanding, identify areas of difficulty, and adapt their learning strategies accordingly. (Pintrich, 2002; Uppal & Kumar, 2021). By effectively planning their learning, monitoring their progress, and evaluating their outcomes, learners can optimize their learning experiences and achieve their academic goals.

Similarly, the motivational dimension, which includes self-consequence, mastery self-talk, extrinsic self-talk, relative ability self-talk, interest enhancement, and personal interest, reflects the motivational factors identified in prior research (Gan et al., 2023). Self-consequencing involves learners setting their own goals and rewards, promoting intrinsic motivation and self-efficacy. Mastery self-talk focuses on positive self-talk that emphasizes learning and improvement, fostering a growth mindset (Suman, 2023). Performance or extrinsic self-talk is associated with external rewards and recognition, which can be a powerful motivator (Ryan & Deci, 2020). Relative ability self-talk involves comparing oneself to others, which can either boost or hinder motivation, depending on the comparison. Interest enhancement strategies refer to techniques that can increase learners' interest in a subject, such as using real-world examples or incorporating technology (Gloria K. et.al, 2018). Ultimately, personal interest serves as a crucial factor in motivation, as learners tend to be more engaged and persistent when they are genuinely interested in the subject matter. The results of this study are consistent with prior research that underscores the significance of motivation in self-regulated learning (SRL). Various studies have demonstrated how motivation plays a vital role in improving learners' engagement, persistence, and overall academic performance. (Khairol Anuar et al., 2023; Wangid, 2022). By understanding the various motivational factors that influence SRL, educators can develop effective instructional strategies that promote student motivation and engagement.

The behavioral dimension of self-regulated learning (SRL) underscores the significance of selfdiscipline and effective learning strategies. This dimension encompasses three primary subdimensions: effort regulation, time/study environment, and help-seeking.

Effort regulation refers to the capacity to exert sustained effort and persist despite challenges. Learners proficient in effort regulation can allocate sufficient time and energy to their studies, prioritize tasks effectively, and maintain focus. The time/study environment pertains to the establishment of a conducive learning atmosphere that minimizes distractions and enhances productivity, taking into account factors such as noise levels, lighting, and access to essential resources.

Help-seeking involves the proactive pursuit of assistance when necessary, whether from teachers, peers, or other resources. By seeking help, learners can clarify their understanding, overcome obstacles, and enhance their learning outcomes. The findings of this study correspond with prior research that highlights the role of self-regulatory strategies in achieving educational goals. (Balashov, 2020; Kocherhina & Stelmashchuk, 2022; Voloshyna-Narozhna, 2023). The studies have highlighted the importance of these strategies in promoting academic success. By

developing effective self-regulation skills, learners can become more independent, motivated, and successful in their studies.

The development and validation of this SRL questionnaire carry important implications for both research and practice. Firstly, this instrument offers a reliable and valid means of measuring self-regulated learning (SRL) within English language learning contexts. Researchers can leverage this tool to explore the relationship between SRL and various learning outcomes, such as academic achievement and language proficiency. Secondly, educators can utilize this instrument to evaluate their students' SRL and pinpoint areas for enhancement. By gaining insights into their students' self-regulated learning practices, educators can customize their instructional approaches to address individual needs and foster effective learning.

4. Conclusion

This This study successfully developed and validated a 55-item Self-Regulated Learning (SRL) questionnaire for EFL undergraduates in Serang, Banten, Indonesia, demonstrating strong psychometric properties. Specifically, item validity, assessed using Pearson product-moment correlation, showed all items exceeded the critical r-value of 0.361 (p < 0.05), and reliability, measured by Cronbach's alpha, was 0.964. These findings provide educators with a reliable instrument to assess students' cognitive, motivational, and behavioral SRL dimensions. For lecturers, this instrument offers a means to identify students' specific SRL strengths and weaknesses, enabling the design of targeted interventions to foster autonomous learning. For students, the questionnaire can be used for self-assessment, promoting metacognitive awareness and encouraging the adoption of effective learning strategies. For developers of SRL measurement instruments, this study provides a model for creating context-specific tools, demonstrating the importance of rigorous validation procedures.

