The Relationship Between Academic Achievements and Learning Motivation and Self-Efficacy

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Abstract: Academic accomplishment is a crucial indicator of students' learning and is strongly impacted by self-efficacy and learning motivation. The internal force that propels students to participate in learning activities, learning motivation influences their engagement, choice of strategy, and perseverance. Students who believe in their own skills are more confident and resilient when faced with academic problems. This is reflected in their self-efficacy. These elements have an impact on academic performance separately and work together to improve it through a positive feedback loop. This investigation systematically explores the complex interplay among academic achievement, self-regulatory efficacy, and motivational factors in educational contexts.It finds that intrinsic motivation is especially useful for fostering deep learning. Self-efficacy improves students' ability to choose strategies and control their emotions helping them keep a positive attitude. The relationship between self-efficacy and motivation varies by grade and subject; extrinsic motivation influences the humanities, but intrinsic motivation is more important in science and engineering. The study makes useful recommendations for instructional strategies, including establishing supportive surroundings, boosting self-efficacy, encouraging intrinsic motivation, and introducing differentiated instruction. For thorough theoretical support, future research should include cross-cultural and longitudinal investigations, increase sample variety, and examine these mechanisms in a range of learning environments.

1 INTRODUCTION

Academic achievement is an important index to measure students' learning effect, which not only reflects students' knowledge mastery level, but also reflects students' comprehensive ability development. Academic achievement is widely used as the core standard to evaluate the quality of education, which is of great significance to the growth of individual students and the cultivation of talents in society. From the individual point of view, good academic achievement can enhance students' self-confidence and lay the foundation for future career development and personal growth; From the perspective of society, students' academic performance has a direct impact on the country's talent reserve and social and economic development. Therefore, investigating the determinants of academic performance holds substantial practical value for enhancing educational quality and fostering comprehensive student development.

Among the many factors that affect academic achievement, learning motivation and self-efficacy are considered to be the two most critical psychological variables. Learning motivation is the inner driving force of students' involvement in learning activities, which can directly affect students' involvement degree, strategy choice and persistence. Studies have shown that students with a high level of learning motivation usually show stronger independent learning ability and academic exploration desire, thus achieving better academic results (Bandura, 1997; Saeid& Eslaminejad, 2017). Self-efficacy, defined as an individual's conviction in their capacity to successfully execute target-specific tasks, functions as both a psychological foundation and motivational catalyst in students' learning processes (Bandura, 1997; Pajares, 1996). Learners with robust self-efficacy demonstrate enhanced resilience when confronting academic challenges and exhibit greater task persistence in their educational pursuits. These findings collectively underscore the pivotal role that both self-efficacy and learning motivation play in facilitating academic success.

At present, studies on the effects of learning motivation and self-efficacy on academic achievement have accumulated some achievements, but most studies still tend to investigate the two as

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separate variables. In fact, learning motivation and self-efficacy do not exist independently, but interact and influence each other, and jointly determine students' learning performance. Therefore, from the "interactive perspective", the analysis of the comprehensive impact of learning motivation and self-efficacy on academic achievement not only helps to reveal the deep logical relationship between the three, but also provides theoretical support for the design of educational intervention.

This research aims to investigate the relationship between learning motivation, self-efficacy, and academic achievement, with a particular focus on how their interplay influences students' academic performance. By constructing the theoretical framework of the interaction between learning motivation and self-efficacy, this study attempts to reveal the specific mechanism and action path between the three. Simultaneously, this research will examine how demographic factors, including grade level and gender, moderate the interplay among these key psychological and academic constructs, offering valuable insights for tailoring personalized educational interventions.

Theoretical contribution: From an educational psychology standpoint, this research significantly advances the existing paradigm examining the interplay among motivational factors, self-regulatory mechanisms, and educational outcomes. By systematically investigating how these psychological constructs influence academic performance, the study not only elucidates their complex dynamics but also opens new avenues for theoretical innovation in this field.

