

# TEACHING STRATEGIES AND STUDENTS' ACADEMIC PERFORMANCE IN AGRICULTURE STUDIES: THE MEDIATING EFFECT OF TEACHERS' SELF-EFFICACY

## 教学策略与农学学生学习成绩:教师自我效能的中介作用

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DOI: <https://doi.org/10.35633/inmateh-68-76>

**Keywords:** *Motivational Strategies; Instructional Strategies; Self-Efficacy; Student Academic; Performance, Blended Learning*

### ABSTRACT

Recognizing the factors that stimulates the student's academic performance requires investigation of different learning strategies that influence teachers' self-efficacy. With the growing diversity of teaching methods, motivational and instructional strategies have gained significant attention, potentially leading educators to use them as the critical benchmark of superior student performance. The primary objective of this study was to analyze the impact of teaching strategies on the academic performance of the students, while considering the mediating role of teachers' self-efficacy. Data was collected from 260 students from different universities and colleges by using the convenience sampling method. The results of the study reveal that motivational and instructional strategies significantly affect the self-efficacy of teachers and the academic performance of students. Teacher self-efficacy mediates the relationship between instructional strategies, motivational strategies, and student academic performance.

### 摘要

要认识到激励学生学习成绩的影响因素就需要探究影响教师自我效能的不同学习方式。随着教学方法的日益多样化,动机和教学策略受到了极大的关注,可能导致教育学家将其作为优秀学生表现的关键基准。本研究的主要目的是在考虑教师自我效能的中介作用下,分析教学策略对学生学习成绩的影响。采用简单抽样的方法,对不同高校260名学生进行问卷调查。研究结果表明,动机与教学策略显著影响教师的自我效能与学生学习成绩。教师的自我效能在教学策略、动机策略和学生学业成绩之间起着中介作用。

### INTRODUCTION

In the 21<sup>st</sup> century, the increase of globalization and the technological advancements have inevitably made education the center of global development. In the current modern period, intense digital changes have led novel academic knowledge to manifold educational borders, emphasizing the need to exhibit superior academic results. Significantly, increasing requirements have inspired the world's pedagogical institutions to respond by innovation, and to promote the academic performance of the students (Seitzer & Windzio, 2022).

Today, the performance of the students has become the backbone of a global knowledge economy. In recent years, high educational competitiveness has meant students had to face considerable work stress (Jayasankara Reddy et al., 2018), which impacted their academic performance. Researches show that this increasing phenomenon has overwhelmed the world's educationalists, who bear the burden of poor student performance (Trigueros et al., 2020). Therefore, based on prior studies, it has become necessary for educationalists to identify the factors that foster the academic performance of the students in today's challenging environment.

In response to the increasing challenges of the 21<sup>st</sup> century, the academic performance of the students has gained the attention of researchers. Deterioration of student performance has made educationists to adopt

novel approaches to accelerate students' learning (Abdullah & Bhatti, 2018). Previously, several factors have led students to face difficulty in understanding complex contents. However, today's researchers have identified various drivers that influence students' performance (e.g., teachers' efficacy, teaching skills, and student motivation) (Abbasi et al., 2018). Surprisingly, among all the factors, teachers' self-belief plays a fundamental role in overcoming learning challenges, thereby reporting improved educational outcomes (C. Choi et al., 2019). This highlighted role of teachers' self-efficacy raises important questions regarding the performance of the students. Accordingly, this study incorporates the fundamental concept of teachers' self-efficacy, which requires instructors' immediate response and attention.

The teachers' self-efficacy persistently helps students to overcome academic difficulties, and it makes teachers believe in their students' educational success (Fong et al., 2019). Teacher's self-efficacy alludes to the instructors' belief in achieving fruitful learning outcomes (Bandura, 1977). This high self-efficacy encourages teachers to enhance their students learning activities, substantially increasing their performance effectiveness (Miller et al., 2017). Teachers' self-efficacy improves students' performance by adopting high-quality learning approaches. Teachers' inspired strategies are relevant for achieving learning goals (i.e., improved academic performance). Undoubtedly, instructors form the backbone of today's academic system and they play a key role in incorporating effective learning techniques, thus guiding the students in their learning process. Fundamentally, teaching is a far more difficult profession than it appears. Teachers may face difficulties in elevating students' interest in learning. Accordingly, previous research revealed that motivational practices critically enhance teachers' competence and students' academic performance (Mwonge et al., 2019). Instructors adopt motivational strategies to nurture student motivation (Barni et al., 2019). As such, motivational strategies potentially enhance the effectiveness of instructors' teaching and student performance (Johnson, 2017).

