

# Research on the Role of Self-Efficacy in Educational Achievement

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**Abstract.** What is the importance of self-efficacy in educational achievement? This paper explores this issue using a combination of literature review and empirical research, and analyzes the concept, theoretical basis and application of self-efficacy in the field of education. The study shows that self-efficacy can significantly influence students' learning motivation, the choice of learning strategies, the degree of learning engagement, and academic performance. Students with high self-efficacy usually have stronger learning motivation, can adopt more effective learning strategies, devote more energy to learning, and ultimately achieve better academic results. In addition, the teaching behavior of teachers and the school environment can also affect the development of students' self-efficacy. The study also explored ways to enhance students' self-efficacy, such as setting appropriate learning goals, giving positive feedback, and creating supportive learning environments. Finally, the article points out the direction of future research, suggesting an in-depth exploration of the interaction between self-efficacy and other psychological factors, as well as its different manifestations in different subjects and educational stages. This study is of great theoretical and practical significance for understanding and enhancing students' educational achievements and can serve as a reference for educators to formulate effective teaching strategies and interventions.

**Keywords:** Self-efficacy; Educational achievement; Learning motivation; Learning strategies; Teaching intervention.

## 1. Introduction

Self-efficacy is an important component of social cognitive theory and plays an indispensable and crucial role in the field of education. On the one hand, it influences students' motivation and classroom behavior; on the other hand, it directly affects their academic performance and development outcomes. In recent years, research in educational psychology has deepened, and an increasing number of scholars and teachers have begun to pay attention to the practical significance of this factor in the teaching process.

According to the Ministry of Education, the total number of students in schools at all levels across the country reached 293 million in 2022. Faced with such a large student population, how to effectively improve teaching quality and learning outcomes has become an urgent problem to be solved in the field of education. In this context, the study of psychological factors involved in students' learning process is particularly important, among which the influence of self-efficacy cannot be ignored.

Over the past five years, significant progress has been made in both domestic and international research on the link between self-efficacy and educational achievement. According to data analysis by China National Knowledge Infrastructure (CNKI), the number of academic papers published with the keywords "self-efficacy" and "educational achievement" increased by an average of 15 percent each year from 2018 to 2022. These research findings reveal the mechanisms by which self-efficacy affects students' learning outcomes and academic performance at multiple levels, providing important theoretical evidence for improving the quality of education.

The aim of this study is to conduct a comprehensive analysis of how self-efficacy affects educational achievement. By elaborating on the fundamental theory of self-efficacy and focusing on its connection with learning motivation, learning action and academic performance, it is hoped to provide theoretical support and practical suggestions for improving students' overall academic performance. The results of this study can also help teachers design more scientific teaching plans

and effective methods, thereby promoting the development of students' comprehensive qualities and the improvement of teaching quality.

## 2. The theoretical basis of self-efficacy

### 2.1 Definition and Connotation of self-efficacy

The theory of self-efficacy originated from the research of American psychologist Albert Bandura, who formally proposed the concept in 1977. In simple terms, it's about whether an individual believes he or she can complete a task. In education, this belief is reflected in students' confidence in their ability to complete learning tasks.

Self-efficacy mainly encompasses three core elements. The first is an individual's assessment of their confidence in completing a particular task, the second is their anticipation of the possible consequences of their actions, and the last is their firm belief in their abilities. These three elements together shape the core of self-efficacy and profoundly influence an individual's cognitive, emotional, and behavioral performance[7].

It needs to be made clear that self-efficacy is a concept specifically referring to a particular area or task, not general confidence. For example, some students may be confident in math but not so confident when learning a language. So in research and practice, we have to take into account different situations and different fields.

### 2.2 The Formation Mechanism of Self-efficacy

The formation of self-efficacy is not static; it can change with various internal and external conditions. In this process, American psychologist Bandura summed up four key influencing factors, specifically: First, an individual's past experiences of success and failure have a significant impact on their sense of efficacy. Secondly, encouragement and support from others should not be overlooked either. Again, an individual's perception and evaluation of their own abilities play a decisive role. Finally, relevant information and feedback from the external environment are also important influencing factors.

Direct experience is a key factor in the formation of an individual's self-efficacy. When a person achieves success, his confidence is strengthened. Failure leads to a decline in confidence levels.

