KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 06 August 2024
Revised 29 October 2024
Accepted 05 November 2024
Published online 10 December 2024

Journal of Adolescent and Youth Psychological Studies

Volume 5, Issue 12, pp 31-40

E-ISSN: 2981-2526

Predicting Students' Academic Performance Based on Academic Self-Concept, Academic Resilience, Academic Engagement, Emotional Self-Regulation, and Self-Esteem

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Dawood, H. D., Mahdad, A., Khalifa Al-Hashmy, R. N., & Manshaee, G. (2024). Predicting Students' Academic Performance Based on Academic Self-Concept, Academic Resilience, Academic Engagement, Emotional Self-Regulation, and Self-Esteem. *Journal of Adolescent and Youth Psychological Studies, 5*(12), 31-40.
http://dx.doi.org/10.61838/kman.jayps.5.12.4

A B S T R A C T

Objective: The aim of the present study was to predict academic performance based on academic self-concept, academic resilience, academic engagement, emotional self-regulation, and self-esteem among students.

Methods and Materials: The statistical population of this correlational- descriptive study included all students of the Faculty of Educational Sciences and Humanities at the University of Wasit, Iraq, in 2023. From this population, a sample of 306 students (115 female students and 185 male students) was selected using a multi-stage cluster random sampling method. Data were collected through the Academic Performance Questionnaire (Pham & Taylor, 1999), Academic Self-Concept Questionnaire (Chen & Thompson, 2004), Academic Engagement Questionnaire (Reeve & Tseng, 2011), Academic Resilience Questionnaire (Samuels, 2006), Emotional Self-Regulation Questionnaire (Hoffman & Kashdan, 2010), and Self-Esteem Questionnaire (Rosenberg, 1965) and were analyzed using Pearson correlation coefficient and stepwise regression analysis.

Findings: The findings of the study indicated that there was a significant positive relationship between all research variables and academic performance (P<0.001). Additionally, the results of the stepwise regression analysis showed that in four steps, academic engagement, self-esteem, academic resilience, and emotional self-regulation could collectively predict 72% of the variance in academic performance, with academic engagement having the highest predictive power at 63%.

Conclusion: Based on the findings of this study, it is suggested that the policymakers of higher education at the University of Wasit prioritize the enhancement of academic engagement and the strengthening of personality and psychological variables such as self-esteem and self-regulation, as well as contextual factors such as academic self-concept and academic resilience, to empower students and advance educational goals and academic success.

Keywords: *academic self-concept, academic resilience, academic engagement, emotional self-regulation, self-esteem, academic performance, students.*

1. Introduction

Improving the quality of education, advancing graduates, and investing in educational and human resources are influential and facilitating factors for the growth of learners in most countries. Therefore, the academic performance of learners is the focal point of the entire educational system, and the success or failure of any educational institution is measured by the academic progress of its learners (Shah & Hussain, 2021). Academic performance evaluates how educational institutions, instructors, and students achieve their immediate and long-term educational goals. Learners who perform well in educational environments are better prepared for adulthood and economic and career success (Grain et al., 2022; Kooren et al., 2024). Hence, focusing on the strengths and positive psychological characteristics of students is important for a better understanding of the factors affecting academic performance. This understanding helps universities improve their educational strategies and provide better learning methods.

In educational research, academic self-concept is one of the best predictors of academic achievement, showing positive reciprocal relationships with long-term progress and beneficial impacts on a wide range of educational outcomes, such as academic interests, emotions, and career aspirations (Scherrer et al., 2022). Academic self-concept refers to an individual's mental representation of their abilities in school and academic settings or representations related to academic achievement. In other words, academic self-concept refers to an individual's self-assessment of their specific academic abilities (Wu et al., 2021). Academic self-concept plays an important role in learners' persistence, effort, and self-assessment (Yang et al., 2023), and students with higher academic self-concept have higher self-esteem. Additionally, a reciprocal relationship between academic self-concept and grades over time has been found (Steinberg et al., 2024).