To shed light on the effectiveness of various strategies, instructional strategies have been identified as the most constructive development of the recent era. With the increase in technological advancement, today's students find it hard to regulate their learning process. As a result, teachers have introduced novel instructional programs and strategies, which help students to achieve their academic goals. Teachers' instructional strategies monitor, guide, and facilitate students' learning by positively influencing their academic performance. Moreover, instructional strategies equip students with the necessary learning competencies, assisting their academic progression. The previous knowledge demonstrates that instructional strategies are highly needed to develop specialized skills, influencing the students' learning performance (de Boer et al., 2018). Indeed, instructional strategies improve students' understanding (Obergruesser & Stoeger, 2020), stimulating positive learning outcomes.

Consequently, the current study analyzes different characteristics that influence teachers' efficiency and students' academic performance. Yet, this topic needs further investigation in the context of motivational and instructional factors (Khanshan & Yousefi, 2020). Concerning the prevailing gap in research, this paper illustrates the effect of teachers' self-efficacy in ensuring the development of institutional strategies, significantly influencing students' academic performance (Hettinger et al., 2021). Based on literature, it is imperative to investigate the role of teachers' self-efficacy in identifying students' needs to improve performance.

Decades of research have underscored the problem that prevented educationists from identifying the factors that strengthen the academic performance of students. However, identifying these factors enables teachers to address all the ambiguities concerning the performance of students. Potentially, achieving educational goals by using strategies leads to positive learning. Accordingly, this research overcomes the limitations in the previous literature by incorporating teachers' efficacy and student learning strategies in a single framework. This study objective is to highlight the factors that improve students' performance. Also, this study investigates the effect of motivational and instructional strategies on the academic performance of students in the context of teachers' self-efficacy. Understanding the impact of teachers' belief in producing positive educational outcomes is critically important for enhancing student performance. The current investigation addresses the literature gap by examining the mediating role of teachers' self-efficacy nexus to strategies (i.e., motivational and instructional) with students' academic performance.

Significantly, in the global educational system, educationists' direct teachers' attention toward achieving academic goals. A student's academic goals hold considerable value in promoting their academic performance. However, to achieve the learning objective, this study is a unique addition that highlights the factors that effectively contribute to student academic performance. It is noteworthy that prior studies have

considered this phenomenon using various constructs (e.g., student achievement, student satisfaction), but in this context, this study is a significant innovation that incorporates the student performance ideology from the perspective of teachers' self-efficacy. Teachers' self-beliefs inspire their strategic choices. This study highlights the teachers' self-efficacy as the directing tool for monitoring instructional and motivational practices. For this reason, this study is an important source to bridge the gap, ultimately leading to the achievement of superior learning outcomes.

Subsequently, the study findings serve as a meaningful guide for school authorities, administrators, educationists, researchers, and policymakers, thus advising them to embrace strategies to boost teachers' self-efficacy and student performance. The continuous use of learning strategies (i.e., motivational and instructional) significantly adds value to students' learning process. This study expects positive results to enhance educational activities. It makes educationists aware of the key strategies that may assist institutions in improving students' performance.

This study consists of six sections. The introduction highlights the research topic, objectives, and study significance. Then, the literature review empirically presents a theoretical framework for the proposed topic. After the hypothesis development in section 2, section 3 explains the research methodology. Similarly, section 4 demonstrates the analysis results, while section 5 illustrates the study findings concerning the previous literature. Lastly, section 6 concludes the study by suggesting future directions and outlining study limitations.

## **MATERIALS AND METHODS**

Increasing globalization has made the world's institutes regard education as the focal point of global activities. In today's world, technological advancements have encouraged institutes to illuminate the need for novel strategies that influence students' performance. Accordingly, section 2 provides a brief overview of the concepts that direct students to achieve superior learning outcomes. Fundamentally, the literature review examines the relationships between different variables. It presents the conceptual definitions of the following terminologies: Motivational Strategies (MS), Student Academic Performance (SAP), Teachers' Self-efficacy (TSE), and Instructional Strategies (IS). This section conceptually provides knowledge of these variables in a similar sequence.

### **Motivational Strategies and Student Academic Performance**

Over the years, the wide acceptance of technology has resulted in the development of the education system, requiring teachers to adopt interactive teaching methods. Today, education has become more than just the learning process, as student academic performance has elevated the concern of educationists. In emerging economies, teachers have adopted different techniques to enhance students' learning process. The literature shows that motivational strategies are vital in nurturing students' academic performance (*Lawrence & Hanitha, 2017*).

Therefore, in fostering learning activity, today's education system demands the need for innovative methods, materials, and strategies to boost the learning process. The motivational strategies encourage students to rigorously accomplish their academic goals in the learning activity. Literature shows that motivational strategies help students gain mastery in their learning (*Bal-Taştan et al., 2018*), potentially influencing the academic performance of the students. In particular, students' goal orientation is an essential construct that predicts student motivation. When a student aims to outperform others, motivational strategies help them gain mastery over challenging tasks. The motivational strategies work as the value belief that leads the students to achieve academic success. In explaining this notion, recent evidence shows that motivational strategies accelerate students' academic success (*Almalki, 2019*). Teachers' motivational strategies inspire the students to gain mastery over their goals, thus significantly improving their academic performance.

