Research Article

Learning Styles and Motivation: Their Role in Academic Performance

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Abstract

This study examines the correlations between academic motivation, learning styles, and academic achievement in higher education. The goal of this study is to prove that there is a correlation between academic motivation, learning styles, and academic success of students. Utilizing Pearson correlation and multiple regression analyses, it explores these variables' impact on academic performance. It highlights the importance of educators recognizing the diversity in learning styles and motivational drivers among students. The results reveal a slight negative correlation between learning styles and academic achievement, but no significant correlation between academic motivation and other variables. The study also suggests that while learning styles have a modest impact on academic performance, the role of motivation is more complex and warrants further investigation. These findings suggest a modest influence of learning preferences on educational outcomes and underscore the complex nature of motivation in academic settings. The study advocates for an integrated pedagogical approach that addresses learning diversity and motivational dynamics. The research contributes to the ongoing debate about the effectiveness of tailoring educational strategies to individual learning styles. It emphasizes the need for a holistic approach in addressing student needs in academic environments.

Keywords: academic motivation, learning styles, academic achievement, higher education, students

1. Introduction

Academic motivation and learning styles are pivotal factors that significantly influence success in higher education. The journey through higher education is more than just acquiring knowledge; it involves developing skills and attitudes essential for effectively applying this knowledge. Academic motivation, encompassing internal and external forces that drive students' desire and commitment to learning, plays a fundamental role in shaping their educational journey (Ryan & Deci, 2000). Intrinsic or extrinsic motivation is crucial for engaging with learning material, persevering through challenges, and achieving academic success. Our study builds upon this understanding, exploring the intricate ways in which motivation influences student engagement and achievement within the higher

education context.

Learning styles represent the varied approaches or methods individuals prefer for absorbing, processing, and retaining new information. This concept has sparked considerable interest and debate in educational psychology. Numerous studies, including ours, indicate that aligning teaching methods with students' preferred learning styles can enhance comprehension and retention of information (Felder & Silverman, 1988). Recognizing and understanding these diverse learning styles is crucial in higher education to develop more inclusive and effective teaching strategies. Each student's unique learning style, whether it be visual, auditory, kinesthetic, or a combination, shapes their academic experience and impacts their performance. Our research contributes to this field by examining the diversity of learning styles in a higher education setting and their correlation with academic performance, shedding light on the practical implications of personalized learning approaches.

The intersection of academic motivation and learning styles is a dynamic and complex area of study. Our research, along with other studies in this field, has found that when educational environments cater to different learning styles and students are effectively motivated, there is a notable positive impact on their academic performance. This synergy not only enhances the learning experience but also fosters a deeper, more lasting understanding of the subject matter. However, our findings also challenge some conventional assumptions, suggesting that the relationship between learning styles and academic achievement may not be as direct or simplistic as previously thought. This indicates a need for more nuanced, integrated educational strategies that consider the complex interplay of motivational factors and learning preferences.

In the broader context of higher education, recognizing and addressing the interplay between academic motivation and learning styles is not only beneficial; it is critical for creating an environment where all students can thrive. This introduction sets the stage to delve deeper into these key factors, aiming to unravel their combined contribution to success in higher education. By drawing on empirical evidence and theoretical insights from our study, we aim to provide valuable perspectives that can inform educational practices and policies, ultimately leading to enhanced learning experiences and outcomes for students in diverse educational settings.

2. Literature Review

A review of the literature on academic motivation and learning styles highlights significant research conducted in this area, emphasizing how these factors influence student achievement and engagement in higher education settings.

Academic motivation is a multifaceted construct that greatly influences student performance. Ryan and Dec's, Self-Determination Theory is central to understanding academic motivation (Ryan & Deci, 2000). They categorize motivation into intrinsic (driven by intrinsic rewards) and extrinsic (driven by extrinsic rewards), arguing that the quality of motivation is as important as its quantity. Pintrich and Schunk emphasize the role of motivation in self-regulated learning, noting that *"motivated students are more likely to set personal academic goals and exert effort to achieve these goals"* (Pintrich & Schunk, 2002).