Another factor that can significantly affect academic performance is academic resilience, which has been mentioned in numerous studies. The goal of developing academic resilience as a positive psychology construct is to increase learners' ability to compete with each other even under unfavorable conditions (Al Omari et al., 2023; Fru-Ngongban, 2023; Zakipour & Abdi, 2024). Resilience is widely regarded as a personal capacity to effectively manage obstacles, challenges, and pressures and adapt despite adverse conditions. In the academic context, academic resilience is defined as the ability to maintain high levels of achievement, motivation, and performance in the face of adverse academic conditions (Anierobi et al., 2024). Learners' belief in their ability to organize and complete academic tasks to control academic conditions affects their endurance, persistence, and resilience to challenging and stressful academic tasks (Victor-Aigboidion et al., 2020). Resilient students hold successful beliefs about themselves and effective skills: they know how to regulate their actions to achieve their goals and view mistakes as a way to improve their skills and knowledge. Previous studies have shown that academic resilience effectively protects learners from experiencing negative emotions due to excessive academic problems and pressures. Furthermore, learners with higher academic resilience are more likely to recover from acute and chronic educational issues (e.g., academic burnout). They can cope with overwhelming academic tasks better than their less resilient peers, demonstrating higher enthusiasm and determination (Romano et al., 2021). Research evidence has shown that academic resilience leads to reduced academic burnout (Romano et al., 2021) and improvements in academic performance (Aguillon et al., 2020). Al Omari et al. (2023) demonstrated that self-esteem and good academic grades were significant predictors of positive resilience among Iraqi students (Al Omari et al., 2023).

Moreover, students' emotions, thoughts, and behaviors concerning educational environments affect their academic outcomes and achievements. Emotions, thoughts, and behaviors related to educational environments are known as academic engagement, which plays an important role in encouraging academic and interpersonal skills among learners (Pekrun & Linnenbrink-Garcia, 2012). Learner engagement can be defined as the involvement of learners in activities and conditions associated with high-quality learning (Nadeem et al., 2023) and the degree of constructive involvement in an activity, encompassing levels of commitment, focus, participation, and persistence (Samadieh & Sadri, 2022). In reality, academic engagement involves the allocation of learners' psychological and physical energy to gain academic experiences through learning and extracurricular activities and commitment to goals (Mashhadi et al., 2023). The degree of learners' academic and practical involvement is related to their academic performance, and learners with higher engagement perform better in their exams (Anwar et al., 2022). Research evidence indicates a positive relationship between academic self-efficacy and academic engagement (Dogan, 2015; Fatimah et al., 2024).

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Furthermore, research evidence shows that enhancing self-regulation helps students develop positive motivational beliefs and effective cognitive strategies (Sukimin et al., 2023). The term self-regulation describes efforts to initiate, direct, and strategically manage goal pursuit through metacognitive planning, monitoring, evaluating, and adjusting cognition, behavior, motivation, and affect (Grain et al., 2022). There is evidence that non-cognitive predictors, such as self-regulation, motivation, engagement, and emotional attitude toward learning, directly contribute to academic performance among samples varying in age, gender, type of educational activity, and cultural differences (Morosanova et al., 2022). Self-regulation leads to improvements in educational performance (Andrés et al., 2017; Nadeem et al., 2023; Sahranavard et al., 2018) and brings about academic vitality. Jawher (2021) also demonstrated that motivational learning and self-regulation provided models for motivating learners and enhancing their individual, social, and academic lives at universities in Erbil, Iraq (Jawher, 2021).

Feelings of inadequacy lead to reduced satisfaction and success in educational settings and the learner's role (Fiorilli et al., 2014). Self-esteem is a significant aspect of every individual's personality, and those with damaged self-esteem cannot endure difficult conditions in daily life, leading to adverse psychological and physical consequences. Self-esteem refers to the learner's positive or negative perception of their value (Rosenberg, 1965), which influences their ability to complete educational tasks. Thus, including this factor is essential as it has been shown to positively correlate with task completion. In the realm of psychological principles, self-esteem holds a central position and can significantly impact academic engagement and enthusiasm (Lim & Lee, 2017). Relying on expectancy-value theory, a positive self-assessment by learners can act as a predictor for academic outcomes, including their level of academic engagement (Fang, 2016). Thus, the aim of the present study was to predict academic performance based on academic self-concept, academic resilience, academic engagement, emotional self-regulation, and self-esteem among students.