Undoubtedly, a student's motivation is a constant factor in individual academic achievement. Students with high motivation perform well in their studies. The teachers' counseling and guidance boost students' motivation, improving their academic performance. In explaining this notion, one study states that in student learning, motivational strategies significantly predict the student's positive academic results (e.g., performance and achievement) (*Hariri et al., 2021*). Motivational strategies inspire students to improve their academic performance (*Sivrikaya, 2019*).

Motivation is an essential element that enables students to sustain themselves in the fast-growing learning environment. However, in this regard, teachers play a significant role in establishing an environment where students are motivated to learn. Indeed, teachers adopt different methods to inspire their students. The teachers' motivational orientation emphasizes adopting strategies that support student learning.

The learning strategies adopted by teachers intrinsically boost students' goals, motivation, and academic performance (Kokkinos & Voulgaridou, 2018). Hence, based on the literature, this paper suggests the following hypothesis:

H1: Motivational Strategies positively and significantly impact student academic performance.

### **Motivational Strategies and Teacher Self-Efficacy**

Significantly, in recent years, various scholars have increasingly directed the pedagogue's attention towards the role of teachers' self-efficacy. This particular focus involves teachers adopting different motivational approaches for structuring the students' learning activities. As pedagogical activities demand superior academic results, higher education has raised the need for adopting novel teaching strategies to enhance the students' learning process. However, today's educationist has prioritized teachers' self-efficacy to increase the effectiveness of the learning strategies. The studies supporting this notion state that increasing self-confidence motivates teachers to direct their teaching process by adopting constructive approaches (Barni et al., 2019). Teachers' self-efficacy drives the educational goals by effectively handling the learning activities. The study states that teachers' motivational perception induces their self-belief in teaching materials, thus forming a significant relationship between teachers' self-efficacy and motivational strategies (Alexander, 2020).

An active learning classroom demands the active participation of the students and the instructor. However, today, many students find it difficult to motivate themselves. In such situations, motivational strategies creating an active learning environment drive the teachers' self-beliefs to assist the students' learning (Heyder et al., 2020). The motivational strategies boost the teachers' confidence. One study states that teachers' self-efficacy is the salient motivational feature that elevates their beliefs in the teaching method (Burić & Kim, 2019). In particular, teachers are individuals who are responsible for regulating the classroom environment. In the classroom setting, teachers' self-efficacy elevates the need for adopting motivational teaching behaviors to improve the students' learning outcomes. The teachers' self-efficacy is the most adopted motivational characteristic that accelerates students' motivation. This educator's perception motivates the students to elevate their performance in different coursework. It stabilizes the student education programs that make learning meaningful (Burić & Kim, 2019).

Consequently, teachers need to adopt different motivational strategies to boost their confidence in teaching methods. The literature confirming this notion undoubtedly theorizes a positive relationship between motivational strategies and teachers' self-efficacy. This paper thereby suggests the following hypothesis:

H2: Motivational Strategies have a positive and significant impact on teacher self-efficacy.

### **Instructional Strategies and Student Academic Performance**

Instructional strategies are the form of procedural knowledge that guides the students in their learning process. It is a profound method of synthesizing knowledge, thus achieving the learning goals. The instructional strategies enable the students to become active learners. Students need guidance in planning their academic activities. In particular, the teachers' designed instructional strategies enhance the individuals' learning experience. In explaining this notion, one study states that the instructional strategies improve the students' performance, thereby leading to them recording a high score in their course evaluation (Chutinan et al., 2018).

Significantly, the instructional strategies help the students to improve their learning outcomes. The learning tactics enhance the performance by profoundly improving the quality of the students' education. One study explains that the instructional strategies foster the students' pedagogical skills, thus enhancing the students learning performance (Matcha et al., 2019). In particular, the instructional strategies greatly emphasize the individuals' quality of teaching. Effective learning strategies nurture the students' learning process, thus contributing to their professional development. The literature implies that the teaching strategies support the individual's learning process, thus improving the students' academic performance (Inyang, 2019).

Indeed, the instructional strategies yield the highest impact on students' learning. The instructional strategies are a good way of structuring the students' learning experience (Cheng et al., 2019). The instructional method inevitably improves the students' competency by prescribing students with the best procedure to complete the work task. One study indicates that teachers use instructional strategies to address the students' difficulties concerning their work tasks (Timothy et al., 2018). Indeed, these studies conclude that strategy instructions significantly affect the student learning process. Therefore, this study proposes the following hypothesis:

H3: Instructional strategies positively and significantly impact student academic performance.