Practical contribution: It provides reference for educators to design teaching intervention and incentive mechanism, and promotes the improvement of students' academic performance. In educational practice, how to effectively improve students' academic performance is always the core issue that educators pay attention to. The results of this study can provide specific guidance for educators in teaching design, curriculum setting and student management. For example, by stimulating students' learning motivation and enhancing their sense of self-efficacy, academic performance can be effectively improved. Furthermore, the findings may enable educators to gain deeper insights into how students' diverse backgrounds shape their learning psychology, facilitating the development of customized pedagogical approaches that foster holistic student growth.

2 LITERATURE REVIEW

2.1 Research Purpose and Significance

Academic achievement is the core indicator to measure the learning effect of students, which is usually measured by various ways such as test scores, homework completion, and classroom performance. It not only reflects students' mastery of knowledge, but also reflects their learning ability, thinking ability and problem-solving ability. By definition, academic achievement can be divided into short-term academic achievement and long-term academic achievement. Short-term academic achievement usually refers to the student's learning performance in a specific period of time, such as exam scores, classroom test scores, etc. Long-term academic achievement refers to students' learning outcomes in a longer time span, such as graduation grades, enrollment rates, etc.

Common methods used to measure academic achievement include standardized tests, teacher evaluations, and student self-assessment. Standardized tests usually have high objectivity and comparability, which can reflect students' knowledge mastery level more accurately. Teacher evaluation is to judge students' learning effect by class performance and homework completion. The self-assessment of students aims to understand students' subjective evaluation of their learning results by means of questionnaire survey or interview.

In addition, the measurement of academic achievement should also take into account subject differences and grade differences. Different subjects have different learning objectives and evaluation criteria. For example, science subjects pay more attention to logical thinking and problem solving skills, while liberal arts subjects emphasize expressive skills and critical thinking. At the same time, students of different grades differ in the difficulty of learning tasks and learning goals. Younger learners' academic performance primarily manifests in their grasp of fundamental concepts, whereas their senior counterparts demonstrate a stronger emphasis on developing integrated competencies.

2.2 Theory and Research of Learning Motivation

Academic motivation serves as the fundamental driving force behind students' engagement in learning activities, significantly influencing their educational outcomes.From a theoretical perspective, self-determination theory emphasizes the importance of

intrinsic motivation, believing that intrinsic driving forces such as interest and curiosity can help students achieve long-term and more stable academic development, while extrinsic motivation may produce positive effects in the short term, but will weaken students' independent learning ability (Saeid & Eslaminejad, 2017; Eccles & Wigfield, 2002). The achievement goal theory further points out that different learning goals will have different impacts on students' learning behavior (Saeid & Eslaminejad, 2017; Eccles & Wigfield, 2002). For example, learning-oriented goals often prompt students to adopt deeper learning strategies, while performance-oriented goals may lead to superficial learning and higher levels of anxiety.

In addition, learning motivation has significant situational dependence. Task difficulty, learning feedback and students' social environment all influence motivation. Research indicates that highly motivated learners demonstrate greater initiative in exploring effective study methods and exhibit enhanced perseverance and adaptability when encountering academic challenges, factors that positively correlate with improved educational outcomes (Li, 2020; Li, 2019; Zhou, 2015).

2.3 Theory and Research of Self-Efficacy

Self-efficacy, a core concept in educational psychology, represents an individual's perceived capability to successfully execute target-specific tasks, serving as a critical determinant of academic success. Grounded in Bandura's social cognitive theory, this psychological construct develops through four primary pathways: mastery experiences, observational learning, verbal persuasion, and physiological feedback (Bandura, 1997; Pajares, 1996). These factors not only help individuals form positive evaluations of their own abilities, but also influence their emotional regulation abilities and behavioral choices during the learning process.

Research demonstrates that learners with elevated self-efficacy levels consistently exhibit greater willingness to undertake demanding academic tasks and maintain superior task persistence and cognitive flexibility throughout the learning process (Bandura, 1997; Pajares, 1996; Zimmerman, 2000). This psychological advantage particularly manifests in their enhanced capacity to navigate academic challenges effectively. Conversely, students experiencing limited self-efficacy frequently develop maladaptive patterns, including chronic anxiety and persistent self-doubt, which may ultimately compromise their educational outcomes.