2. Methods and Materials

2.1. Study Design and Participants

This research uses a descriptive-survey methodology of correlational analysis, where the relationship between variables is analyzed based on the research objectives. The statistical population of this study included all students of the Faculty of Educational Sciences and Humanities, covering majors such as Psychology, Educational Sciences, History, Geography, English Language, Arabic Language, and Quranic Sciences at the University of Wasit, Iraq, totaling 5,500 students in 2023. Based on Krejcie and Morgan's (1970) table, the sample size was determined to be 290 individuals. To control the response rate, 320 questionnaires were distributed using a multi-stage cluster random sampling method. After collecting the data, 14 unusable questionnaires were identified, leaving 306 questionnaires (including 115 female and 185 male respondents) for analysis. The inclusion criteria were the willingness and informed consent of the student (according to university regulations) to participate in the study, enrollment in one of the university's third and fourth semesters, and the absence of psychological disorders such as depression, anxiety, or other issues that might interfere with participation in the research. The exclusion criteria were the lack of willingness to continue participating in the research and withdrawal from the study.

2.2. Measures

2.2.1. Academic Performance

The 48-item Academic Performance Questionnaire by Pham and Taylor (1999) was used to measure academic performance. This questionnaire assesses academic performance in dimensions such as self-efficacy, emotional impacts, planning, lack of outcome control, and motivation. The items are scored on a 5-point Likert scale (from 1=strongly disagree to 5=strongly agree), with items 8, 23, 26, and 33 reverse-scored, and item 7 not scored. A score below 120 indicates poor academic performance, above 175 indicates strong academic performance, and between 121 and 174 indicates average academic performance. The validity of the questionnaire was reported to be 0.81 using factor analysis, and the overall reliability was reported to be 0.74 using Cronbach's alpha (Dortaj, 2004). The Cronbach's alpha for this questionnaire in the present study was 0.93.

2.2.2. Academic Self-Concept

The 15-item Academic Self-Concept Questionnaire by Chen and Thompson (2004) was used to measure academic self-concept. This questionnaire evaluates an individual's mental image of themselves in three levels: general, academic, and non-academic. Items are scored on a 5-point Likert scale (from 5=strongly agree to 1=strongly disagree).

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General level is measured with items 1, 3, 12, and 13, academic level with items 2, 4, 8, 9, 10, 11, 14, and 15, and non-academic level with items 5, 6, and 7. To obtain a total score, the scores of all items are summed. Higher scores indicate a more positive self-concept (Vahidi-Nejad et al., 2020; Wu & Kang, 2023). The Cronbach's alpha for this questionnaire in the present study was 0.87.

2.2.3. *Academic Engagement*

The 22-item Academic Engagement Questionnaire by Reeve and Tseng (2011) was used to evaluate aspects of student engagement, including behavioral, emotional, cognitive, and agentic engagement. Items are scored on a 5-point Likert scale (from 1=never to 5=always). Agentic engagement is measured with items 1, 3, 5, 8, and 14; behavioral engagement with items 2, 7, 9, 10, and 21; emotional engagement with items 11, 13, 16, and 17; and cognitive engagement with items 4, 6, 12, 15, 18, 19, 20, and 22. Scores range from 22 to 110, with higher scores indicating higher engagement (Emami Khotbesara et al., 2024; Mahvash et al., 2024). The Cronbach's alpha for this questionnaire in the present study was 0.91.

2.2.4. *Academic Resilience*

The 40-item Academic Resilience Questionnaire by Samuels (2006) was used to measure academic resilience. The final version of this questionnaire was developed in collaboration with others and published in 2009. The 29-item version used in this study asks respondents to rate their academic resilience on a 5-point Likert scale (from 1=strongly disagree to 5=strongly agree). The questionnaire measures communication skills (items 5, 7, 9, 10, 12, 13, 20, 21, 22, and 23), future orientation (items 4, 6, 8, 11, 14, 15, 16, 17, and 18), and problem-solving/optimism (items 1, 2, 3, and 19). Items 4, 12, 21, and 22 are reverse-scored. Scores range from 29 to 148, with a score of 87 indicating average resilience (Rashidzade, 2020). The Cronbach's alpha for this questionnaire in the present study was 0.66.