### **Instructional Strategies and Teacher Self-Efficacy**

Today's education demands adopting strategies for achieving fruitful academic results. In this regard, teachers proposed instructional strategies make the learning process effective. Instructional strategies enable teachers to organize their learning materials, ideas, and curriculum according to students' needs. It fosters the teaching process by making teachers believe in their teaching methods. One study states that teacher-guiding programs significantly influence self-efficacy (*Khanshan & Yousefi, 2020*). The teacher's self-belief supports the instructional practices (*Poulou et al., 2019*), substantially encouraging students' autonomy in accomplishing the task (*Miller et al., 2017*).

Undoubtedly, teachers use different instructional strategies for attaining educational goals. The instructional practices enhance the teachers' skills and capabilities, thus making them believe in the teaching methods. One study states that instructional strategies improve teachers' professional skills by adopting constructive learning materials (e.g., videos, notes, and projects) (*Yang, 2017*). Hence, due to the increasing benefit of instructional strategies, today's education system has been motivated to adopt effective instructional strategies to boost teachers' self-efficacy (*Poulou et al., 2019*). In the educational setting, teaching strategies have operationalized the teaching methods to influence students' learning. The instructional tactics enable the teachers to feel confident about their abilities, skills, and teaching methods. Based on this statement, the research shows that learning methods and techniques favor student learning by significantly fostering teachers' self-efficacy (*Mahasneh & Alwan, 2018*).

Therefore, instructional practices are an effective way of supporting the learning objective and teachers' efficacy. The modeling of target strategies makes teachers succeed in their efforts, potentially improving their self-efficacy. Teachers' instructional policies enable them to manage the classroom environment by overcoming the educational challenges influencing effective learning. Accordingly, by highlighting the differentiation role of instructional practices, the literature reports that constructive instructional approaches make teachers believe that their teaching holds paramount significance in regulating classroom learning activities (*Suprayogi et al., 2017*). Indeed, the literature indicated that deploying instructional strategies improves the teachers' self-efficacy. Hence, based on the previous research, this study proposes the following hypothesis:

H4: Instructional Strategies have a positive and significant impact on teacher self-efficacy.

### **Teacher Self-Efficacy and Student Academic Performance**

Over the years, excessive student failure has emerged as a vital concern to educationists, who have demanded an urgent need to improve students' learning performance. Results have shown that in order to reach the learning standards, students' performance needs to be improved (*Ingersoll et al., 2018*). However, this challenge to enhance students' performance continues to appear at all educational levels. The research reveals that teachers' efficacy plays a significant role in reciprocating these emerging challenges, thereby countering students' low academic performance (*Mosoge et al., 2018*). Students demand a higher sense of self-efficacy for outperforming in the international market. Indeed, teachers holding a high level of self-belief view their students' failure as a temporary setback, persistently influencing the need for improving the learner's academic performance.

Undoubtedly, self-efficacy significantly relates to the individual's ability to improve academic performance. The teachers' self-efficacy boosts the students' interest in learning activities, thus promoting improved academic results. In this regard, teachers' self-efficacy significantly strengthens students' learning abilities, eventually influencing their academic performance. Students' performance goals depend on the teacher's characteristics. Teachers' self-efficacy encourages the students to achieve the classroom objectives. The literature states that in the classroom environment, the teachers providing adequate teaching resources encourage students to gain academic outcomes (e.g., improved performance) (*Laniga-Wijnen et al., 2018*). Accordingly, the research shows that teachers' self-confidence inspires students to achieve their goals (*Yerdelen & Sungur, 2019*).

Significantly, teachers hold a central position in the educational network, potentially improving learners' academic performance. The instructors' self-efficacy fosters the students' academic performance by directing their attention toward goal attainment. Undoubtedly, the role of teachers' self-efficacy has intrigued researchers and scholars, leading them to focus on the effectiveness of teachers' self-belief in encountering difficulties in improving school performance. In explaining this notion, the research states that the teachers' self-perception assists the students learning process, thereby motivating them to improve their academic performance (*Ghaffar et al., 2019*). In recent years, teachers' self-efficacy has emerged as a growing topic that has gained

the attention of today's practitioners in enhancing the students' performance (Mok & Moore, 2019; Sarfraz, et al., 2022a). The teacher's self-efficacy makes students effectively perform their tasks (Perera et al., 2019). As indicated by the literature, the previous research states that teaching self-efficacy is the prime driver influencing the students' learning process (Jabeen & Iqbal Khan, 2022; Sarfraz et al., 2022b). Indeed, the studies showed that teachers' self-efficacy had gained significant importance in the education sector, thus influencing the students' academic performance. Therefore, based on the prior literature review, this study proposes the following hypothesis:

H5: Teacher Self-Efficacy positively and significantly impacts students' academic performance.