2.4 Interaction Between Learning Motivation and Self-Efficacy

Learning motivation and self-efficacy interact with each other in academic achievement, forming a complex interactive relationship. Learning motivation is the inner driving force for students to engage in learning, which can enhance self-efficacy by stimulating learning behaviors, that is, students' confidence in their own abilities (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009). For example, a student's interest in a subject can lead to active participation in learning and increased self-efficacy after successful completion of a task.

In turn, self-efficacy also affects learning motivation. When students have confidence in their ability to complete tasks, they will be more willing to accept challenges and show stronger persistence in the face of difficulties, thus further stimulating their learning motivation (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009). This interaction forms a positive cycle: students gain a sense of accomplishment through the completion of learning tasks, enhance self-efficacy, and thus stimulate stronger learning motivation.

In addition, external environments such as teacher feedback, classroom atmosphere, and family support can amplify the positive effects of both. Studies have shown that interventions that improve learning motivation or self-efficacy alone have limited effect, while educational strategies that promote synergies between the two tend to improve academic achievement more significantly (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009).

3 ANALYSIS

3.1 The Influence of Learning Motivation on Academic Achievement

Academic motivation, serving as the fundamental psychological engine that propels students' engagement in learning processes, constitutes a critical determinant of educational success. The theoretical distinction between intrinsic and extrinsic motivation primarily resides in their respective motivational origins. Intrinsic motivation emerges from learners' genuine interest in and intellectual

curiosity about the subject matter itself, manifested through their pursuit of knowledge and inquisitive approach to problem-solving. In contrast, extrinsic motivation predominantly derives from external incentives, including academic recognition, performance evaluations, and relative standing among peers.

Studies have shown that intrinsic motivation has significant advantages in pushing students to carry out deep learning (Saeid & Eslaminejad, 2017; Eccles & Wigfield, 2002). Deep learning means that in the learning process, students not only pay attention to the memory and repetition of knowledge, but also pay more attention to understanding the nature of knowledge, establishing connections between knowledge, and applying it to solve practical problems. For example, students who focus on mastering knowledge tend to be able to participate more actively in class discussions, complete tasks autonomously, and show greater perseverance in the face of difficulties. In contrast, students who rely solely on extrinsic motivation may excel in the short term, but their academic performance may fluctuate in the long term due to a lack of intrinsic interest in learning.

In addition, the role of motivation may vary across disciplines and learning tasks. For example, because the knowledge points of science and engineering are more systematic and logical, students' intrinsic motivation is crucial to their long-term learning (Ugwuanyi et al., 2020). This is because the knowledge structure of science and engineering subjects is often highly coherent and complex, and students need to master the knowledge system through in-depth understanding and logical reasoning. If students lack intrinsic motivation and rely solely on extrinsic rewards such as test scores, it may be difficult to consistently invest time and energy in understanding complex knowledge structures, resulting in poor learning outcomes. On the contrary, intrinsic motivation can stimulate students' desire to explore knowledge, encourage them to think actively and solve problems, so as to better grasp the core content of science and technology subjects. In the humanities, which require creativity and expression skills, extrinsic motivation such as teacher encouragement and rewards may be more effective in stimulating students' performance (Ugwuanyi et al., 2020). Therefore, teachers should fully consider the subject characteristics and adopt flexible incentive strategies when designing curriculum and evaluation system.

3.2 Influence of Self-Efficacy on Academic Achievement

A high level of self-efficacy can help students show more persistence and initiative in learning. Studies have shown that self-efficacy can not only improve students' ability to choose learning strategies, but also enhance their ability to regulate emotions, especially in the face of failures and challenges (Bandura, 1997; Pajares, 1996: Zimmerman, 2000).

First, students with high self-efficacy tend to choose more active learning styles, such as setting clear learning goals, adopting effective time management methods, and actively seeking help. These strategies can help students complete learning tasks more efficiently, thereby enhancing their academic achievement.

Second, self-efficacy plays an important role in emotion management. Emotional regulation encompasses an individual's capacity to monitor, evaluate, and modify emotional responses effectively. Research indicates that students demonstrating robust self-efficacy typically possess enhanced emotional regulation skills, enabling them to more effectively manage and mitigate adverse psychological states, including academic anxiety and learning-related depression, throughout their educational journey. For example, when students encounter difficult problems in exams, students with high self-efficacy will relieve stress through positive self-suggestion or adjustment of mentality, while students with low self-efficacy may fall into anxiety, affecting subsequent performance.