The interaction between motivation and learning styles is a crucial area of research. A study by Komarraju et al. found that students' learning styles were significantly related to their academic motivation and performance (Komarraju, Karau, Schmeck, & Avdic, 2011). They suggest that *"understanding students' learning preferences can help design more effective teaching strategies that promote motivation and, therefore, academic achievement".*

Further research indicates that the relationship between motivation and learning styles is dynamic and context-dependent. For instance, Felder and Silverman's Learning Styles Model (1988) provides a framework for understanding how students' preferences for processing and perceiving information can interact with their motivation levels. Studies applying this model have shown that when teaching methods align with students' learning styles, their intrinsic motivation can increase

significantly, leading to better academic outcomes.

Moreover, cultural and environmental factors play a crucial role in shaping academic motivation and learning styles. Hofstede's cultural dimensions theory, for example, has been applied to understand how cultural values influence learning preferences and motivation across different educational contexts.

The integration of technology in education also presents new dimensions to this field of study. E-learning environments and digital tools have been found to affect both motivation and learning styles. Research by Sun and Cheng, for instance, shows that interactive and adaptive learning technologies can cater to diverse learning styles while enhancing student motivation through engaging and personalized experiences (Sun & Cheng, 2007).

In conclusion, the interaction between motivation and learning styles is a critical area of ongoing research. The literature shows that academic motivation and learning styles are closely related and play an important role in student success in higher education. This body of research underscores the need for educational strategies that not only accommodate different learning styles but also actively foster academic motivation. Such an approach promises to improve learning experiences and outcomes in higher education settings. Future research should continue exploring these dynamics, particularly in the context of evolving educational technologies and diverse cultural settings.

3. Methodology

The problem of this research is to prove whether there is a correlation between academic motivation, learning style, and academic achievement. This study aims to answer the question of whether there is a linear relationship between academic motivation, learning style, and academic achievement. Another research question raised by the study is whether learning styles differ depending on the level of academic motivation.

The research was conducted with a sample of 180 students. The age of the students varies from 18 to 27, of which 34 are male and 146 are female. Students study in various university departments in the Republic of Kosovo.

In this study, the variables addressed are academic motivation, learning styles, and academic achievement. Academic motivation refers to an individual's desire, drive, and willingness to engage and excel in academic activities (Jones & Pintrich, 2006). The instrument selected for measuring academic motivation is the Academic Motivation Scale by Deci and Ryan (1985), which consists of 28 attitudes (Utvaer & Haugan, 2016). This instrument is divided into seven subscales: 1) Knowledge, 2) Accomplishment, 3) Stimulation, 4) Identified regulation, 5) Introjected regulation, 6) Extrinsic regulation, and 7) Amotivation. Academic motivation is measured on a 7-point Likert scale.

Learning styles are the other variable of this study, which refers to the different ways in which individuals prefer to approach and process information when learning new concepts or skills (Felder & Silverman, 1988). Learning styles were measured through the Learning Styles Questionnaire (Honey & A., 2000). The instrument consists of subscales for measuring learning styles: 1) Activist Style, 2) Reflector Style, 3) Theorist Style, and 4) Pragmatist Style.

Descriptive statistics were used to analyze the demographic data of the participants, while inferential statistics, including Pearson correlation and multiple regression analysis, were employed to examine the relationships between the variables. The study also included qualitative elements, where focus group discussions were conducted to gain deeper insights into students' perceptions of how their learning styles and motivation influenced their academic performance. These discussions helped to contextualize the quantitative findings and provided a more comprehensive understanding of the interplay between academic motivation, learning styles, and achievement.

4. Results

The initial aim of the study was to verify which of the learning styles is more evident in the sample composed of students. Subjects are classified based on their dominant learning style, while those with more than one dominant learning style are identified as having a combined learning style.
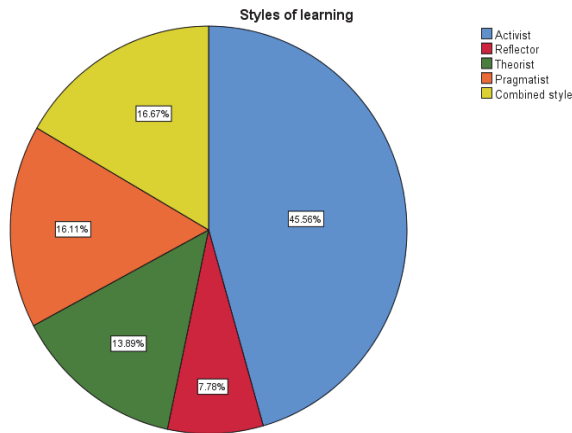
Graph 1. Distribution of learning styles