2.2.5. *Emotional Self-Regulation*

The 20-item Emotional Self-Regulation Questionnaire by Hoffman and Kashdan (2010) was used to measure emotional self-regulation. Responses are scored on a 5-point Likert scale (from 1=not at all true of me to 5=completely true of me). The questionnaire consists of three subscales: concealment, adjustment, and tolerance, with 8, 7, and 5 items, respectively (Ghafoori & Haghayegh, 2021). The Cronbach's alpha for this questionnaire in the present study was 0.91.

2.2.6. *Self-Esteem*

The 10-item Self-Esteem Questionnaire by Rosenberg (1965) was used to measure self-esteem. This questionnaire assesses global self-worth and personal value. Items are scored on a 4-point Likert scale (from 1=strongly disagree to 4=strongly agree). Items 1 to 5 are scored directly, and items 6 to 10 are reverse-scored. Scores range from 10 to 40, with higher scores indicating higher self-esteem. The Cronbach's alpha for this questionnaire in the present study was 0.81.

2.3. *Data analysis*

Pearson's correlation coefficient and stepwise regression analysis were used to analyze the collected data via SPSS-25.

3. Findings and Results

In the present study, 115 female and 185 male students participated. The ages of 51 participants were less than 21 years, 155 were between 21 and 24 years, 74 were between 25 and 30 years, and 20 participants were older than 30 years. The educational level of 233 participants was undergraduate, and 67 were in graduate studies.

Table 1

Descriptive Statistics of Research Variables

Variables	Mean	Standard Deviation
Academic Self-Concept	57.29	4.26
Academic Resilience	173.51	14.66
Academic Engagement	74.04	8.25
Emotional Self-Regulation	85.79	9.07
Self-Esteem	28.28	2.94
Academic Performance	207.23	18.02

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Based on the results in Table 1, the means of academic resilience, academic self-concept, self-esteem, academic performance, academic engagement, and emotional self-regulation were 173.51, 57.29, 28.28, 207.23, 74.04, and 85.79, respectively. To examine the correlation between variables, Pearson's correlation coefficient was used, and the results are presented in Table 2.

Table 2

Pearson Correlation Coefficient Matrix Between Research Variables and Academic Performance

Variables	1	2	3	4	5	6
1. Academic Resilience	1					
2. Academic Self-Concept	0.55	1				
3. Self-Esteem	0.47	0.73	1			
4. Academic Performance	0.69	0.65	0.61	1		
5. Academic Engagement	0.69	0.66	0.55	0.79	1	
6. Emotional Self-Regulation	0.46	0.65	0.57	0.62	0.57	1

For all correlations: $p < .01$

The results in Table 2 indicate that there are significant positive relationships between academic performance and academic resilience (0.69), academic self-concept (0.65), self-esteem (0.61), academic engagement (0.79), and emotional self-regulation (0.62) (P<0.01). The results of the regression variance analysis and the stepwise regression coefficients are reported in Table 3 and Table 4.

Table 3

Regression Variance Analysis for Determining the Contribution of Predictor Variables

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level
Regression Model	70053.07	4	17513.26	190.76	0.01
Residual	27082.59	295			
Total	97135.66	299	91.8		

Table 4

Regression Analysis for Determining the Contribution of Academic Self-Concept, Academic Resilience, Academic Engagement, Emotional Self-Regulation, and Self-Esteem

Steps	Criterion Variable	Predictor Variables	B	Beta	T	Significance Level	R2
1	Academic Performance	Academic Engagement	1.73	0.79	22.62	0.001	0.63
2	Academic Performance	Academic Engagement	1.43	0.65	16.51	0.001	0.67
		Self-Esteem	1.53	0.25	6.29	0.001	
3	Academic Performance	Academic Engagement	1.09	0.5	10.73	0.001	0.70
		Self-Esteem	1.34	0.22	5.74	0.001	
		Academic Resilience	0.3	0.24	5.54	0.001	
4	Academic Performance	Academic Engagement	0.98	0.45	9.52	0.001	0.72
		Self-Esteem	0.98	0.16	4.01	0.001	
		Academic Resilience	0.28	0.23	5.36	0.001	
		Emotional Self-Regulation	0.3	0.16	4.03	0.001	

Considering the results in Table 3 and Table 4, as well as the beta values and significance levels in the fourth step, academic engagement, self-esteem, academic resilience, and emotional self-regulation can predict academic performance at P<0.01. The academic self-concept variable could not predict academic performance and was excluded from the analysis. According to the R2 statistic, academic engagement, self-esteem, academic resilience, and emotional self-regulation can predict 72% of the variance in academic performance.