### **The Mediating Role of Teachers' Self-Efficacy**

Motivation is a critical factor that drives individual academic activities. It makes the students feel attached to the learning task without losing interest and enthusiasm. This phenomenon makes the educationist understand that motivation comes from effective teaching practices. Through this phenomenon, various studies have explained the role of teachers' self-efficacy in influencing learners' educational performance. In this regard, one study states that teachers' motivational belief regulates student learning, thereby contributing to their academic development (Durksen et al., 2017). The research on the teachers' efficacy shows a strong positive correlation between motivational strategies, instructors' self-belief, and students' academic performance (Karimi & Nikbakht, 2019).

Arguably, students mostly attend those classes that motivate them to participate in classroom activities. Motivation is a profound concept that needs sustainability in students' academic life. Significantly, teachers are the individuals who care about developing an interactive classroom environment. They intend to adopt different motivational strategies to boost the students' learning process. The research states that effective teachers' understanding makes the learning activity meaningful for students (Bal-Taştan et al., 2018). Teachers' motivational perception is an essential factor that allows them to develop motivational strategies for accelerating students' learning activities. Teachers' self-efficacy motivates the students to learn better, substantially inducing better academic outcomes. In explaining this notion, one study reveals that teachers' self-belief and motivational strategy significantly influence educational outcomes (e.g., student performance and achievement) (Karimi & Nikbakht, 2019). Teachers' motivational strategies play a paramount role in influencing student performance. It makes the teacher realize their responsibility regarding the students' learning, thereby increasing their teaching confidence. One study highlights the importance of motivational regulation to empower the teachers' confidence in the teaching materials (Zhang & Liu, 2019).

Similarly, this relation is also encouraged in another study. It shows that teachers' self-efficacy encourages them to adopt novel motivational tools to accelerate student learning performance (Bal-Taştan et al., 2018). It is a fact that teachers' efficacy influences the teachers' choice of strategies, thus influencing superior academic performance. Accordingly, to explain this phenomenon, the research states that the teachers' motivational approaches support an environment that boosts their confidence in learning outcomes (i.e., student achievement and performance) (Rawahi et al., 2019). Therefore, the literature concludes that the teachers' motivational strategies facilitate the students' academic activities, which is critical to influencing their learning outcomes.

Indeed, the teachers' self-perception strongly influences the students' performance. However, in recent years, establishing a belief system that enhances the teachers' strategies (e.g., motivational and instructional) has become significant for today's educationists. Student-centered approaches, methodologies, and techniques foster their competence to perform in academics. The teachers' self-belief makes students select courses, activities, and assignments that shape their efforts in recording high academic results. Therefore, the literature shows that teachers' self-efficacy is a profound construct that enhances students' learning needs (Laniga-Wijnen et al., 2018). Notably, instructors' self-efficacy has emerged as a meaningful way of influencing students' learning performance. Overall, education is a significant component that empowers learners to gain knowledge. In gaining educational goals, teachers are the focal figure that inspires students to achieve academic standards. Teachers' high teaching competency fosters students' learning activities. In explaining this notion, the research shows that conducive instructional practices elevate the teachers' self-efficacy, capabilities, and skills, potentially leaving a positive impact on student performance (Poulou et al., 2019). For example, study states that instructional strategies help teachers guide and maintain course activities (Hurlbut, 2018). The teachers' self-efficacy supports a positive learning environment where high-quality instructions increase the effectiveness of the teaching medium. The instructional strategies make complex concepts look easier, thus providing the students with a clear understanding.

Based on this statement, the study indicates that teachers' self-efficacy elevates the need for guiding strategies, influencing the student's academic performance (*Hayat et al., 2020*). In particular, student performance regulated by the instructional strategies should bring positive academic results (e.g., improved student performance). The teachers' self-belief increases the readiness for the instructional strategies, thus improving the quality of the student outcome (*Khanshan & Yousefi, 2020*). Therefore, based on the presented literature, this study proposes the following hypotheses:

H5(a): Teacher Self-Efficacy mediates the relationship between motivational strategies and student academic performance

H5(b): Teacher Self-Efficacy mediates the relationship between instructional strategies and student academic performance

The study proposed hypothesis, direct and indirect relationship among variables is presented in Figure 1.

