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The Role of Learning Repetitive Strategy in Determining Learning Performance Skill: An Insight from Health Vocational School

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Authors
Ardiyanto J.[1]* *MSc*
Handayani O.W.K.[1] *PhD*
Raharjo T.J.[1] *PhD*
Pujiastuti R.S.E.[2] *PhD*

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[1]Negeri Semarang University, Semarang, Indonesia
[2]Health Polytechnic of Semarang, Semarang, Indonesia

**Correspondence*
Address: Sekaran, Gunung Pati, Semarang City, Central Java 50229, Indonesia.
Phone:-
Fax: -
faisalnara78@gmail.com

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ABSTRACT

Aims Knowledge and skills significantly affect the learning performance of vocational students. However, adding ability without enhancing memory can reduce learning effectiveness, which ultimately affects learning performance. This study was done to investigate the effect of learning engagement and self-confidence on learning performance, mediated by repetition of educational materials. The goal is to improve the learning process and increase students' memory retention during exams.

Participants & Methods This study was conducted on 179 respondents from health vocational schools to analyze knowledge, skills, and expertise after learning using four variables: learning engagement, self-confidence, repetition strategy, and learning performance from August to December 2022.

Findings The results indicated that learning engagement and self-confidence directly affected learning performance. The Repetition strategies mediated the relationship between learning engagement and self-confidence with learning performance.

Conclusion Therefore, implementing rehearsal strategies for students is essential in the learning process to establish optimal learning performance. Repetition strategies can help students maintain and strengthen their memory, leading to better exam performance and educational evaluations.

Keywords Learning; Work engagement; Memory; Academic Performance; Health

CITATION LINKS

[1] Computer self-efficacy, learning performance, and the mediating ... [2] Medical students' motivation and academic ... [3] Face-to-face, blended, flipped, or online learning ... [4] Effectiveness of basic safety training as perceived by ... [5] Social media and e-portfolios: Impacting design ... [6] Contribution of mathematical anxiety, learning motivation ... [7] How to improve teaching practices: The role ... [8] Harnessing the power of spaced repetition learning ... [9] Spaced repetition learning games on mobile devices ... [10] Exploring undergraduates' learning engagement ... [11] How does prior knowledge influence learning ... [12] Teacher online feedback and learning motivation ... [13] The effects of cooperative learning on Iranian university ... [14] The effects of a discovery learning module on geometry ... [15] Defining student learning experience through ... [16] Spaced repetition learning as a tool for orthopedic ... [17] Statistical control in correlational studies: 10 essential ... [18] Multivariate data analysis seventh ... [19] Examining the role of learning engagement in ... [20] High-fidelity nursing simulation: Impact on student ... [21] Investigating the use of a mobile flashcard application rememba on the vocabulary ... [22] Instructional sensitivity in vocational ... [23] Factors affecting students' learning performance through collaborative ... [24] MOOC-based flipped learning in higher education: Students' ... [25] Effects of problem-based learning vs. traditional ... [26] Cognitive, afective and students' performance : A model of meaningful ... [27] Implementation of self-directed learning model to improve students' self-regulated ... [28] The correlations among learning motivation, self-confidence, and writing ability of students ... [29] Evaluation of four digital tools and their perceived impact on active learning, repetition and feedback in ... [30] Adaptive forgetting curves for spaced repetition language ... [31] The effects of Hebb repetition learning and temporal grouping in immediate serial recall of spatial ... [32] How to learn effectively in medical school: Test yourself, learn actively, and repeat in ...

Introduction

Learning performance is one of the critical aspects of evaluating the learning process. Learning performance shows each student's ability to understand the educational materials presented by the lecturer [1]. Remembering study material supports students' learning abilities. Developing student understanding through educational materials requires a strategy to improve learning performance [2]. Student learning ability is an indispensable aspect representing understanding the study material. Evaluation is part of a learning strategy that analyzes students' abilities by investigating their understanding during learning. Learning evaluation is carried out by learning performance as an indicator of learning performance and assessing the lecturer's test results to determine students' understanding. The result of the examination scores is used to understand the level of student's knowledge and skill. Sometimes learning performance is not optimal, even if the lecturer has tried to provide a detailed understanding [3]. Various facilities are being developed to improve the quality of learning, which can support the professor's study material in more detail. However, learning performance in students often does not show results consistent with improving the quality of education. The learning process is sometimes not directly proportional to students' learning outcomes [4].