Graph 1. Presents the distribution of learning styles of the subjects. This figure suggests that most participants have a dominant activist learning style (45.56 %), while a combined style is also relatively common (16.67 %). Pragmatist learning (16.11%) and theoretical learning (13.89%) follow. Meanwhile, reflective learning is the least represented in this sample (7.8%).

The majority of participants represent the activist learning style (45.56%). This suggests that nearly half of the sample prefers an active engagement with their learning environment, thriving on new experiences and opportunities for collaboration. On the other hand, 16.67% of participants represent a combined learning style. These individuals likely do not have a single dominant learning style but rather a hybrid approach, integrating aspects of various learning styles. This flexibility can be beneficial in a variety of learning situations, allowing these students to adapt to different types of content and instructional methods.

The pragmatist learning style, which 16.11% of the participants favor tends to focus on the practical application of knowledge and often excels in contexts where they can immediately apply what they have learned to solve real-world problems. Meanwhile, 13.89% of participants represent theorist learning styles. These students prefer to understand the theory behind the actions, seeking to integrate observations into complex but logically sound theories. They approach learning systematically, with a keen interest in analyzing concepts.

Lastly, the smallest segment represents the reflector learning style, comprising 7.8% of the sample. Reflectors are characterized by their preference for observing and reflecting on experiences from different perspectives. They take a thoughtful approach to learning and require time to assimilate and process information before applying it.

This distribution highlights the diverse approaches to learning within the sample population. It underscores the importance of designing educational experiences that cater to a wide range of learning preferences to engage students effectively. By recognizing and addressing the dominant and less-represented learning styles, educators can create more inclusive learning environments that offer various entry points to learning and engagement for all students.

Another goal of this study is to verify the subscales of academic motivation. Subjects are classified based on the type of motivation that prompts them to show academic motivation, and if two or more types of this motivation are a driving factor, then we are dealing with combined motivation.
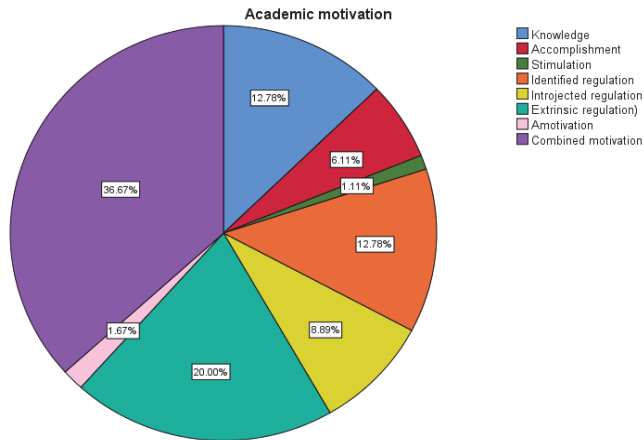
Graph 2. Distribution of academic motivation

Graph 2. suggests that a significant portion of the participants have a combined motivational style (36.67 %), indicating they are likely influenced by multiple factors in their academic motivation. Extrinsic regulation is the most prominent single factor of motivation (20.00 %), followed by knowledge (12.78 %) and identified regulation (12.78 %). Stimulation (1.11 %) and amotivation (1.67 %) have the least number of individuals.

36.67% of participants display a combined motivational style. This dominant purple segment indicates that these students are not solely influenced by one specific type of motivation; instead, they draw from various motivational sources to engage with their academic work. The complexity of their motivation likely reflects a more holistic approach to learning, where multiple internal and external factors stimulate their drive for academic success.

The second-largest segment, represents extrinsic regulation, accounting for 20% of the participants. These individuals are significantly motivated by external rewards and outcomes, such as grades or approval from others. They tend to set goals that are rewarded by external recognition, suggesting that such rewards are influential in their academic engagement and persistence.