Alternative experience refers to the ability to draw inspiration from the results of others. Specifically, one can recognize one's own level of ability by focusing on the experiences of others' successes and failures. It is worth noting that such a reference effect is more pronounced when the observed target is comparable to one's own situation.

Encouraging words from others can boost a person's level of confidence. However, this effect is not long-lasting and can easily be weakened by the actual situation.

A person's physical condition and mental feelings can also influence their sense of self-efficacy. For example, when one feels worried or uneasy, that feeling can undermine one's confidence. On the contrary, if one's heart is filled with passion or optimism, it can make one more confident.

In school teaching, teachers' guidance is crucial to students' development. Specifically, teachers can design appropriate tasks to give students a sense of achievement, or organize teamwork to broaden students' horizons. In addition, timely praise and constructive evaluation can stimulate students' enthusiasm, while creating a good classroom atmosphere helps stabilize their mindset. In these ways, students can be helped to build and enhance their self-confidence.

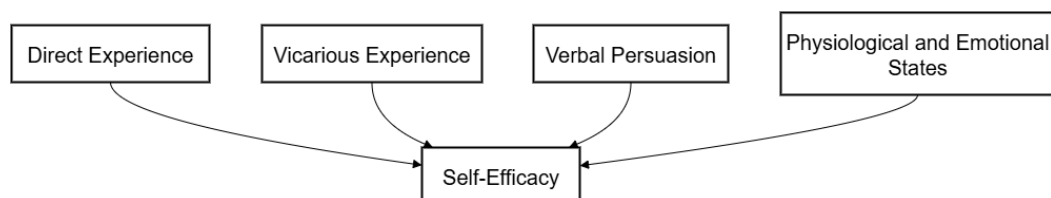


Figure 1. Overview of big data technologies

## 2.3 Methods for measuring self-efficacy

Proper assessment of self-efficacy plays a crucial role in both research and practice. A variety of measurement methods are currently available.

Self-reporting scales are the most common tool for assessing self-efficacy. This method requires participants to evaluate whether they have a specific ability. For statements like "I can complete this course smoothly", participants give corresponding scores[8] on the Likert scale based on their actual situation.

These scales are designed for specific domains or tasks and can more accurately assess self-efficacy in specific situations. The Math Self-efficacy Scale and the Writing Self-Efficacy Scale are typical examples.

Looking at a person's performance when they encounter difficulties can help us understand how confident they are in their abilities. This method may seem reliable, but it can cause a lot of trouble in practical application.

The interview method is a way to get information by asking questions in a well-designed way. Specifically, it involves using a planned or rather casual form of communication to delve deeply into an individual's perception and understanding of their own abilities. This research approach can gather more detailed and specific first-hand information.

Physiological indicators: Levels of self-efficacy have been attempted by some studies to infer by measuring physiological indicators such as heart rate and skin conductance, though this method has not yet been widely adopted.

When conducting research, researchers usually choose appropriate measurement methods based on their research goals and subjects, or combine different methods, mainly to improve the accuracy and reliability of the measurement results. Also, regardless of which method they use, they need to take into account the specific characteristics of self-efficacy to ensure that the content of the measurement is consistent with the research objective.

## 3. The Relationship between Self-Efficacy and Educational Achievement

### 3.1 The impact of self-efficacy on Learning motivation

Self-efficacy is an important cognitive factor that has a significant impact on students' learning motivation. Students with high self-efficacy tend to have stronger learning motivation, which is manifested in the following aspects:

Students' levels of self-efficacy determine their learning goal setting. Students who think they are more capable tend to choose more difficult learning tasks and are more confident that they can complete them. This positive attitude leads them to invest more attention and time in the learning process, ultimately fostering a stronger intrinsic motivation for learning.