When students have high self-confidence, it encourages a desire to learn more intensively because they believe can master the educational materials. Self-confidence is a psychological factor that encourages students to learn more intensively [5]. Self-confidence can improve learning performance. When a student has high self-confidence, the intention to learn is stronger and affects more optimal learning abilities. Self-confidence encourages someone to take certain actions; for example, when students are studying, they have access to a variety of literary works that can enhance educational material enrichment [6]. Self-confidence is a strong asset in improving the learning process. When testing is carried out, it can measure the level of learning success indicated by better learning performance. Learning engagement increases students' insight; therefore, it affects learning performance [7]. Students who are actively involved and able to remember the educational materials delivered during the learning process have better learning performance.

The learning process used at this time actively involves students. However, the learning performance still has not shown optimal results. The theory used to analyze the current learning process is student-centered learning. The existence of students who are actively involved in the learning process does not necessarily have positive implications for learning performance. The repetition strategy is based on spaced repetition theory [8]. The relationship between process and psychological factors and their impact on learning performance is still not entirely clear. Therefore, it is necessary to conduct further research to investigate this relationship, especially by adding learning repetition. The repetition strategy plays a crucial role in the learning process, as it helps to reinforce the educational materials. The impact of process and psychological factors on learning performance can be seen through repetition. Repetition is an integral part of the learning process, which can significantly improve students' memory retention [9].

Learning engagement requires student activity in the learning process [10]. Student activity is an important factor in maximizing understanding; hence, the learning process can increase the planned insight [11]. The knowledge and skills obtained during learning determine the level of learning performance. Active student involvement in the learning process leads to increased knowledge, which in turn affects his/her learning performance [12]. The ability of students to follow the learning process is based on motivation to improve their abilities. The aspect of self-confidence comes from the psychological dimension of students who believe that by using self-efficacy in the learning process, they can acquire knowledge and obtain optimal scores on the test as a form of evaluation [13]. Psychological aspects cannot be separated in determining learning performance; thus, the measurement of the influence of psychological aspects, specifically on self-confidence on learning performance, needs to be tested in-depth [14]. Self-confidence is a psychological aspect formed from belief; thus, it has an important role in determining learning success and performance. One indicator of self-confidence is positive thinking and being able to undertake learning activities optimally to influence learning performance [15].

Repetitive learning is an important method for students, particularly for vocational health students, because it reinforces and solidifies the knowledge and skills learned in the classroom. By practicing and reviewing the educational materials multiple times, students are more able to understand and retain the information, which leads to improved learning outcomes and better performance in their future careers. In the field of vocational health, where practical skills are critical, repetitive learning helps students develop muscle memory and familiarity with the procedures and techniques [16]. It also helps students develop confidence in their abilities and reduces the likelihood of errors or mistakes that could harm patients. Also, repetitive learning helps students identify areas where they may be struggling and allows them to focus their efforts on improving their understanding of those concepts.

The primary aim of this research was to examine the effectiveness of the repetitive learning method in improving learning performance among vocational

health students. The research objective is of utmost importance as it seeks to provide evidence-based insights into the effectiveness of the repetitive learning method, which has been suggested as a potential strategy to improve student learning outcomes. Through rigorous analysis and interpretation of data, this research aimed to contribute to the body of knowledge on learning strategies and ultimately provide practical recommendations for educators and policymakers to enhance student learning outcomes in vocational health education.