Closely tied are two segments, knowledge, and identified regulation, each comprising 12.78% of the sample. The knowledge segment reflects students who are motivated by the intrinsic pleasure and satisfaction gained from learning new things. In contrast, identified regulation represents students who recognize the personal importance and value of their academic endeavors, even if the tasks themselves are not inherently enjoyable.

Stimulation, the motivation to engage in stimulating activities, is represented by the smallest segment, indicating that only 1.11% of the participants are primarily driven by the thrill of the learning process. Similarly, amotivation indicating a lack of motivation accounts for a small percentage (1.67%) of the sample. These individuals may struggle to find a reason to engage in academic tasks, which might suggest a need for interventions aimed at enhancing their motivational base.

The combined motivational style, depicted by the largest segment, underscores the necessity for educators to recognize and cater to the multifaceted nature of student motivation. A one-dimensional approach to fostering motivation may not be sufficient; instead, educators should strive

to create learning environments that offer a variety of motivational triggers, aligning with the diverse needs and preferences of their students.

In summary, Graph 2 reveals that while certain motivational factors are more prevalent, a significant number of students are influenced by a blend of motivations, which can be a vital consideration when developing strategies to increase engagement and academic performance. Understanding these patterns can assist educators in crafting teaching methods and curricular designs that acknowledge and utilize the varied motivational landscapes of their students.

Table 1. Gender differences

	Gjinia e pjesëmarrësve	N	Mean	Std. Deviation	Std. Error Mean
Academic motivation	Meshkuj	34	5.15	2.337	.401
	Femra	146	5.57	2.508	.208
Academic achievement	Meshkuj	29	8.345	.8975	.1667
	Femra	134	8.836	.7673	.0663

Table 1. shows the gender differences among subjects in terms of academic motivation and academic achievement. In academic motivation, females have a slightly higher mean score than males (M = 5.57). The standard deviation for females (SD = 2.508) is also slightly higher, suggesting a greater variability in female scores around the mean compared to males. This greater variability could be indicative of a broader range of motivational factors or differing responses to educational stimuli among female students.

Regarding academic achievement, females have a higher mean score than males (M = 8.836), with a smaller standard deviation (SD = .7673). This smaller standard deviation indicates that female scores are more tightly clustered around the mean than male scores, suggesting a more consistent level of high academic achievement among female students in this sample. The higher average score for females in academic achievement might be influenced by various factors, including study habits, attitudes toward education, or even social and cultural factors that support or encourage academic success among females.

These gender differences in academic motivation and achievement are noteworthy. They provide a basis for further investigation into how different factors might influence educational outcomes for males and females. This could include exploring aspects such as gender-specific teaching strategies, differential access to resources, or the impact of societal expectations on academic performance. Understanding these dynamics is crucial for developing more inclusive educational practices and policies that address the specific needs and strengths of both male and female students.

In summary, the findings in Table 1 highlight the importance of considering gender as a key factor in educational research. They underscore the need for a gender-sensitive approach in education to ensure equitable opportunities and outcomes for all students, regardless of gender. Further research in this area could provide deeper insights into the causal factors behind these observed differences and help shape more effective educational strategies.

Table 2. Differential analysis

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Academic motivation	Equal variances assumed	.831	.363	-.893	178	.373	-.421	.472	-1.352	.509
	Equal variances not assumed			-.934	52.211	.355	-.421	.451	-1.327	.484

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		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Academic achievement	Equal variances assumed	2.597	.109	-3.027	161	.003	-.4907	.1621	-.8108	-.1706
	Equal variances not assumed			-2.736	37.362	.009	-.4907	.1793	-.8540	-.1274

The t-test was performed to verify if there are gender differences in academic motivation and academic achievement. The t-test results (Table 2) reveal that there is no statistically significant difference in academic motivation between males and females (t = -.893, p > 0.05), suggesting that gender does not play a substantial role in determining the levels of academic motivation among students in this study.

However, the analysis showed a statistically significant difference in academic achievement, with females scoring higher on average than males (t = -3.027, p < 0.05). This difference in academic achievement by gender indicates that female students, on average, may have higher academic performance than their male counterparts in this sample. The mean difference in scores, along with the standard error and the 95% confidence interval, further substantiates this finding. The lower and upper bounds of the confidence interval for academic achievement (-.8108 to -.1706) do not straddle zero, reinforcing the conclusion that the observed difference is statistically significant and not due to random chance.