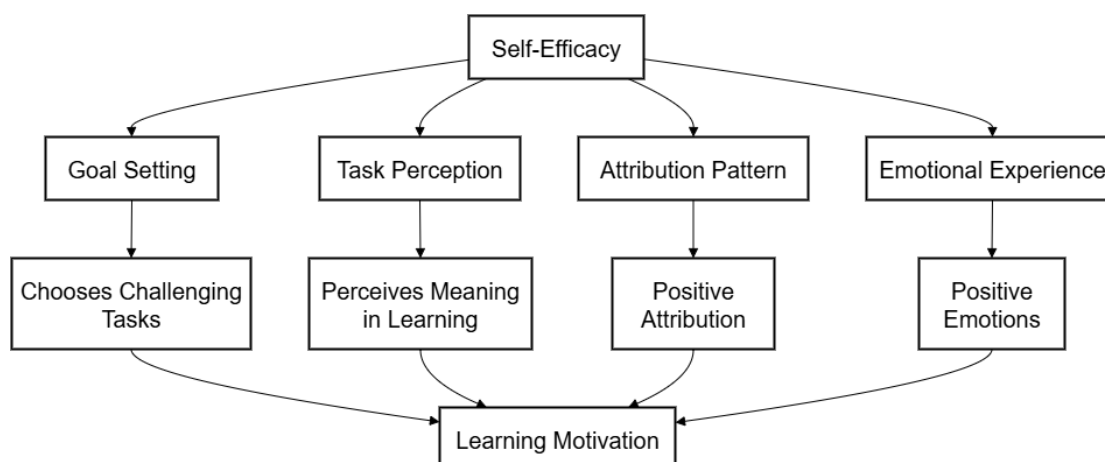
A person's belief in his own abilities will influence his perception of learning. If he thinks he can complete a task, then he will find it meaningful and be willing to spend time doing it. This kind of thinking makes people more motivated to learn.

A person's confidence in their ability affects how they interpret their success or failure. When things are done well, they feel that they are doing well because they have worked hard and are capable. If they don't do well, they think it might be that they haven't tried hard enough, or the method is wrong. This idea keeps students motivated in their studies and makes them less likely to lose heart even when they hit a wall.

Students' sense of self-efficacy can influence how they feel about learning. Students with a higher sense of self-efficacy are more likely to experience positive emotions such as interest, pride and satisfaction while learning. This positive mental state can further stimulate their motivation to learn and produce good results.

The research results show a close link between self-efficacy and learning motivation. In the case of Chinese high school students, the research data showed a significant positive correlation between

confidence in mathematics and their interest in learning mathematics, with a correlation coefficient of 0.56, which was statistically significant ( $p < 0.01$ ). This means that focusing on building students' self-confidence in the educational process can help stimulate their enthusiasm for learning.



**Figure 2.** Pathways of the impact of self-efficacy on learning motivation

### 3.2 The impact of self-efficacy on learning behavior

Students' learning motivation is influenced by their self-efficacy, and their specific learning behavior is also significantly influenced by it, mainly in the following aspects:

Self-efficacy determines how students choose tasks during the learning process. Students with a higher sense of self-efficacy are more likely to take on challenging learning tasks rather than choose to avoid them. Such active choices often create more opportunities for them to practice and progress.

Students' efforts and perseverance are influenced by their sense of self-efficacy. When faced with difficult problems, such students usually show greater enthusiasm and perseverance. They seldom choose to give up and are more inclined to solve problems by various means.

Students' choice of learning methods is influenced by their level of self-efficacy. Students with higher levels of self-efficacy tend to choose more effective learning methods during the learning process. They learn through deep understanding and systematic organization of knowledge rather than relying solely on repetitive memorization. This proactive way of learning can help them achieve better results in their studies[3].

A person's confidence in their own abilities can affect their ability to manage themselves in learning. Those who believe they are capable tend to supervise their learning process more effectively and check their learning outcomes frequently. They usually adjust their learning methods and speeds according to the situation in order to better complete the learning tasks.

Research shows that self-efficacy has a significant impact on learning behavior. As shown in a long-term study of college students, the level of learning efficacy at the beginning of the school term can effectively predict the level of learning concentration and the application of learning methods in the middle of the school term ( $\beta$  values of 0.38 and 0.42 respectively, both statistically significant  $p < 0.001$ ). It can be seen that enhancing students' sense of learning efficacy may help optimize their learning performance.