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4. Discussion and Conclusion

The present study aimed to predict academic performance based on academic self-concept, academic resilience, academic engagement, emotional self-regulation, and self-esteem among students. The results showed that academic resilience could predict academic performance. This finding is consistent with the prior results (Al Omari et al., 2023). In this context, it can be said that academic achievement and the ability to maintain or improve poor grades to better grades are indicators of academic resilience in learners. Students with academic resilience continue or remain in university despite facing difficult obstacles until they can graduate (Romano et al., 2021). Romano et al. (2021) believe that learners with high academic resilience, due to their inherent ability to manage and use emotional information for better performance, tend to use creative tools to adapt and foster positive emotions. They have successful beliefs about themselves and efficient skills. They know how to regulate their actions to achieve their goals and view mistakes as a way to improve their skills and knowledge. Academic resilience effectively protects learners from experiencing negative emotions caused by excessive academic pressure, and learners with higher academic resilience are more likely to recover from acute and chronic academic problems (e.g., academic burnout). They can cope with overwhelming academic tasks better than their less resilient peers, showing higher enthusiasm and determination (Romano et al., 2021).

Another finding was the prediction of academic performance based on academic engagement. This finding is consistent with the prior results (Salanova et al., 2010; Seif, 2016; Tafesse, 2020). In explaining this finding, it can be said that one of the effective capabilities in education, known as strategies to cope with academic issues and challenges, is academic enthusiasm. Learners face various obstacles, challenges, and pressures in their daily academic lives. They encounter poor grades, threatened self-esteem, and reduced motivation, which provide a source of stress (Samadieh & Sadri, 2022). One of the protective factors against these challenges, which plays an important role in helping to solve problems and improve their academic progress, is academic engagement (Yan et al., 2023). Academic engagement has a positive correlation with study motivation and self-efficacy (Fan & Williams, 2010) and academic resilience (Anierobi et al., 2024). It appears that academic engagement brings flexibility, responsiveness to contextual cues, and adaptability to changes in the environment (Wu et al., 2021). Learners who show high levels of academic engagement are more likely to succeed academically, while those with lower levels of academic engagement struggle to achieve good grades. This dimension of involvement ensures that they meet the necessary expectations and actively participate in the learning journey (Leary, 2005).

The prediction of academic performance based on self-esteem was also confirmed. Individuals with high self-esteem generally have a good feeling about themselves and are better able to resolve conflicts with other children. They generally think positively about themselves, feel liked and accepted, are confident, proud of what they can do, believe in themselves, and have the confidence to try new things. Children with low self-esteem may also lose interest in learning and develop ways to cope with challenges such as withdrawal, avoidance, silliness, and denial (Nadeem et al., 2023). Moreover, individuals with a clear, quick, and stable self-concept can better make sense of their life experiences, are less vulnerable to the negative impact of challenging situations, and consistently express their needs and wants in interpersonal interactions. Successfully resolving problems improves one's self-concept clarity regarding personal abilities and self-efficacy, which can lead to higher levels of academic performance.

The results showed that academic self-concept could not predict academic performance. This finding is inconsistent with the prior results (Wu et al., 2021). In explaining this finding, it can be said that academic self-concept is an important factor for maintaining self-efficacy beliefs about sustaining interest in academic domains and can enhance students' performance (Fru-Ngongban, 2023). Students with higher academic self-concept in active learning environments are more likely to show higher feelings of self-efficacy and belonging (Aguillon et al., 2020). In active learning classes, students with a positive academic self-concept participate more in group discussions and achieve academic success (Cooper et al., 2018). The positive relationship between academic self-concept and academic achievement can be explained based on the internal/external frame of reference models and the reciprocal effect model. The internal/external frame of reference model (Marsh, 1986; Marsh & Hau, 2002) assumes that an individual's self-concept in a particular school subject is shaped by an external and internal reference: the internal reference pertains to the comparison between one's performance in a specific school subject with the performance of other students; the latter refers to the comparison between one's performance in a specific school subject and one's