These findings contribute to the ongoing discourse on gender disparities in academic settings. While motivation levels appear to be similar across genders, the difference in academic achievement suggests that there might be other factors at play influencing these outcomes. These could include differences in study habits, access to resources, or even societal and cultural factors that impact educational experiences and outcomes.

The results underscore the importance of considering gender as a variable in educational research and highlight the need for further investigation into the underlying causes of these differences in academic achievement. Understanding these nuances can help educators and policymakers develop targeted strategies to address any disparities and ensure equitable educational opportunities for all students.

Table 3. Post Hoc Analysis and ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Activist	Between Groups	23.568	4	5.892	.725	.576
	Within Groups	1283.880	158	8.126		
	Total	1307.448	162			
Reflector	Between Groups	24.573	4	6.143	.932	.447
	Within Groups	1041.954	158	6.595		
	Total	1066.528	162			
Theorist	Between Groups	27.565	4	6.891	.841	.501
	Within Groups	1294.398	158	8.192		
	Total	1321.963	162			
Pragmatist	Between Groups	25.340	4	6.335	1.016	.401
	Within Groups	984.979	158	6.234		
	Total	1010.319	162			
Academic motivation	Between Groups	42.145	4	10.536	1.803	.131
	Within Groups	923.499	158	5.845		
	Total	965.644	162			

The ANOVA results (Table 3) indicate that 'academic achievement' does not significantly differ across

the various levels of learning styles (Activist, Reflector, Theorist, Pragmatist) or levels of 'Academic motivation' within this particular data set. The comparative analysis shows that F-statistics with their p-values don't indicate any statistically significant differences. This indicates that "academic achievement" as a contributing element does not seem to have a varying influence on the dependent variables included in this study.

The lack of significant differences across the learning styles and academic motivation levels might indicate that other unmeasured variables could be influencing academic achievement. These could include factors such as personal circumstances, teaching quality, or other environmental influences. The homogeneity in academic achievement across different learning styles and levels of motivation suggests that while these factors are important in educational contexts, their direct impact on academic performance may be more limited than previously assumed. Furthermore, the results imply that while it's important to consider learning styles and motivation in educational planning, these factors alone might not be decisive in determining academic success. This underscores the importance of a more holistic approach in educational strategies, where multiple aspects of the student experience are considered. The findings also highlight the need for future research to explore additional factors that may influence academic achievement, potentially leading to more effective and tailored educational interventions.

These ANOVA results provide a foundation for re-evaluating the role of learning styles and academic motivation in educational outcomes. They call for a broader perspective in understanding the determinants of academic success, emphasizing the need for multifaceted educational strategies and further research in this domain.

Table 4. Correlates analysis

		Academic achievement	Academic motivation	Styles of learning
Academic achievement	Pearson Correlation	1	.100	-.159[*]
	Sig. (2-tailed)		.204	.043
	N	163	163	163
Academic motivation	Pearson Correlation	.100	1	-.139
	Sig. (2-tailed)	.204		.062
	N	163	180	180

The goal of the study was to prove that there is a correlation between academic motivation, learning styles, and academic success of students. Table 4. displays the Pearson correlation coefficients, which measure the strength and direction of the linear relationship between pairs of variables.

A statistically significant, albeit weak, negative correlation between academic achievement and styles of learning (.043; p < 0.05) was observed, suggesting that different styles of learning may be associated with slightly different levels of academic achievement. This indicates that certain learning styles may slightly hinder or enhance academic performance, though the effect size is modest.

However, the relationships between academic motivation and both academic achievement (.204; p > 0.05) and styles of learning (.062; p > 0.05) did not reach statistical significance. The correlation between academic motivation and styles of learning, while not significant, is approaching significance and might warrant further investigation. This near-significant trend suggests a potential interplay between how students are motivated and their preferred learning styles, which could subtly influence their academic outcomes.