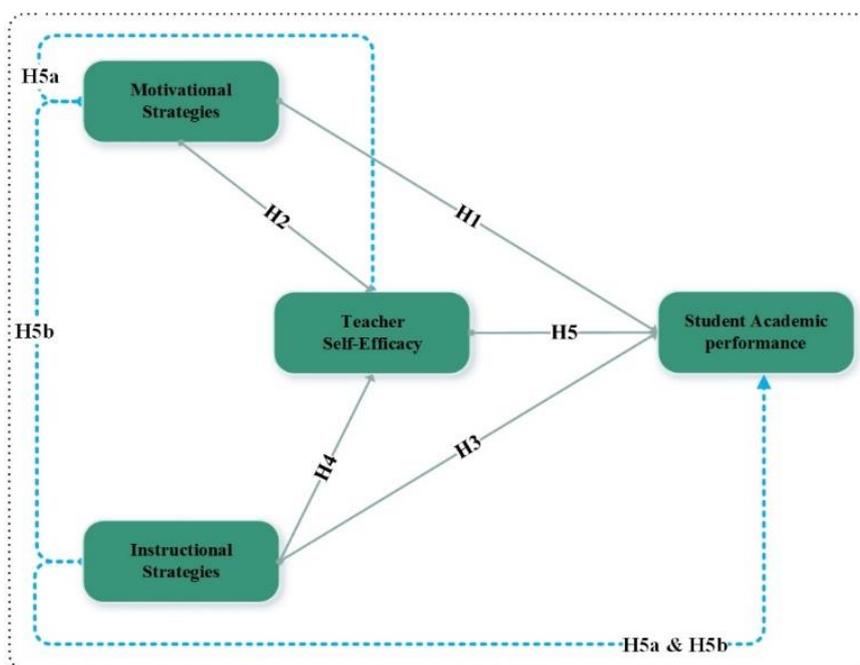


Fig. 1 – Conceptual Model

## Research Methodology

The aim of this study was to check the impact of motivational and instructional strategies on students' academic performance during the COVID-19 pandemic. Data was collected from the teachers of higher educational institutes in China. In this study, we have adopted a convenience sampling technique and informed consent was obtained from all participants. A total of 330 questionnaires were distributed to the teachers, between November 2021 to December 2011, but 260 questionnaires were selected for the data analysis. The response rate of the respondents was 78% in this study. Structural equation modeling and a statistical software package for the social sciences (SPSS) were used to test the proposed relationship. We also have checked the common method bias using Harman's single-factor approach. There is no common method bias in this study because the variance extracted by one single factor is 11.843%, less than 50% (*Podsakoff et al., 2003*).

Motivational Strategies were measured on the 4-item scale, while Instructional Strategies were assessed on the 7-items scale adopted from the study of *Nie et al. (2012)*. The sample items include "I make a special effort to give my students creative and imaginative work" and "I give the pupils feedback on their exams or tests." In this study, we have measured Teacher Self-Efficacy on the 5-item scale adopted from *Lazarides & Schiefele (2021)*. The sample items include "Respond to difficult questions from your students" and "Implement alternative strategies of knowledge transfer in your classroom." The dependent variable (student academic performance) was assessed on the nine-items scale based on the study of *DuPaul et al. (1991)*. The sample items include "Estimate the percentage of written language arts work completed (regardless of accuracy) relative to classmates" and "How frequently does the student accurately follow teacher instructions and/or class discussion during large-group (e.g., whole class) instruction?"

## RESULTS

We analyzed the data of 260 participants. Table 1 shows the reliability and validity values of motivational strategies, instructional strategies, teachers' self-efficacy, and student academic performance. All items' factor loading value was higher than 0.6, as suggested by *Hair (2010)*. SAP\_7 has the lowest factor loading value of 0.669, while SAP\_11 has the highest factor loading value of 0.872. *Nunnally et al. (1978)* suggested that the average variance extracted value (AVE) should be higher than 0.5. In this study, all the variables' AVE value was higher than 0.5.

Figure 2 shows the graphical representations of the Measurement Model. The latent constructs were shown in circle shapes, while the items were shown in rectangle shapes.

Table 1

### Reliability & Validity Analysis

Construct	Items	Loading	$\alpha$	CR	AVE
Motivational Strategies	MS_1	0.787	0.877	0.877	0.640
	MS_2	0.812			
	MS_3	0.804			
	MS_4	0.796			
Instructional Strategies	IS_1	0.726	0.920	0.919	0.620
	IS_2	0.774			
	IS_3	0.840			
	IS_4	0.757			
	IS_5	0.817			
	IS_6	0.781			
	IS_7	0.810			
Teacher Self-Efficacy	TSE_1	0.752	0.890	0.890	0.618
	TSE_2	0.819			
	TSE_3	0.834			
	TSE_4	0.723			
	TSE_5	0.796			
Student Academic Performance	SAP_1	0.824	0.952	0.952	0.643
	SAP_10	0.803			
	SAP_11	0.872			
	SAP_2	0.852			
	SAP_3	0.736			
	SAP_4	0.787			
	SAP_5	0.763			
	SAP_6	0.850			
	SAP_7	0.669			
	SAP_8	0.781			
SAP_9	0.863				

Table 2 shows the value of discriminant validity analysis by using Fornel Larcker & HTMT. The values of the latent constructs were below 0.9 (*Henseler et al., 2015*). Thus, it demonstrates that each latent construct measurement was completely discriminatory concerning one another.

