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Research Article

Psychology for curing mental health

Learning Strategies, Self-Efficacy And Performance Among Students Of College Of Health And Rehabilitation Sciences, Princess Noura Bint Abdulrahman University

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Abstract: This study aimed to investigate the relationship between learning strategies, self-efficacy, and performance among students of the College of Health and Rehabilitation Sciences. The main objective of this study was to provide the impact of the learning process (rehearsal, elaboration, organisation and critical thinking) concerning self-efficacy and performance of the health sciences students. The sample of this study comprised of (n=147) students enrolled in the final year of BS Program of College of Health and Rehabilitation Sciences, Princess Nourah bint Abdulrahman University. Learning strategies were measured by a subscale of learning strategies, whereas, self-efficacy was measured by general self-efficacy scale. The grade point average of the students served to measure the performance of the students. Previous studies have shown that there is a clear difference in learning strategies on self-efficacy and performance among the students. The current study explored these variables among allied health students involved in practical clinical skills. Results proved the predictive relationship of deep level strategies with self-efficacy ($F(3,143) = 5.587$, $p<.01$) and surface-level strategies with performance ($F(1,145) = 4.541$, $p<.03$) of the students. The findings could contributeto evaluating the most frequently used learning strategies about self-efficacy and the performance of the students. Effective learning strategies were proposed to enhance the performance of the students.

Keywords: Learning Strategies, Self-efficacy, Performance, Rehearsal, Elaboration, Organization, Critical thinking, Health Sciences students