While this study provides valuable insights, its limitations, particularly the relatively small sample size, indicate potential pathways for future research. It is advisable to conduct further validation tests on a larger population that includes a variety of cultural and educational backgrounds to enhance the generalizability of the instrument. Longitudinal studies could examine the development of self-regulated learning (SRL) over time, while cross-cultural research might explore how cultural factors influence the manifestation of SRL. Additionally, investigating the effects of specific instructional strategies on the development of SRL within the Indonesian EFL context would be beneficial.

5. References

- Abdul, A., Hussein, K., & Mandalawi, A. (2024). Cognitive psychology: strategies to improve learning. Al-Iraqa Foundation for Culture and Development. 4(1). https://www.researchgate.net/publication/383201965_Cognitive_psychology_strategies_to_ improve_learning.
- Alafgani, M., & Purwandari, E. (2019). Self-efficacy, academic motivation, self-regulated learning and academic achievement. Jurnal Psikologi Pendidikan Dan Konseling: Jurnal Kajian

Transformation of Literacy-Based Islamic Education Learning Management Integration in Elementary Schools

Psikologi Pendidikan Dan Bimbingan Konseling, 5(2). https://doi.org/10.26858/jppk.v5i2.10930.

- Bademci, V. (2022). Correcting Fallacies about Validity as the Most Fundamental Concept in Educational and Psychological Measurement. *International E-Journal of Educational Studies*, 6(12). https://doi.org/10.31458/iejes.1140672.
- Balashov, E. (2020). Self-Regulated Learning, Cognition and Metacognition. Self-Regulated Learning, Cognition and Metacognition. Ukraine: Nova Science Publishers. https://lccn.loc.gov/2019058238.
- Muqdamien, B., Umayah, Juhri, & Raraswaty, D. P. (2021). Tahap Definisi Dalam Four-D Model Pada Penelitian Research & Development (R&D) Alat Peraga Edukasi Ular Tangga Untuk Meningkatkan Pengetahuan Sains Dan Matematika Anak Usia 5-6 Tahun. Jurnal Intersections, 6(1). https://doi.org/10.47200/intersections.v6i1.589.
- Cazan, A. M. (2022). An intervention study for the development of self-regulated learning skills. *Current Psychology*, 41(9). https://doi.org/10.1007/s12144-020-01136-x.
- Cleary, T. J., Callan, G. L., & Zimmerman, B. J. (2012). Assessing Self-Regulation as a Cyclical, Context-Specific Phenomenon: Overview and Analysis of SRL Microanalytic Protocols. *Education Research International*, 2012. https://doi.org/10.1155/2012/428639.
- Dent, A. L., & Koenka, A. C. (2016). The Relation Between Self-Regulated Learning and Academic Achievement Across Childhood and Adolescence: A Meta-Analysis. *Educational Psychology Review*, 28(3). https://doi.org/10.1007/s10648-015-9320-8.
- Dinsmore, D. L., & Fryer, L. K. (2019). Developing Learners' Cognitive Strategies and the Motivation to Use Them: Rethinking Education Policy. *Policy Insights from the Behavioral and Brain Sciences*, 6(2), 107–114. https://doi.org/10.1177/2372732219860862.
- Dörrenbächer-Ulrich, L., Sparfeldt, J. R., & Perels, F. (2024). Knowing how to learn: development and validation of the strategy knowledge test for self-regulated learning (SKT-SRL) for college students. *Metacognition and Learning*, *19*(2). https://doi.org/10.1007/s11409-024-09379-w.
- Gan, Z., Liu, F., & Nang, H. (2023). The Role of Self-Efficacy, Task Value, and Intrinsic and Extrinsic Motivations in Students' Feedback Engagement in English Learning. *Behavioral Sciences*, 13(5). https://doi.org/10.3390/BS13050428.
- Gloria Kang GJ, Ewing-Nelson SR, Mackey L, Schlitt JT, Marathe A, Abbas KM, S. S. (2018). 乳鼠心肌提取 HHS Public Access. *Physiology & Behavior*, *176*(1), 139–148. https://doi.org/10.1177/2372732216655542.Interest.
- Habók, A., & Magyar, A. (2018). Validation of a Self-Regulated Foreign Language Learning Strategy Questionnaire through multidimensional modelling. *Frontiers in Psychology*, 9(AUG). https://doi.org/10.3389/fpsyg.2018.01388.
- Higgins, N. L., Frankland, S., & Rathner, J. A. (2021). Self-Regulated Learning in Undergraduate Science. *International Journal of Innovation in Science and Mathematics Education*, 29(1). https://doi.org/10.30722/IJISME.29.01.005.
- Hoffman, B. J., Kennedy, C. L., LoPilato, A. C., Monahan, E. L., & Lance, C. E. (2015). A review of the content, criterion-related, and construct-related validity of assessment center exercises. *Journal of Applied Psychology*, *100*(4). https://doi.org/10.1037/a0038707.
- Jansen, R. S., van Leeuwen, A., Janssen, J., Kester, L., & Kalz, M. (2017). Validation of the selfregulated online learning questionnaire. *Journal of Computing in Higher Education*, 29(1). https://doi.org/10.1007/s12528-016-9125-x.