Table 2

### Discriminant Validity Analysis (Fornel Larcker & HTMT)

Constructs	1	2	3	4
1. Instructional Strategies	<b>0.787</b>	0.486	0.553	0.530
2. Motivational Strategies	0.487	<b>0.800</b>	0.534	0.496
3. Student Academic Performance	0.555	0.535	<b>0.802</b>	0.514
4. Teacher Self-Efficacy	0.530	0.497	0.517	<b>0.786</b>

Table 3

HYPOTHESES TESTING					
Hypothesis		Beta	SE	T-Value	P-Value
H1	MS → SAP	0.279	0.066	4.227	***
H2	MS → TSE	0.313	0.077	4.09	***
H3	IS → SAP	0.304	0.07	4.365	***
H4	IS → TSE	0.378	0.077	4.927	***
H5	TSE → SAP	0.217	0.069	3.131	**

\*\* $p < 0.01$ , \*\*\* $p < 0.001$

Each of the proposed direct effect paths had a p-value below the accepted threshold of 0.05; they were all determined to be statistically significant. Table 3 describes those motivational strategies has significant relationship with student academic performance ( $\beta = 0.279$ ,  $p < 0.05$ ). H2 states motivational strategies ( $\beta = 0.313$ ,  $p < 0.05$ ) has a significant and positive impact on teacher’s self-efficacy. Instructional Strategies has positive and significant impact on student academic performance ( $\beta = 0.304$ ,  $p < 0.05$ ) and teacher self-efficacy ( $\beta = 0.378$ ,  $p < 0.05$ ). So, hypotheses H3 and H4 were accepted. H5, which states that teacher self-efficacy has a positive and significant impact on student academic performance, was accepted in this study ( $\beta = 0.217$ ,  $p < 0.05$ ).

Table 4

Mediation Effect Hypotheses Testing					
Hypothesis		Beta	SE	T-Value	P-Value
H5(a)	MS → TSE → SAP	0.068	0.029	2.333	*
H5(b)	IS → TSE → SAP	0.082	0.036	2.293	*

\*Indicates significant paths: \* $p < 0.05$

Table 4 shows the results of the mediation analysis. Hypothesis H5(a) states teacher self-efficacy mediates the relationship between motivational strategies and student academic performance. The hypothesis H5(a) was accepted at the ( $\beta = 0.068$ ,  $p < 0.05$ ). H5(b) states teacher self-efficacy mediates the relationship between instructional strategies and student academic performance. The H5(b) was accepted at the ( $\beta = 0.082$ ,  $p < 0.05$ ). Figure 3 shows the results of structural equation modeling.

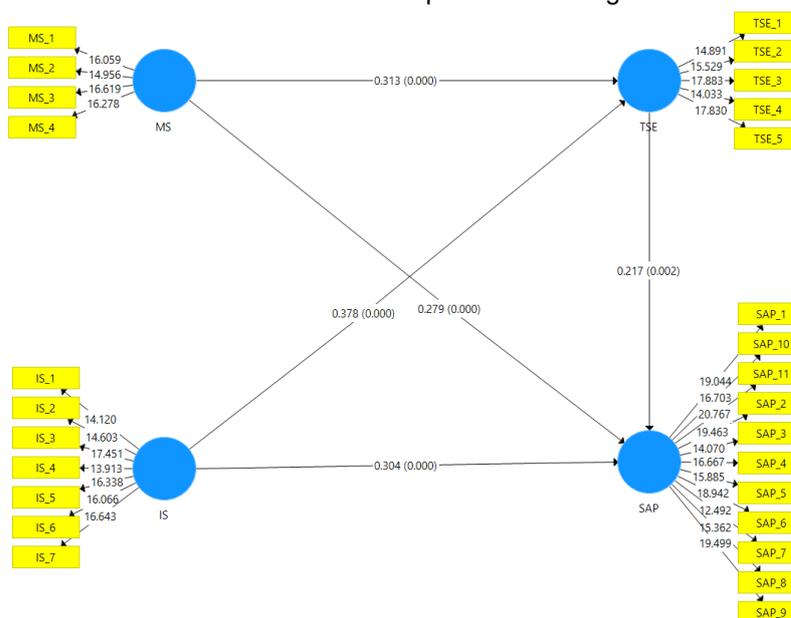


Fig. 2 – Results of Structural Model

**Discussion**

Education is an activity that demands mastery over the learning activity. Teaching is an activity that involves undertaking knowledge, skills, and models that helps the learners understand and evaluate academic matters. Increasing teachers’ self-efficacy fosters their teaching capacity to ensure high-quality learning performances. Indeed, the teachers’ self-confidence is a vital construct that influences students’ academic outcomes. In this view, this study intends investigated different interdependences that help educators boost students’ academic performances. In particular, to analyze the research outcomes, section 5 aims to compare

the study results with the previous findings. This section sheds light on different conceptions that present the teachers' self-efficacy to play a significant role in predicting the students' performance.