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1. INTRODUCTION

Learning, self-efficacy and performance are core components for allied health professionals. Several learning approaches have a diverse influence on the learning ability of medical students.[1] The vivid impact of these learning strategies in association with self-efficacy and performance was found in the students. It is an essential matter in the field of education that learners must be exposed to a variety of learning resources to enable them to apply their knowledge and skills which they learn with the assistance of the teacher, inside and outside the classroom. This process assists the learners in choosing the best methods that are most suitable in their learning style and level, pace, as well as time and place. By having such resources, learners can be independent and relied on themselves in making decisions. It also helps learners to investigate, explore and develop skills that will enhance their abilities in solving problems. Self-efficacy is referred to as a personal belief regarding their competency in performing and accomplishing the goals. It plays an important part to motivate students to learn by exhibiting self-monitoring behaviour.[2] It also influences the performance of students academically in decision-making as well as enrolling in courses.[3] Many studies have used integrated models of attainment, motivation, self-efficacy, and learning approaches to find their influence on the academic success of students.[4-5] The motivation to achieve academically is mostly impacted by the self-belief a student holds regarding his or her capabilities in understanding complex ideas, setting specific but challenging goals for achievement and evaluating own performance.[6] The facilitating role of self-efficacy, thus, helps in predicting the choice of learning strategies made by students as well as its impact on the end grades.[2] Learning techniques and strategies adopted by students impacts their performance and self-efficacy. In many studies, learners who have higher self-efficacy have been reported to actively engage in their learning process, such as metacognitive and cognitive strategies. A reciprocal relationship has been found in self-regulated, and self-efficacy learning ability in that learners incline to enhance their self-regulated learning skills as they enhance their beliefs regarding self-efficacy.[3] Thus, the learning process has a significant role to play in increasing self-efficacy and eventually, the performance of students. As the allied health professionals go about their studies and practice, the learning continues. How they perform and how far they believe they can achieve the objectives of a specific task depends on their personal beliefs regarding their abilities.[7] This means that if they believe they are well-equipped to perform better, they will regulate their learning accordingly. In that case, the learning process and strategies become essential because the choice of a learning strategy would determine their success and perform in the long run. Students who are less skilful in regulating their learning become either unwilling or incapable of generating self-efficacy beliefs.[1] The failure to regulate their learning leads to academic failure as many students overlook the importance of learning. Simultaneously, many students fail to meet university requirements due to the belief that they are not competent enough to possess the requirements capabilities that are essential for mastering a specific topic.[8] There has been a great debate in the healthcare field to improve critical thinking and other abilities among healthcare experts for the sake of learning.[9] Given the nature of their study and the significance of what the allied professionals learn will impact on a broader scale over the patients' diagnosis and treatment. Self-regulated knowledge refers to learning approaches that learners utilise themselves in order to regulate their personal cognition to manage the resources in the process of learning. Self-regulation learning approaches are multi-dimensional activities that consider action, cognition, surroundings and emotion of a learner.[7] Therefore, self-regulation forms the basis of academic endeavour as the students embark higher on the path of studies. Learning strategies are thus meta-cognitive and cognitive approaches such as the explanation, practice, critical philosophy, organisation and metacognitive self-regulation.[7] This conceptualised learning framework differentiates the learning strategies as instrumental in deep processing or surface processing. The learning strategies such as organisation, elaboration and critical thinking encourage deep processing learning while rehearsal encourages surface processing.[10] Surface processing in learning refers to scraping the outer surface in understanding a topic without critically analysing it in-depth. .[11] Rehearsal refers to the discrete learning strategy. However, it does not give in-depth information which is necessary to comprehend the link between different thoughts in the academic field and bridging the gap between old and new knowledge.[12] It is also not useful in gaining new knowledge with the help of long-term memory. Nevertheless, rehearsal is effective in simple task learning as it activates the short-term memory. However, it prepares the learner to shift short term memory information to link the term by repeating the information and practice.[13-14] Deep processing in learning is associated with students' intrinsic interest and aspiration to understand the topic of study. Academic performance differs as per the learning process adopted by a student. Studies show that deep processing yields stronger and more positive outcomes.[15] Meta-cognitive learning strategies refer to an awareness of students, meta-cognitive processing, own control on learning and knowledge. Meta-cognitive, therefore, consists of planning, regulating and monitoring own activities.[16] Organisation strategy refers to the tactics such as outlining main ideas, distinguishing supporting and main ideas and clustering them by organising them.[17] Critical thinking is used to assist students in the application of previous knowledge to critically evaluate and solve problems. Elaboration strategy enables students in developing the knowledge that is enriched based on tactics such as creating analogies, paraphrasing, notes taking and summarising. A highly self-regulated student sets specific outcomes, monitors the extent to which his or her learning strategy is effective enough to yield expected outcomes and responds to their own evaluation.[4] Self-regulation is correlated with self-efficacy, as a student was more involved in regulating own learning and performance, the higher he or she scores on self-efficacy. The reason is that their belief on their own abilities make the set goals and objectives relatively high and challenging, meaning they involve themselves in deep learning processes.[18] Academic performance can be measured by the Grade Point Average (GPA), which reflects the overall performance of a student throughout a course. Students who use deep processing learning strategies, as mentioned, perform better academically, which is evident by their higher GPA. On the contrary, lower GPAs show low academic performance which is influenced by lower self-efficacy and surface learning process strategies.[18] The integration of high self-efficacy, skillful self-regulated learning strategies that give deeper knowledge positively impact the academic performance and as a result, the GPA positively improves. Many studies show that deep process learning strategies impact on the self-efficacy of students while surface process learning strategies

impact on the performance.[4,14,19] The rationale behind this research is to analyse the dissimilarity in learning strategies, self-efficacy and performance among students of the College of Health and Rehabilitation Sciences. The study aims to investigate the difference in the deep and surface processing as a consequence of different strategies employed by the students. Furthermore, there is a greater interest in finding the impact of learning processes or approaches, for instance, practice, explanation, critical philosophy and organisation in relation to self-efficacy and educational enactment of the learners. Most of the studies have been conducted around investigating the influence of self-efficacy on learning approaches employed by learners. However, this research intends to find the impact of learning approaches on the self-efficacy and performance of allied health sciences students. There are three research hypotheses formulated for this research, as follows:

H1: There will be a significant relationship between learning strategies, self-efficacy and performance among health science students
H2: Students who use deep processing learning approaches such as organisation, critical thinking and explanation will score high on self-efficacy.
H3: Students who use surface learning strategies such as rehearsal will score high on performance.