In addition, there may be significant differences in self-efficacy among students in different grades. Students in the primary stage are usually less familiar with learning tasks, and their self-efficacy is easily affected by external factors, such as teacher's evaluation or peer feedback. Senior students rely more on their own experience and ability perception, which also requires educators to design personalized support and incentives according to the characteristics of students' grades (Zhou, 2015; Mo, 2021).

3.3 Interaction Between Learning Motivation and Self-Efficacy

Learning motivation and self-efficacy do not exist independently, but affect academic achievement through interaction. On the one hand, strong learning motivation can promote students to establish positive self-efficacy. For example, after students devote themselves to learning tasks and achieve certain

achievements, they will be more confident to cope with more difficult tasks, thus forming a positive cycle of "motivation - efficacy - achievement". On the other hand, the improvement of self-efficacy will further stimulate students' learning motivation and make them more actively participate in learning tasks (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009).

This interactive mechanism also shows dynamic adaptability to different academic tasks. In relatively simple learning tasks, the direct effect of learning motivation on academic achievement is more obvious, while in more complex or difficult tasks, the moderating effect of self-efficacy is more important. Self-efficacy can not only help students cope with setbacks in tasks, but also maintain their motivation level and ensure the sustainability of the learning process (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009).

However, this interaction is not always linear. Some studies have shown that when students have too high motivation for learning tasks but low self-efficacy, they may have a sense of frustration because they cannot reach their goals, thus reducing academic performance (Bandura, 1997; Pajares, 1996). Therefore, in educational practice, teachers should pay attention to the balanced development of students' motivation and sense of efficacy, and help students gain a sense of accomplishment and enhance their confidence in their own ability through reasonable learning task allocation and feedback mechanism.

4 DISCUSSION

4.1 Research Summary

Through the analysis of the relationship between learning motivation, self-efficacy and academic achievement, this study deeply discusses their interaction mechanism, and summarizes the following main conclusions:

Learning motivation is an important driving force for academic achievement. Learning motivation can significantly affect students' learning engagement and academic performance, especially intrinsic motivation has a more positive effect on long-term academic achievement (Saeid & Eslaminejad, 2017; Eccles & Wigfield, 2002). Students' interest and enthusiasm for the learning task itself can help them overcome external interference and learning pressure, and continue to promote the achievement of academic goals.

Self-efficacy plays a key role in academic achievement. As students' belief in their own ability, self-efficacy not only affects the choice and persistence of learning behaviors, but also helps students to effectively regulate emotions and relieve anxiety in the face of difficulties. The establishment of this belief provides important psychological support for students' continuous progress in their studies (Bandura, 1997; Pajares, 1996; Zimmerman, 2000).

There is a significant interaction between learning motivation and self-efficacy. Learning motivation and self-efficacy are not independent variables, but affect academic achievement through interaction. Strong learning motivation can enhance students' self-efficacy, and a high level of self-efficacy can further stimulate students' learning motivation. This interaction provides important conditions for students to form a positive learning cycle (Saeid & Eslaminejad, 2017; Schunk & Pajares, 2009).

4.2 Practical Significance and Suggestions

The results of this study have important implications for educational practice, and specific recommendations are as follows:

1. Focus on stimulating students' intrinsic motivation

In teaching, teachers should try to avoid over-reliance on external rewards, but should stimulate students' intrinsic motivation by creating an interest-oriented learning environment (Saeid & Eslaminejad, 2017; Eccles & Wigfield, 2002). For example, by designing problem-driven teaching activities that encourage students to explore problems and find answers in their learning, students' learning interest and engagement can be effectively enhanced.

2. Strengthen the cultivation of self-efficacy

Students' self-efficacy can be gradually improved through positive learning experiences and feedback (Bandura, 1997; Pajares, 1996). In teaching, teachers can adopt the method of hierarchical goal setting, decompose learning tasks into specific goals that students can gradually achieve, and help students accumulate successful experience through positive evaluation and timely feedback, so as to enhance their confidence in their own abilities.

3. Create a supportive learning environment

Family and school play an important role in the external support of students' academic achievement (Zhou, 2015; Mo, 2021). Parents should provide positive emotional support and appropriate expectations to avoid excessive academic pressure.