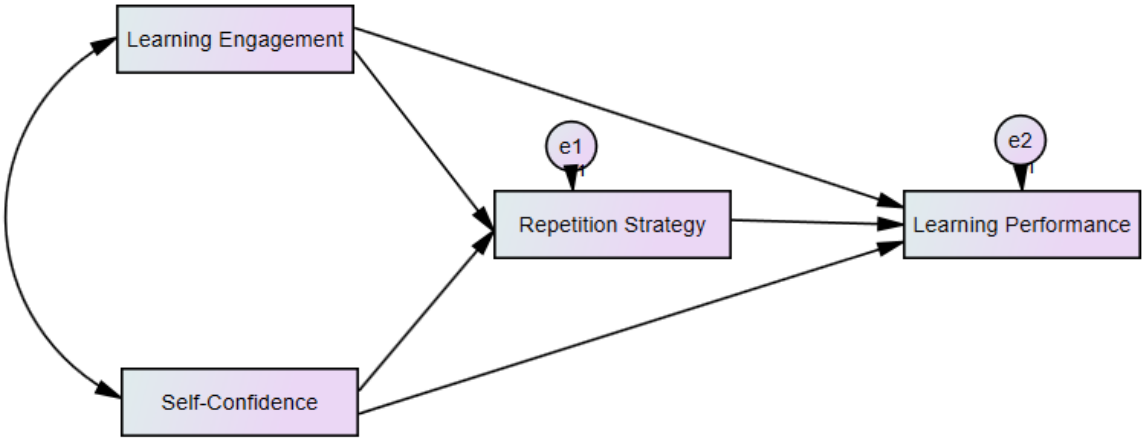

Figure 1) Research framework

Participants and Methods

This correlational quantitative research was done to examine the relationship between two or more variables [17], to determine their possible statistical relationship, and if so, the strength and direction of that relationship.

This research was conducted at a health vocational school to analyze knowledge, skills, and expertise after learning using four variables: learning engagement, self-confidence, repetition strategy, and learning performance from August to December 2022.

According to Hair's suggestion to determine the sample size using five to ten times the number of indicators, which ranges from 30 to 500 [18], the number of samples sample was considered to be 179 students using the repetitive learning method. The repetitive research method was applied to the health vocational school. Students who met the criteria were selected to fill out the questionnaires. To measure student learning engagement, the indicators [19], self-confidence [20], repetition strategy [21], and learning performance [22] were evaluated.

Data analysis was done using structural equation modeling (SEM) with AMOS. SEM is a multivariate statistical analysis technique that can be used to test complex theoretical models and hypotheses by examining the relationships between variables. The test results showed that all indicators were valid and reliable.

The results of the reliability test showed that Cronbach's alpha for each variable was ≥0.7, (learning engagement: 0.897, self-confidence: 0.864, repetition strategy: 0.842, and learning performance: 0.875).

Findings

Students primarily had access to Internet resources for studying. Table 1 shows that the Internet is a prominent source in the current era to improve learning performance. Repetition is an important aspect of the learning process to enhance memory. According to Table 1, most students reported repeating four to six times. Therefore, it can be concluded that too little or too much repetition is not very effective. The use of learning strategies varies for each lesson, and there is an even percentage for each learning strategy.

Table 1) Respondents' learning characteristics

Item		Frequency	Percentage
Learning media source	Internet	75	42
	Textbook	53	30
	E-Book	33	18
	Journal	18	10
Repetition times	1-3	18	10
	4-6	72	40
	7-9	63	35
	≥9	26	15
Learning strategy	Project-based learning	43	24
	Discovery learning	47	26
	Problem-based learning	41	23
	Inquiry learning	48	27

Table 2 shows that all variables, including learning engagement, self-confidence, repetition strategy, and learning performance were significantly correlated.

According to Table 3, the path of learning engagement to repetition strategy (β=4.061, p=0.000), self-confidence to repetition strategy (β=8.799, p=0.000), self-confidence to learning performance (β=2.247, p=0.025), learning engagement to learning performance (β=4.623, p=0.000), and repetition strategy to learning

performance (β=4.342, p=0.000) was significant and confirmed. For mediation measurement, the Sobel test is required. Based on the results of Sobel's test, the effect of learning engagement on learning performance through repetition strategy was confirmed (β=8.599, p=0.000). The results proved the significant effect of self-confidence on learning through repetition strategy (β=9.245, p=0.000).

Table 2) Correlation between the variables

Correlations	Learning Engagement	Self-Confidence	Repetition Strategy	Learning Performance
Learning Engagement	1	0.590**	0.627**	0.681**
Self-Confidence	0.590**	1	0.758**	0.675**
Repetition Strategy	0.627**	0.758**	1	0.733**
Learning Performance	0.681**	0.675**	0.733**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 3) Hypothesis test result

Estimated paths	S.E.	β	p-value	Result
Learning engagement to repetition strategy	0.333	4.061	0.000	Supported
Self-confidence to repetition strategy	0.616	8.799	0.000	Supported
Self-confidence to learning performance	0.185	2.247	0.025	Supported
Learning engagement to learning performance	0.373	4.623	0.000	Supported
Repetition strategy to learning performance	0.358	4.342	0.000	Supported

The model fit in Table 4 shows that it complies with the fit model criteria of the study. These results indicate that the relationship between variables met the criteria of a good model.