2. METHODOLOGY

The present study used a descriptive, correlational research design. The research method applied was quantitative in which survey method using different standardised self-report questionnaires.

2.1 Sample

The sample of this study was comprised of (n=147) students enrolled in BS programs of final year (level 7 & 8) at College of Health and Rehabilitation Sciences, Princess Nourah bint Abdulrahman University (PNU). There were 237 students enrolled in the final year. ,A representative sample was calculated using a 95% confidence interval. All-female students enrolled in the final year of BS Programs at the College of Health and Rehabilitation were included. Students having any special needs was excluded to maintain homogeneity in the sample group.

2.2 Measures

a. Sociodemographic Form

A personal information questionnaire prepared by the researcher was used to determine the age, department, track, educational level, birth order, socioeconomic status, study habits and health status.

b. Learning Strategies Scale

This scale is derived from 'Motivated Strategies for Learning Questionnaire (81-item, MSLQ)'. The full questionnaire was developed by Pintrich, Smith, Garcia, and McKeachie to measure the types of learning strategies and academic motivation used by college students.[20] The subscale of learning strategies that were used in the study has 19 items. This instrument uses a 7-point Likert scale. Four sub-scales were adopted from MSLQ to measure students' rehearsal, elaboration, organisation, and critical thinking. The learning strategies were conceptualised as deep processing (organisation, critical thinking, and elaboration) and surface processing (rehearsal).

c. General Self-efficacy scale

measures self-efficacy in adaptation, optimism, and coping regarding facing adversity or everyday problems.[21] The purpose of the GSE is to measure confidence in goal setting, effort, and persistence. It consists of 10 items. It can be responded to the 4-point Likert scale (1=Not at all true, 4= Exactly true). Score range is 10-40. Cronbach's alphas ranged from .76 to .90, with the majority in the high .80s. Criterion-related validity is documented in numerous correlation studies where positive coefficients were found with favourable emotions, dispositional optimism, and work satisfaction.

2.3 Ethical Considerations

All the ethical considerations were fulfilled before conducting the study. After getting ethical approval from the Internal Review Board (IRB Log # 18-0029), PNU. A consent form was given to the subjects to get their willingness to participate in the study and received with their acceptance. Students were approached in their free slot of time and the meeting was fixed according to their convenience. Researchers administered a brief demographic information sheet for participants. Standardised scales were administered to individuals. Participants were assured about the confidentiality of their information. To ensure the privacy of the participants' personal information, survey forms were assigned codes and data was kept confidential.

3. STATISTICAL ANALYSIS

Collected data were analyzed by using SPSS (V. 24). Descriptive Statistics of measures of central tendency and dispersion was calculated. Pearson correlation of coefficient computed to find out the relationship of learning strategies, self-efficacy and performance among health sciences students. Further linear regression analysis was conducted.

4. RESULTS AND DISCUSSION

The results have been generated by using a correlation coefficient table in order to evaluate the direction and strength of the linear association between the factors. The variables in this research are the performance, learning approaches, and self-efficacy. For learning strategies (MSLQ) is used, which measures the learning approaches types used by students. For self-efficacy General Self-Efficacy (GSS) scale has been used, which is a tool to correlate to optimism, satisfaction and emotion. For performance (GPA) has been used to indicate the performance of students on a scale of 1.0 to 5.0. Table 1 shows the correlation between learning strategies, self-efficacy and performance. Learning strategies and self-efficacy were found having correlation ($r=.211$, $p<.05$). However, there was no relationship found between learning strategies and performance.

Table 1. Correlation Matrix of learning strategies, Self-efficacy and performance				
Variables	**Self-efficacy**	**Performance**	**Mean**	**SD**
Learning Strategies	.211*	.118	97.77	13.46
Self-efficacy		.080	29.23	4.22
Performance		-	4.59	0.38

P<0.05, 1-tailed

Table 2 shows the correlation between all the learning strategies as well as the correlation of each learning strategy with performance and self-efficacy. The correlation between organisation strategy, critical thinking and elaboration strategy with self-efficacy was found significantly correlated (r=.320, .168, .198, P<0.01) respectively. Whereas, the correlation between rehearsal and performance was found strongly positive relationship (r=.174, P<0.01). The correlation matrix is providing specific patterns of relationships. It can be seen that deep leaning strategies were correlated with self-efficacy and surface learning strategies were correlated with performance. Hence, the first hypothesis is partially accepted.