- Khairol Anuar, N. A., Zakaria, N., Ibrahim, N., Mokhtar, M. I., Jasman, N. H., Mohd Yunos, D. R., & Rahmat, N. H. (2023). The Influence of Learners' Motivation and Self-Regulated Learning Behaviour. *International Journal of Academic Research in Business and Social Sciences*, 13(6). https://doi.org/10.6007/ijarbss/v13-i6/17114.
- Kirmizi, O. (2013). Investigating self-regulated learning habits of distance education students. *Journal of History Culture and Art Research*, 2(2). https://doi.org/10.7596/taksad.v2i2.246.
- Kocherhina, I., & Stelmashchuk, K. (2022). Peculiarities of Behaviour Self-Regulation in Students Who Combine Study and Work. *Scientific book of NPU M. P. Drahomanov. 12(1). Psychological sciences.* https://doi.org/10.31392/npu-nc.series12.2022.19(64).04.
- Maclean-blevins, A. O. (2013). Class Dojo: Supporting the art of student self-regulation. *Rising Tide*, 6. https://doi.org/10.20472/TE.2019.7.1.003.
- Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, selfregulated learning, and motivation contribute to academic Achievement. *Journal of Educational Psychology*, 106(1). https://doi.org/10.1037/a0033546.
- Menggo, S., Darong, H. C., & Semana, I. L. (2022). Self-Regulated Learning Method Through Smartphone Assistance in Promoting Speaking Ability. *Journal of Language Teaching and Research*, 13(4). https://doi.org/10.17507/jltr.1304.10.
- Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*, *41*(4), 219–225. https://doi.org/10.1207/S15430421TIP41043.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and Self-Regulated Learning Components of Classroom Academic Performance. *Journal of Educational Psychology*, 82(1), 33–40. https://doi.org/10.1037/0022-0663.82.1.33.
- Putarek, V., & Pavlin-Bernardić, N. (2020). The role of self-efficacy for self-regulated learning, achievement goals, and engagement in academic cheating. *European Journal of Psychology* of Education, 35(3). https://doi.org/10.1007/s10212-019-00443-7.
- Rivers, D. J., Nakamura, M., & Vallance, M. (2022). Online Self-Regulated Learning and Achievement in the Era of Change. *Journal of Educational Computing Research*, 60(1). https://doi.org/10.1177/07356331211025108.
- Roy, R., Sukumar, G. M., Philip, M., & Gopalakrishna, G. (2023). Face, content, criterion and construct validity assessment of a newly developed tool to assess and classify work–related stress (TAWS–16). *PLoS ONE*, *18*(1 January). https://doi.org/10.1371/journal.pone.0280189.
- Russell, J. M., Baik, C., Ryan, A. T., & Molloy, E. (2022). Fostering self-regulated learning in higher education: Making self-regulation visible. *Active Learning in Higher Education*, 23(2). https://doi.org/10.1177/1469787420982378.
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61. https://doi.org/10.1016/j.cedpsych.2020.101860.
- Salehi, M., & Jafari, H. (2015). Development and validation of an EFL self-regulated learning questionnaire. *Southern African Linguistics and Applied Language Studies*, 33(1). https://doi.org/10.2989/16073614.2015.1023503.
- Sim, M. S., Siok, T. H., Shuang, G. C., Syed Ahmad, T. S. A., & Rahmat, N. H. (2023). Self- regulated Learners: What Drives Them? *International Journal of Academic Research in Business and Social Sciences*, 13(3). https://doi.org/10.6007/ijarbss/v13-i3/16476.
- Sullivan, G. M. (2011). A Primer on the Validity of Assessment Instruments. *Journal of Graduate Medical Education*, 3(2). https://doi.org/10.4300/jgme-d-11-00075.1.