These findings point to the complex nature of the relationship between learning styles, academic motivation, and achievement. The modest correlation values indicate that while there may be some association, other factors are likely at play in determining academic success. It is possible that variables not examined in this study, such as individual student characteristics, teaching methods, and environmental factors, could also significantly impact these relationships.

In summary, while the study aimed to establish clear correlations between these key educational variables, the results suggest a more intricate and nuanced relationship. This complexity underscores the importance of considering a range of factors in educational research and practice, particularly when aiming to enhance academic achievement through tailored learning and motivational strategies.

Further analysis revealed that the relationships between learning styles and academic motivation are nuanced. The data indicates that while certain learning styles, such as the activist and pragmatist styles, are more prevalent, these do not necessarily correlate with higher levels of academic motivation. This observation suggests that the effectiveness of learning styles in enhancing academic motivation might be more dependent on the individual characteristics and preferences of the students rather than the learning styles per se.

Moreover, the study examined the impact of different types of motivation on academic achievement. It was observed that while extrinsic motivation factors like grades and rewards play a role, they do not overwhelmingly dominate the students' motivation landscape. This finding is crucial as it implies that intrinsic factors such as personal interest and a desire for knowledge are also significant contributors to students' academic pursuits.

These results provide a comprehensive overview of the interaction between learning styles and academic motivation among the student sample. They highlight the complexity of these relationships among themselves.

5. Discussion

The interplay between academic motivation, learning styles, and academic achievement has been a focal point of educational psychology research. Consistent with the findings of Ryan and Deci (2000), our study aimed to explore these dynamics within a higher education context. The correlation analysis indicated that while there is a statistically significant negative correlation between academic achievement and learning styles, the relationship between academic motivation and both academic achievement and learning styles did not reach statistical significance.

The findings of this study offer important insights into the complex relationship between learning styles, academic motivation, and academic performance. The prevalence of activist and pragmatic learning styles among students suggests that active engagement and practical application are crucial in the learning process. However, the lack of a strong correlation between these styles and higher academic motivation or achievement raises questions about the universality of learning style theories in educational practice. This observation aligns with recent criticisms of learning style models, which argue that they may oversimplify the learning process and overlook other critical factors such as the learning environment and instructional methods.

These findings suggest that although learning styles might modestly influence academic outcomes, the role of academic motivation is more complex and warrants further investigation. Given the context of the study, it is imperative to consider the educational implications of these findings.

While learning styles showed some correlation with academic achievement, educators should be cautious in heavily weighting curricula towards specific learning style adaptations. It has been suggested that an overemphasis on learning styles may not be the most efficient use of educational resources (Pashler, McDaniel, & Bjork, 2008). Instead, a balanced approach that accommodates diverse learning preferences without compromising on content delivery might be more beneficial.

In terms of academic motivation, the prominence of extrinsic factors like grades and external rewards is noteworthy. However, the significant presence of intrinsic motivation factors such as personal interest and desire for knowledge indicates that student motivation is multidimensional and cannot be solely attributed to external incentives. This finding underscores the importance of creating learning environments that foster intrinsic motivation, perhaps through curricular innovation, student-centered teaching approaches, and opportunities for self-directed learning.

The results reinforce the notion that educational strategies need to be multifaceted, taking into

account individual learning preferences while also fostering intrinsic motivational factors to optimize academic performance (Komarraju, Karau, Schmeck, & Avdic, 2011). Furthermore, the nuanced role of academic motivation in this context raises questions about the motivational strategies that educators employ.

Intrinsic motivation, which is often linked to higher academic achievement, may not be sufficiently addressed by traditional teaching methods (Deci, Vallerand, Pelletier, & Ryan, 1991). Thus, incorporating teaching strategies that enhance intrinsic motivation, such as providing autonomy, competence, and relatedness, could be essential in improving educational outcomes.

The study's limitations include its sample size and demographic constraints, as it was conducted within a single cultural and educational context. Therefore, caution should be exercised in generalizing the findings to other populations or educational settings. Additionally, the cross-sectional nature of the study limits its ability to establish causal relationships between the variables. The study utilized a relatively small, demographically homogeneous sample of 180 students from the Republic of Kosovo, predominantly female, and within the 18 to 27 age range. This gender imbalance and narrow age range may not accurately represent the diverse student populations found in different educational contexts or cultural settings. The sample's cultural homogeneity further limits the applicability of the findings to other regions with distinct educational systems and cultural values. Recognizing these limitations underscores the importance of interpreting the study's results within its specific context and suggests a need for future research to involve more diverse and representative samples. This approach would help in understanding how learning styles and motivation impact academic performance across a broader spectrum of students, thereby enhancing the universality and applicability of the research findings.