Table 4) Model fit results

Model Fit indices	Observed value	Recommended value
Chi-square	0.000	Small
Noncentrality parameter (NCP)	0.000	Small
Comparative fit index (CFI)	1.000	>0.90
Root mean squared error of approximation (RMSEA)	0.062	<0.08

Discussion

The results demonstrated that learning engagement had a positive and significant impact on learning performance and repetition strategy. This study confirmed that when participants are actively engaged in the learning process, it enhances their ability to obtain knowledge, leading to optimal performance on tests. As knowledge is a measurable aspect of the learning process, it plays an important role in improving learning performance [23]. This study highlights the importance of participation in the learning process as a means of creating student activity that leads to better knowledge acquisition [24]. Our results are in agreement with previous findings from Choi *et al.* [25] indicating that students' learning abilities are determined by active involvement, both inside and outside the classroom. This involvement is demonstrated by students' engagement in classroom activities and their search for learning resources that enrich the taught material. Student involvement is an important factor in achieving effective and efficient learning performance [26].

Self-confidence is a psychological factor that significantly influences learning performance. The role of psychological factors is crucial in motivating students during the learning process. Confidence in learning activities affects self-efficacy while learning engagement supports the optimal implementation of the learning process [27]. Knowledge acquisition, encouraged by psychological factors, plays a vital role in promoting optimal learning performance. Psychological factors motivate students to continue learning, not only within the classroom but also through actively seeking out educational materials from other sources. Easy access to the Internet is a factor that supports successful learning, which is further bolstered by self-confidence. Students with high self-confidence have the intention, motivation, and enthusiasm to implement the learning process optimally, which increases their interest in completing courses [28]. This study proved that self-confidence has a positive and significant effect on the repetition strategy. Self-confidence plays an important role in providing internal motivation, thereby enabling students to have the intention to complete their learning activities optimally [29].

Learning performance is achieved through participation in a repetition strategy, as repeated exposure to material encourages deeper and longer-lasting knowledge acquisition. According to repetitive learning theory, material repetition leads to an increase in students' memory retention over a longer period of time. The repetition strategy plays a crucial role in supporting learning success, which is measured through learning evaluation. Psychological factors are a dominant force in learning activities [15]. The repetition strategy involves repeating the educational materials to increase memory retention and facilitate the learning process. Memory, particularly as it is related to knowledge, plays a critical role when students take tests [21]. As per the repetition theory, memory plays a significant role in enhancing students' ability to perform well in exams and in increasing the length of their memory retention [30]. The testing process requires knowledge to encourage students' abilities that can be evaluated. The study results strengthened that the repetition

strategy is an implementation and solution step for schools to improve learning performance [2]. This research proved that the repetition strategy has an effect on learning performance, which indicates that repetition of educational materials affects the success of learning through evaluation or testing [31]. The study results strengthened that the repetition strategy is an implementation and solution step for schools to improve learning performance. The success of learning is an important factor that determines the success of schools. This study proved that self-confidence has a significant effect on active participation in the repetition strategy process and affects learning performance. Also, the repetition strategy mediated the effect of self-confidence on learning performance and learning engagement on learning performance.

Several studies have shown that repetition can improve learning performance. For example, Augustin [32] showed that repetition improves recognition memory for faces and names. Another study by Zaidi *et al.* [30] demonstrated that repeated retrieval practice can enhance long-term memory retention. Furthermore, the repetition strategy has been shown to play a significant role in supporting the learning process. By repeating educational materials, students can gain a deeper understanding of them, which enhances their ability to retain and recall them. Additionally, repetition helps students identify gaps in their understanding of the educational materials, which can lead to further study and improvement. Moreover, the repetition strategy helps boost students' confidence in their ability to learn and remember information. By improving their memory retention, students are better equipped to perform well on tests and assignments, which leads to increased confidence and motivation to continue learning.

A limitation of this research is that it was conducted solely in vocational schools, and further investigation is necessary to determine the applicability of these findings to non-vocational schools.

Conclusion

This study utilized learning engagement as a variable to represent the learning process, and self-confidence as a psychological factor that affects learning performance through the use of repetition strategies. Specifically, we focused on the mediating effect of the repetition strategy on learning engagement and self-confidence, with regard to learning performance in health vocational school.

The results demonstrated that a repetitive learning strategy significantly mediates learning performance. This research confirms that in the learning process, repetition is necessary to strengthen students' memories, allowing them to recall previously studied educational materials during evaluation. Repetition is also an effective way to increase students' insight and reinforce their memories.

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