Table 2. Correlation Matrix of Deep and Surface learning strategies, Self-efficacy and performance							
Variables	**Critical thinking**	**Rehearsal**	**Elaboration**	**Performance**	**Self-efficacy**	**M**	**SD**
Organization	.427**	.384**	.409**	.045	.320**	21.51	2.946
Critical thinking		.412**	.216**	.089	.168*	24.93	4.982
Rehearsal			.510**	.174*	.113	21.12	4.117
Elaboration				.049	.198*	30.22	6.165
GPA					.080	4.59	0.38
GSS					-	29.23	4.22

P<0.01, *P<0.05,

Table 3 illustrates the strength of the link between dependent variables and the model. R is showing the direct positive correlation between the dependent variable of self-efficacy and the predictors of learning approaches (elaboration, organisation and critical thinking). Therefore, the second hypothesis, "Students who use deep processing learning approaches (organisation, critical thinking, and elaboration) will score high on self-efficacy" has been approved.

Table 3. Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.324[a]	.105	.086	4.397
a. Predictors: (Constant), Elaboration, Critical thinking, Organization				

Table 4 is presenting the regression equation that is confirming the fitness of the model. The significance value, according to the table is .001, which is less than .05. This means that there is a statistically substantial link between self-efficacy and deep learning approaches, i.e. elaboration, organisation and critical thinking strategies. This proves that the second hypothesis has been accepted. It means that students who use deep learning strategies score high on the self-efficacy test. Hypothesis 2: Students who use surface learning strategies (rehearsal) will score high on performance.

Table 4. ANOVA for regression equation, deep learning strategies on self-efficacy					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1 Regression	323.976	3	107.992	5.587	.001[b*]
Residual	2764.160	143	19.330		
Total	3088.136	146			
a. Dependent Variable: GSS					
b. Predictors: (Constant), Elaboration, Critical thinking, Organization					

The model summary table (5) shows the regression analysis between rehearsal strategy and performance. The correlation was found, .174, whereas, variation can be explained 3% causing by rehearsal strategy on performance.

Table 5. Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.174[a]	.030	.024	.37676
a. Predictors: (Constant), Rehearsal				

The table (6) shows the significance of rehearsal or surface learning strategies on performance. The significance value is .035, which is again less than .05. This means that there is a statistically substantial connection between surface learning strategies such as rehearsal and performance of students. This means that hypothesis 3 is also accepted that students who use surface learning strategies score high on performance.

Table 6. ANOVA for regression equation, surface learning strategy on performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.645	1	.645	4.541	.035[b*]
	Residual	20.583	145	.142		
	Total	21.227	146			