For this reason, the specific characteristics of the sample limit the extent to which the results can be generalized to all higher education students. Diverse educational systems, cultural backgrounds, and student demographics could influence learning styles and motivation differently, suggesting that the findings may not be directly applicable outside the study's immediate context.

While correlations between learning styles, academic motivation, and academic achievement were explored, the directionality of these relationships cannot be established. Longitudinal research designs could provide insights into how these variables interact over time, potentially offering a clearer understanding of causality and the long-term impact of learning styles and motivation on academic success. Moreover, the study focused primarily on the roles of learning styles and motivation without extensively considering external factors that could influence academic performance. Factors such as teaching quality, curriculum design, social support, and socioeconomic status might also play significant roles in shaping educational outcomes. Future research should aim to incorporate these variables to present a more holistic view of academic success determinants.

Future research could explore these relationships in more diverse and larger samples, and incorporate longitudinal designs to better understand how learning styles and motivation evolve. Investigating the role of technology in learning, especially in the context of increased online and blended learning modalities, would also be valuable. Furthermore, qualitative studies could provide deeper insights into students' perspectives on how their learning styles and motivational factors influence their academic experiences and outcomes.

In conclusion, this study contributes to the ongoing dialogue in educational research regarding the significance of learning styles and motivation in academic achievement. It calls for a more nuanced understanding of these constructs and their interplay, advocating for educational strategies that are responsive to the diverse needs and motivations of students in higher education.

6. Conclusions

This study has provided valuable insights into the complex interplay between learning styles, academic motivation, and academic performance. The findings suggest that while certain learning styles, such as activist and pragmatist, are prevalent among students, they do not significantly

influence academic motivation or achievement. This challenges the conventional wisdom that tailoring education to specific learning styles will automatically lead to improved academic outcomes. Moreover, the study highlights the multifaceted nature of academic motivation, where both intrinsic and extrinsic factors play a crucial role in shaping students' academic pursuits.

Based on the findings, the following recommendations are proposed for educators and policymakers in higher education. Educational strategies should be diversified to address the varied learning styles of students. This includes incorporating a mix of active learning, practical application, and theoretical instruction to cater to different learning preferences. Furthermore, with the growing prevalence of digital learning platforms, it is crucial to understand how technology can be effectively integrated to support diverse learning styles and enhance academic motivation.

Efforts should be made to foster intrinsic motivation among students, such as providing opportunities for self-directed learning, offering courses that align with students' interests, and creating a supportive and engaging learning environment. Moreover, professional development programs for educators should include training on recognizing and addressing diverse learning styles and motivational needs, as well as on the effective use of technology in teaching.

Another recommendation that comes from this study is the need for additional research to explore the impact of learning styles and motivation in different cultural and educational contexts and to examine the long-term effects of these factors on academic performance.

While the study sheds light on the relationship between learning styles, motivation, and academic performance, it also underscores the need for a more holistic approach to education that considers the varied and dynamic nature of student learning preferences and motivational drives.

To deepen our understanding of how learning styles and motivation impact academic performance over time, longitudinal studies are essential. Such research could track changes in learning preferences and motivational drivers across different stages of a student's educational journey, providing insights into the long-term effects of these factors on academic success. Therefore, future research should aim to replicate and extend this study in various cultural and educational settings. Exploring the impact of learning styles and motivation in different contexts will help to ascertain the universality of our findings and identify unique cultural nuances.

Upcoming research should focus on three main areas: developing and testing intervention-based strategies tailored to diverse learning styles and motivational needs, exploring the impact of digital learning platforms, and employing qualitative methods to gain a deeper understanding of students' personal experiences and perceptions. Thus, such comprehensive approaches aim to enhance pedagogical practices, optimize digital learning environments, and uncover the complex interplay of factors influencing academic engagement and achievement.

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