Schools should focus on optimizing the classroom atmosphere and providing resource-rich learning conditions to help students learn efficiently in a relatively relaxed environment.

4. Pay attention to individual differences and implement differentiated education

Students of different grades, genders and backgrounds may have significant differences in learning motivation and self-efficacy (Ugwuanyi et al., 2020). Therefore, educators need to flexibly adjust the teaching content and methods according to the individual needs of students. For example, for students with low self-efficacy, group collaboration or example can be used more to help them build confidence.

4.3 Limitations

Although this study has achieved some valuable conclusions, there are still the following limitations:

The empirical studies reviewed in this study mainly focus on students in a specific age group or region, and the results may not be fully applicable to other groups (Li, 2020; Li, 2019; Mo, 2021; Xiang, 1986). Future studies could improve the universality of the study by expanding the sample size to include students from different cultural backgrounds, for example.

This study did not collect data, and although it can reflect the overall relationship between variables, it cannot reveal the dynamic process in depth. In the future, experimental studies or longitudinal studies could be combined to explore the long-term effects of learning motivation and self-efficacy on academic achievement (Li, 2019; Mo, 2021; Xiang, 1986).

While this investigation primarily examines the interplay between learning motivation and self-efficacy, it acknowledges the potential influence of environmental factors, particularly familial support systems and instructional approaches, which warrant further exploration in subsequent research (Zhou, 2015; Ugwuanyi et al., 2020; Mo, 2021). Follow-up studies can further integrate internal and external factors to build a more comprehensive impact model.

4.4 Future Research Direction

Based on the above research limitations and conclusions, this study proposes the following future research directions:

Future studies can adopt longitudinal research design to track the changes of students' learning motivation, self-efficacy and academic achievement in different classes, and explore the dynamic relationship between the three. This will help reveal the mechanisms of action of the three over long time spans (Li, 2020; Li, 2019; Mo, 2021; Xiang, 1986).

In different cultural contexts, students' learning motivation, self-efficacy and academic achievement may show different characteristics. For example, students in collectivist cultures may rely more on extrinsic motivation, while students in individualistic cultures may lean more toward intrinsic motivation. Future studies can enrich the applicability of the theory through cross-cultural comparison (Ugwuanyi et al., 2020; Hofstede, 1986; Markus & Kitayama, 1991).

With the popularization of digital technology, the influence of online learning platform and blended learning mode on students' learning psychology and academic performance is becoming more and more important. Future studies may focus on the mechanism of learning motivation and self-efficacy on academic achievement under the digital learning environment, and explore how to use technology to improve students' learning effect (Means et al., 2010; Seyed et al., 2017).

Future research may try to construct a comprehensive model including learning motivation, self-efficacy, external environment variables such as family support and school resources to fully reveal the influence path of academic achievement. This comprehensive analysis will help to guide educational practice more scientifically (Zhou, 2015; Ugwuanyi et al., 2020; Mo, 2021).

Through its comprehensive examination of the dynamic relationships among learning motivation, self-efficacy, and academic outcomes, this study makes dual contributions: it elucidates the intricate interplay between these psychological constructs while offering actionable insights for educational practice. While acknowledging certain methodological limitations, future research directions could incorporate expanded sampling strategies, longitudinal designs, and experimental approaches to advance this field of study, ultimately contributing to more holistic strategies for enhancing student learning outcomes.

5 CONCLUSION

In conclusion, this study demonstrates the major significance of learning motivation and self-efficacy in affecting academic accomplishment. Both components interact dynamically, with learning motivation improving self-efficacy, and vice versa, contributing to a positive cycle that promotes

academic achievement. In order to promote deep learning and tenacity and assist students in overcoming obstacles, intrinsic motivation and self-efficacy are very crucial. According to the results, teachers should concentrate on promoting self-efficacy and intrinsic motivation through goal-setting techniques and encouraging feedback. Improving academic results also requires taking into account each student's unique characteristics and establishing a supportive learning environment. Although the study offers insightful information, in order to create a more complete model for educational interventions, future research might include the long-term impacts of these components as well as the impact of outside variables like teacher behaviour and family support.

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