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corresponding performance in other school subjects (Marsh & Hau, 2002). Moreover, based on this theory, academic achievement positively predicts academic self-concept when the external reference is the same domain (congruent) and negatively predicts academic self-concept when the latter refers to a different domain (incongruent) (Marsh & Hau, 2002). Concerning the relationship between academic self-concept and academic achievement, three other significant theories exist: the skill development model, the self-enhancement model, and the reciprocal effect model. According to the skill development model, academic achievement affects self-concept but not vice versa, while the self-enhancement model believes that self-concept is a significant predictor of academic achievement but not vice versa. The reciprocal effect model states that academic self-concept and academic achievement mutually reinforce each other (Marsh, 1986; Marsh & Hau, 2002).

Another finding of the research showed that emotional self-regulation could predict academic performance. This finding is consistent with the prior results (Andrés et al., 2017; Morosanova et al., 2022; Nadeem et al., 2023). In educational environments, individuals receive information that they need to learn. Emotions can direct higher-order cognitive processes (such as working memory, attention, planning, etc.) toward content unrelated to academic content. If educational information is not attended to and processed, it cannot be remembered and learned. Therefore, emotional regulation strategies and skills can facilitate focusing attention and processing new information, thus positively affecting academic performance (Graziano et al., 2007). Emotions have a fundamental impact on learners' motivation, cognition, and action by directing mental and physiological energy to perform tasks and directing attention to positive or negative aspects of themselves and tasks (Pekrun et al., 2006; Pekrun & Linnenbrink-Garcia, 2012). The results of Tang and Zhang (2022) showed that students with higher self-regulation also have higher academic achievement and more motivation and interest in continuing their studies (Teng & Zhang, 2022). He also noted that students with lower self-regulation are likely to have lower levels of metacognitive knowledge. Learners with high levels of self-regulation take action to utilize educational opportunities and overcome academic obstacles while monitoring their actions (Zimmerman & Schunk, 2004). Integrated emotion regulation, providing the ability to accept negative emotions, leads to less arousal and more cognitive recall in students (Roth et al., 2014). Individuals with better emotional self-regulation can choose different situations (situation selection), attempt to modify the situation they are in (situation modification), shift their attention within a situation (attentional deployment), and re-evaluate the situation (cognitive change), which helps them cope with academic stress (Seibert et al., 2017).

Moreover, the stepwise regression analysis results showed that among the variables entered into the equation, academic engagement has the highest predictive power. Learners who enjoy learning usually have more motivation to cope with difficult challenges (Pekrun et al., 2006; Pekrun & Linnenbrink-Garcia, 2012). Additionally, when they actively participate in learning activities, complete tasks, and interact with classmates and instructors, they are more likely to develop a deeper understanding of the subject, strengthen their critical thinking skills, and enhance their cognitive engagement in learning (Wang & Eccles, 2012). Therefore, students can create a conducive environment for deeper cognitive engagement by establishing a solid foundation for emotional and behavioral engagement, ultimately leading to academic achievement (Lim & Lee, 2017).

5. Limitations & Suggestions

Finally, it is necessary to consider the limitations of this study. The first limitation is that this study was conducted on students from the Faculty of Education at the University of Wasit in Iraq. Therefore, caution is needed in generalizing the results to other statistical populations, such as other faculties of the university under study and other universities in Iraq. To address this limitation, it is suggested to conduct the present study among other students of the University of Wasit and students from other universities in Iraq. Finally, given that academic engagement played a crucial role in predicting academic performance in this study, it is recommended that the role and importance of academic engagement be taken seriously by the policymakers of the higher education system in Iraq in planning and student empowerment programs. Moreover, since resilience and self-regulation have a positive and direct impact on academic success, it is suggested that instructors design assignments that are challenging but within students' abilities so that they can use self-regulation strategies and increase their confidence in their academic capabilities by achieving mastery in difficult academic tasks. Interventions aimed at improving academic performance should promote the adoption of a deep learning approach and improve cognitive and emotional engagement to enhance university students' academic progress.

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E-ISSN: 2981-2526

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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