a. Dependent Variable: Performance

b. Predictors: (Constant), Rehearsal

The results revealed that there is a significant relationship between deep processing learning with high self-efficacy among health sciences students. This sheds light on the notion that students who perceive themselves at the high level of self-efficacy and believe themselves to be capable of achieving high goals. To further elucidate this, students who regulate their own learning use deep learning strategies and they have a high belief that they are able and fully capable of accomplishing goals.[22] Self-regulated learning is essential for Allied Health Professionals in that the gap has to be bridged between practice and knowledge.[16] Through self-regulated learning, students become better able to learn and monitor own learning against set standards.[23] The standards that are set by the students for their own learning are based on their self-belief.[24] Surface learning strategies such as rehearsal has a strong relationship with an academic performance which is measured through grade point average. This means that high academic performance is augmented by surface learning strategies used by students.[11] Rehearsal strategy is different from other learning strategies in that it only gives basic knowledge; however, it helps students to perform better and understand the topics.[25] Through rehearsal, a piece of information may be retained and used in assessments and practical skills which yield positive results in terms of high achievement in practical examination. However, it reveals that using surface learning does not correlate with self-efficacy as strongly as other deep process learning strategies do.[6] On the other hand, studies have also proved that self-efficacy and self-esteem positively exert impact on the deep processing of students which further influences their academic performance via deep processing and mastery goals.[26] It can be said that in this study deep processing learning strategies have shown a strong correlation with high self-efficacy. However, the impact of deep processing on academic performance cannot be denied.[24,26] It can be explained through the fact that deep processing gives profound and long-lasting knowledge which of course shows that the student regulating his or her learning through deep processing strategies have stronger beliefs regarding his or her capability.[17] Self-regulation and metacognition are important in educational psychology. Metacognitive strategies differ in their extent to which they help exert a stronger impact on the learning processes of students.[5] While some strategies help in gaining a deeper understanding, other strategies only help in gaining surface or superficial knowledge. However, all of the self-regulatory strategies are essential in determining success in academic performance. Self-regulation is a characteristic which determines the awareness of students regarding the requirements of a task and their own need in relation to having a learning experience at an optimal level.[29] One of the studies suggests that a self-regulated learner avoids such cognitions and behaviours that may impede or detrimentally impact their academic success.[30] This means they are well-aware regarding necessary strategies for their own learning. They also understand how and when to use those strategies in order to enhance performance and perseverance. For self-regulated learners, learning is a process which could be controlled and regulated.[31] For that reason, they continuously plan, monitor, organise and assess their own learning by setting goals and standards for achievement. Self-efficacy is a motivational variable which mediates the learning of students and metacognition is related to monitoring own thinking and evaluating the accuracy of procedures applied by a student in order to identify potential errors.[19,28] This identification helps in resetting the goals in the case previously set standards have not been met. This motivation becomes a predictor of performance and academic achievement. Self-efficacy itself is correlated with self-regulated and metacognitive learning strategies.[4] The deeper processed learning strategies use, the higher they possess positive self-beliefs about themselves. As a result, academic performance and achievement do improve. In this research, the results have shown a link of the deep learning process with self-efficacy but not with performance. Most of the studies conducted on this topic have found the positive impact of learning strategies in relation to self-efficacy on performance. The difference between learning strategies, however, has not been examined in previous studies as it has been done in this study.[32] Previous studies investigated the influence of self-regulated education strategies on academic achievement and enactment in the light of self-efficacy and positive self-beliefs of students.[8,32] This study has made a distinction between the learning strategies based on the learning processes. It can be said that students of the College of Health and Rehabilitation Sciences, PNU, who scored high on self-efficacy use deep process learning approaches, for instance, organisation, explanation and critical thinking. However, learners who scored high in performance in terms of grade point average use surface process learning approaches such as rehearsal meaning their end goal is achieving high grades rather than gaining deeper knowledge through self-regulated deep process learning strategies. There are some limitationsto the studies; for instance, only female students were participants. In future studies, this could be covered by having a comparative design for gender. Another aspect of comparison for teaching strategies and learning strategies can be explored in future studies.

5. CONCLUSION

It can be concluded that deep processing strategies positively impact the self-efficacy of students and vice versa. Highly skillful students self-regulate themselves by using deep processing learning strategies to gain better and deeper knowledge; possess positive beliefs regarding their own self and high self-efficacy. On the other hand, surface processing strategies impact positively on academic performance. Learning strategies play an important role for Allied Health Professionals. There is a need to bridge the gap between practice and knowledge by making use of deep processing learning. In order to enable students to gain profound and in-depth knowledge and understanding of a subject matter and complex topics, it is crucial to make students understand the

importance of self-regulating their own learning process. Only academic achievement must not be the end goal for students. Instead, there is a greater need for gaining deeper knowledge by using metacognitive learning strategies which are sure to yield better outcomes.

6. AUTHORS CONTRIBUTION STATEMENT

Uzma Zaidi conceived the idea, designed the methodology, collected the data, performed the analysis of the data, wrote and reviewed the article.

7. CONFLICT OF INTEREST

Conflict of interest declared none.

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