- Suman, C. (2023). Cultivating a Growth-Oriented Mindset in Educational Settings. *Peer Review Journal Talent Research Institute*, 2(1), 24–42. https://doi.org/10.5281/zenodo.8154509.
- Tao, X., Hanif, H., & Ebrahim, N. A. (2023). Emerging Trends of Self-regulated Learning: A Comprehensive Bibliometric Analysis. World Journal of English Language, 13(6). https://doi.org/10.5430/WJEL.V13N6P252.
- Teng, L. S., & Zhang, L. J. (2016). A Questionnaire-Based Validation of Multidimensional Models of Self-Regulated Learning Strategies. *Modern Language Journal*, 100(3). https://doi.org/10.1111/modl.12339.
- Thiagarajan, S., Semmel, D. S., & Semmel, M. I. (1974). Instructional Development for Training Teachers of Exceptional Children: A Sourcebook. India: Bloomington, Indiana. Https://Doi.Org/10.1016/0022-4405(76)90066-2.
- Uppal, N., & Kumar, A. (2021). Metacognition: a key determinant of self-regulated learning. *Shodh Sanchar Bulletin*. *10*(40). https://www.researchgate.net/publication/348525585.
- Voloshyna-Narozhna, V. (2023). To the Problem of Self-Regulated Learning in Conditions of Uncertainty. Scientific Notes of Ostroh Academy National University: Psychology Series. 16(1). https://doi.org/10.25264/2415-7384-2023-16-22-27.
- Wangid, M. N. (2022). The Role of Self-Motivation in Self-Regulated Learning. *PSIKOPEDAGOGIA Jurnal Bimbingan Dan Konseling*, 11(1), 14. https://doi.org/10.12928/psikopedagogia.v11i1.14175.
- Winarti, Ambaryani, S. E., & Putranta, H. (2022). Improving Learners' Metacognitive Skills with Self-Regulated Learning based Problem-Solving. *International Journal of Instruction*, 15(2). https://doi.org/10.29333/iji.2022.1528a.
- Xiao, S., Yao, K., & Wang, T. (2019). The Relationships of Self-regulated Learning and Academic Achievement in University Students. *SHS Web of Conferences*, 60. https://doi.org/10.1051/shsconf/20196001003.
- Xu, K. M., Cunha-Harvey, A. R., King, R. B., de Koning, B. B., Paas, F., Baars, M., Zhang, J., & de Groot, R. (2023). A cross-cultural investigation on perseverance, self-regulated learning, motivation, and achievement. *Compare*, 53(3). https://doi.org/10.1080/03057925.2021.1922270.
- Yigletu, A., Michael, K., & Atnafu, M. (2023). Professional development on assessment for learning and its effect on pre-service teacher's self-regulated learning. *Cogent Education*, 10(1). https://doi.org/10.1080/2331186X.2023.2222875.
- Yot-Domínguez, C., & Marcelo, C. (2017). University students' self-regulated learning using digital technologies. *International Journal of Educational Technology in Higher Education*, 14(1). https://doi.org/10.1186/s41239-017-0076-8.
- Zamanzadeh, V., Rassouli, M., Abbaszadeh, A., Majd, H. A., Nikanfar, A., & Ghahramanian, A. (2015). Details of content validity and objectifying it in instrument development. *Nursing Practice Today*, *1*(3). 10.15171/jcs.2015.017.
- Zhu, M. M., Alberts, K. M., Bork, W. N., & Wong, D. (2023). Self-regulated learning and intercultural competence: examining the role of self-regulation in supporting preservice teachers' intercultural learning outcomes. *Intercultural Education*, 34(5). https://doi.org/10.1080/14675986.2023.2213655.
- Zimmerman. (2022). Becoming a Self-Regulated Learner: Beliefs, Techniques, and Illusions. *Routledge*, 58(41). https://doi.org/10.1207/s15430421tip4102.

- Zimmerman, B. J. (2008). Investigating Self-Regulation and Motivation: Historical Background, Methodological Developments, and Future Prospects. *American Educational Research Journal*, 45, 166-183. https://doi.org/10.3102/0002831207312909.
- Zimmerman, B. J. (1990). Self-Regulated Learning and Academic Achievement: An Overview. *Educational Psychologist*, 25(1). https://doi.org/10.1207/s15326985ep25012.
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, *3*(2). https://doi.org/10.4304/tpls.3.2.254-262.