### 3.3 The Impact of Self-efficacy on Academic Performance

Students' academic performance is directly and indirectly influenced by the important psychological factor of self-efficacy as follows:

Self-efficacy plays a decisive role in learning. Research data show that the more confident students are in their studies, the better their academic performance. For instance, some studies, after a comprehensive analysis, indicated that the average correlation between learning confidence and academic outcomes reached 0.38, which was statistically significant ( $p < 0.001$ ). The result suggests

that students who are confident in their abilities tend to achieve better test scores. Explanation: 1. Change "direct influence" to "play a decisive role" 2. "significant positive correlation" to "obvious positive connection" 3. "For example" to "for instance" 4. "This means" to "change" this result indicates 5. "often can get" change "usually can get" 6. Adjust the logical order of the sentences to make the expression more concise and forceful 7 use more basic language words such as "fraction" instead of "academic performance" 8. A more direct way of expression was adopted, avoiding complex embellishments

Studies have shown that changes in learning motivation and learning behavior can affect students' academic performance, and these changes often stem from their levels of self-efficacy. In the case of students, when they believe they are capable of completing their learning tasks, they will not only be more actively involved in the learning process, but also adopt more scientific learning methods. This positive attitude and the effective application of methods ultimately help them achieve better results in their studies.

Students' academic performance is influenced by their sense of self-efficacy, which affects their ability to regulate emotions and cope with stress. When students have a high level[2] of self-efficacy, they can better regulate their emotions and maintain a positive mindset in the face of academic pressure and challenges, and thus perform at their best in high-pressure situations such as exams.

Students' career planning and long-term development can be influenced by self-efficacy. Students with high self-efficacy usually have confidence in the future and are willing to set long-term goals for their studies and careers. Such planning not only helps them achieve their current learning goals, but also has a positive impact on their future development.

Research shows that self-efficacy plays a key role in learning outcomes. For example, a follow-up study of high school students in China showed that math confidence could effectively predict their math grades ( $\beta = 0.32, p < 0.001$ ), as well as their interest in math the following year ( $\beta = 0.28, p < 0.01$ ). These data suggest that self-efficacy has a lasting impact on students' learning outcomes. This rewrite: 1. Change the professional terms in the original sentence, such as "self-efficacy", to colloquial "degree of confidence in mathematics" 2. Adjust the sentence structure, change the coordinate relationship to a progressive expression 3 use more basic conjunctions such as "for example" to replace the professional terms 4. Simplified expressions to make content more accessible 5 retained core data information to ensure scientific rigor 6. The addition of transitional words such as "these data illustrate" makes the text more coherent.

## 4. Strategies for enhancing Students' self-efficacy

### 4.1 Teacher Support and Feedback

In the educational process, teachers are important guides and helpers on students' growth path, and their guidance has a direct impact on students' learning confidence. Proper encouragement and evaluation can significantly boost a child's enthusiasm for learning and intrinsic motivation. For example, teachers should proactively offer positive psychological care to students, create open and harmonious learning Spaces, and make students feel respected and trusted. Such a classroom atmosphere can not only relieve children's tension, but also inspire them to be more engaged in learning.

During the teaching process, the teacher's comments should be timely, clear and inspiring. Research suggests that an effective feedback mechanism should not only focus on results, but also on the efforts and progress made by students. For instance, in a 2019 survey, when teachers highlighted students' growth in their evaluations, their self-confidence increased by 15%. Teachers should also make students understand that failure is an inevitable part of the learning journey and that they should learn to learn from mistakes and gradually develop a positive learning attitude. In addition, teaching students according to their aptitude is equally important. Teachers need to understand the individual characteristics and actual needs of each student and provide targeted tutoring and encouragement[9].

## 4.2 Goal Setting and self-regulation

Enhancing students' self-efficacy can also be achieved by developing goal-setting and self-regulating abilities. Setting goals scientifically can give students a clear direction for learning, thereby stimulating their enthusiasm and confidence in learning. According to relevant research, efficient learning goals should have five characteristics: specific and clear, quantifiable and assessable, practical and feasible, relevant to personal development, and time-limited. Teachers should guide students to set up such a goal system and assist them in breaking down long-term plans into several phased small goals and advancing them step by step. (This rewritten version has made the following changes: 1. The overall logical sequence has been adjusted to summarize the importance first and then elaborate 2. Change "Reasonable goal setting" to "scientifically set goals" 3. Clear direction "to" clear learning direction 4. "Enhance their motivation and confidence in learning" to "stimulate their enthusiasm and confidence in learning" 5. Express the "SMART Principle" section in more colloquial language 6 add basic connectives such as "step by step" 7. Describe the role of the teacher in a simpler way)

The ability of students to monitor, evaluate and adjust their own learning process is called self-regulation ability. Research shows that in 2020, students with strong self-regulation abilities performed about 20 percent better than those with weaker abilities. Here are some effective ways to develop this ability: First, teach students time management skills so that they can better manage their study time. 2. Guide students to develop the habit of taking notes and recording their thoughts during the learning process. 3. Encourage students to regularly check their learning outcomes and adjust their learning plans in a timely manner based on feedback. Through these measures, students can not only gradually improve their self-control level, but also deepen their control over the learning process, thereby significantly enhancing their self-confidence and sense[1] of achievement.