In education, the quality of education is only not determined by the teaching skills but also by the motivation that aids student learning. Students cannot perform solely without the support of teachers. One study shows that in enhancing students' performance, the teachers' motivational strategies play an essential role in developing and improving the students' course performance (Tokan & Imakulata, 2019). Among the array of motivational constructs, the teachers' self-efficacy is the strongest predictor of student academic results. Academic self-efficacy makes teachers devise effective instructional practices that enhance student outcomes. Teachers boost students' motivation by providing necessary learning materials that help them outperform others. The teaching guidance and personal characteristics help the students to believe in themselves, which is crucial for accelerating their academic success (Ghaffar et al., 2019). Indeed, referring to these studies, our study also showed similar results. Hence, considering this fact, we have accepted H1 and H2.

In recent years, instructional learning strategies have gained significant research attention in education. In particular, learning strategies are the most significant way of acquiring knowledge and skills. They inspire and encourage the students to participate in the learning activity, thus bringing positive academic outcomes. Today, instructional strategies are the most beneficial instruments for determining students' academic performance. One study states that instructional strategies help the teachers implement effective supporting techniques (Mahasneh & Alwan, 2018), thus improving students' academic performance. At present, the advantages of these tactics have considerably influenced students' learning process. It has made learning meaningful for students, potentially leading to superior academic results. Hence, to achieve the goal of the teaching-learning process, instructional strategies help teachers gain mastery over the learning process. The teaching strategies boost the teachers' morale, thus ensuring the delivery of high-quality teaching to the students (Poulou et al., 2019). Today's learning system emphasizes adopting effective learning methods that enable teachers to confidently become active players in the students' learning process (Choi et al., 2019). Hence, based on this view, our research findings also support and accept the previous literature (i.e., H3 and H4).

Undoubtedly, teachers are the prime executors of teaching functions. In recent years, researchers have proposed that teachers' self-efficacy plays a fundamental role in accelerating students' academic performance. Generally, teachers are the individuals who are responsible for enhancing the students' learning expectations, which, in turn, produces improved academic results. The teachers' self-efficacy motivates the students to achieve a superior performance level. It makes them effectively control their cognition and learning process, thus directly affecting students' goals, inspirations, and performance. In explaining this notion, one study states that teachers' self-efficacy perception affects student learning orientation and performance (Yerdelen & Sungur, 2019). Also, the teachers' self-efficacy supports the implementation of active learning strategies (e.g., motivational and instructional) that influence the students' academic goals and performance. The success of the teaching capabilities increases the teachers' self-perception and confidence in their professional abilities. In this regard, numerous studies have illuminated the role of teachers' self-efficacy in generating and implementing new teaching methods, designs, and strategies for obtaining better students' grades (Hayat et al., 2020). The study states that learning strategies are essential for educators to increase students' academic results (Ghaffar et al., 2019).

In particular, the prior results show a positive relationship between the teachers' efficacy and learning and motivational strategies. Similarly, our study results indicate that motivational and instructional strategies have emerged as a fundamental component in improving students' performance. Hence, in line with the prior evidence, our study results accept and support the previous findings, thus confirming the relationship proposed in H5 and H6. Consequently, our study shows positive and consistent results, thus confirming and verifying all the assumptions made in the previous literature.

## CONCLUSIONS

In today's modern era, the continuous technological shift has provided opportunities for global institutions to combat emerging educational challenges. In particular, the extended educational changes have called on worldwide educational institutions to express themselves by devising strategies that drive students' performance. Accordingly, the knowledge-based society demands the need to improve students' performance, specifically related to increasing teachers' self-efficacy. As a result, the world's education institutes benefit by

adopting novel educational strategies (i.e., motivational and instructional) that direct the instructors' attention toward achieving the academic goal.

In particular, teachers' role in learning has recently gained substantial research attention. Teachers strongly contribute to student motivation by devising learning strategies to foster student academic performance. Significantly, teachers' self-efficacy is relevant to students achieving learning goals with the help of planned learning strategies. Hence, this study highlights the relevance of teachers' self-efficacy and student academic performance in the context of motivational and instructional strategies. The literature confirmed that teachers' self-efficacy improves students' learning outcomes.

The study findings suggest that teachers' self-efficacy significantly mediates the relationship between motivational and instructional strategies and student academic performance. The study produced systematic and enduring positive results. The developing effect of educational strategies (i.e., motivation and instruction) is known to have a prolonged impact on effective student performance. However, the literature findings from previous studies confirm a positive and significant relationship between the variables. Additionally, this study posits that these findings provide relevant guidance for future researchers, scholars, institutions, policymakers, and knowledge members (e.g., teachers, students, and administration), directing their attention toward students' academic performance.

## ACKNOWLEDGEMENT

This study is supported by the Scientific Research Start-up Fund of Zhejiang Shuren University, PR China (KXJ0122604).

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