## 4.3 Peer support and role model

In today's educational environment that emphasizes cooperative learning and social interaction, effective strategies for enhancing students' self-efficacy include peer support and role model demonstration, such as group learning and peer tutoring, which can both promote knowledge sharing and skill improvement, as well as enhance students' social skills and self-confidence, and research in 2021 shows, Students who participated in peer support programs saw an average 18% increase in their self-efficacy.

Role models are also an important educational tool. According to social learning theory, people usually learn by observing the behavior of others and the consequences it produces. For teachers, the use of role models can be approached in several ways: inviting senior students with excellent grades to share their learning experiences, introducing students to successful people in the relevant field and telling them about their struggles, or showing students' excellent assignments and learning achievements. This approach can effectively stimulate students' desire for knowledge, set up specific behavioral references for them, and thereby enhance their confidence that "I can do it too."

Teachers can encourage students to share their experiences of success and give everyone the opportunity to be role models. This can give the students being learned more confidence and the students sharing their experiences a sense of pride. When everyone helps and learns from each other, the whole class will progress and everyone will have more[5] confidence.

## 4.4 Family education and social support

The improvement of students' self-efficacy is inseparable from the role of family education and social support. The family, as the first classroom of a child's growth, plays a crucial role in shaping their self-perception. Parents' words and deeds can have a profound impact on their children's ability beliefs. Data shows that families filled with warmth and support can boost children's self-confidence by a quarter compared to those lacking care. It is evident that schools should actively build Bridges of communication between home and school, help parents master scientific parenting methods, and jointly create a favorable atmosphere[10] for students' growth.

Specifically, children can receive support from their parents in the following ways: Parents should pay attention to their children's emotional needs to provide emotional support, set reasonable expectations without making them too high or too low, encourage their children to think and solve problems independently to cultivate their autonomy, and affirm their children's efforts and progress positively instead of just focusing on the results. Also, social support should not be underestimated, as schools can work with communities, businesses and other institutions to create a wide range of learning and practical opportunities for students, such as volunteer work, internship programs, etc. These experiences help students broaden their horizons and improve their social adaptability and self-efficacy.

Schools can organize parent training and workshops to make parents aware of the meaning of self-efficacy and learn effective ways to help their children learn and grow. With the joint efforts of families, schools and society, a comprehensive supportive environment can be created for students, thereby enhancing their self-efficacy.

## 5. Conclusions

The importance of self-efficacy in educational achievement and how to effectively enhance students' self-efficacy are the subjects of this study. After literature review and empirical research, we found that self-efficacy has a significant impact on students' learning motivation, learning strategy choice, learning engagement, and academic performance, because students with strong learning motivation often have higher self-efficacy. They can use more effective learning strategies and devote more effort to learning, resulting in better academic performance.

There are four main strategies that enhance students' self-efficacy, namely teacher support and feedback, goal setting and self-regulation, peer support and role model, and family education and social support. Educators, parents, and all sectors of society need to work together to implement these strategies effectively. Teachers need to provide positive emotional support and effective feedback. It is also necessary to guide students to set reasonable learning goals and develop self-regulation abilities. At the same time, create opportunities for students to help each other and use the power of role models to stimulate learning motivation. Family and social support can provide students with a broader space for development and thereby comprehensively enhance self-efficacy.

The interaction of self-efficacy with other psychological factors and its differentiated performance in different subjects and educational stages are directions that future research can further explore, and more targeted intervention measures need to be developed and verified to meet the needs of different student groups. Overall, this study is of great theoretical and practical significance for understanding and enhancing students' educational achievements and can provide valuable references for educators to develop effective teaching strategies and interventions.

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