INNOVATIVE PRACTICE AND ACHIEVEMENT GROWTH PERFORMANCE OF UNDERGRADUATES AT LOCAL UNIVERSITIES IN JIANGXI CHINA FROM THE PERSPECTIVE OF NEW PRODUCTIVE FORCES: THE MEDIATING ROLE OF TEACHER INFLUENCE

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Abstract:

The present study investigates the relationship between innovation practice (IP) and achievement growth performance (AGP) among undergraduates at local universities in Jiangxi, China. The investigation focuses on the mediating role of teacher influence (TI). When viewed through the lens of new quality productive forces (NQPF), the necessity to cultivate new quality laborers (NQL) is evident, and this can be achieved by enhancing undergraduates' innovation capabilities, which are significantly fostered through extensive innovation practice. Nevertheless, concerns continue to be voiced regarding the participation, rationality, and effectiveness of current innovation practices within universities, which may potentially hinder students' comprehensive development. This quantitative study employed a stratified random questionnaire to collect data from undergraduates at local universities in Jiangxi. The study drew upon achievement motivation theory (AMT), social cognitive theory (SCT), and self-determination theory (SDT). The data was subsequently subjected to analysis using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings shows that the relationship between students' innovation practices and achievement growth performance is complex, and that teachers' influence plays a significant mediating role in this relationship. The objective of this research is to provide valuable insights for guiding effective student involvement in innovation practice, thereby enhancing their innovation capabilities and promoting their proactive and holistic development. Ultimately, this will contribute to the cultivation of new quality laborers for national development from local universities such as in Jiangxi.

Keywords: Achievement Growth Performance, Innovative Practice, New Productive Forces, Teacher Influence, Undergraduates of Local Universities.

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1. Introduction

In the context of contemporary China's economic and social development, "new quality productivity" has become a key strategic imperative, emphasizing innovation, advanced technology, and sustainable development (Chuanli & Yangyang, 2025). This national vision requires a highly skilled and innovative workforce, and therefore the demand for "new quality laborers" is urgent (Wang, 2023). In this context, higher education institutions, especially local universities in provinces such as Jiangxi, play a key role in cultivating the talent needed to drive this transformation (Wang et al., 2025). The purpose of higher education, including in China, is closely related to promoting the proactive and comprehensive development of undergraduates (Zhang et al., 2024), a process often assessed through their "achievement growth performance" (Cheng et al., 2021). This goal is highly consistent with the requirements of "new quality productivity" because both emphasize the importance of cultivating students' innovative capabilities (Kroeber, 2024).

Cultivating innovative capabilities is more than just an academic activity, it requires students to actively engage in innovative practices (IPs), and Zhang (2024) points out that innovative practices (such as experiential learning, collaborative projects, and technology integration, etc.) play a significant role in cultivating college students' innovation capabilities and encouraging their active participation(Zhang, 2024). These practices provide undergraduates with valuable practical experience, foster problem-solving skills, and offer a crucial platform for creative expression and knowledge application (Zhang, 2024). However, the effectiveness of these innovative practices is not inherent, it is deeply influenced by faculty guidance and intervention. Without appropriate faculty influence (TI), the potential impact of innovative practices on student academic growth and performance may remain suboptimal (Boden, 2019). Observations from local universities in Jiangxi Province suggest that despite efforts to encourage innovation, persistent challenges remain regarding the extent and quality of undergraduate student engagement, the legitimacy of such engagement, and the overall effectiveness of these practices, sometimes hindering their comprehensive development (Aacsb, 2023). Understanding the complex interplay between innovative practices, faculty influence, and student performance is therefore crucial for cultivating the next generation of a new, highly qualified workforce in Jiangxi Province, and is crucial for the development of new higher education in other local universities and globally, and Boden et al (2019) all point the synergy and comprehensive effectiveness of teacher-student interaction, practical innovation, and experiential training are the core issues for building a new type of productive force talent team and promoting the upgrading of higher education reform (Aacsb, 2023; Boden, 2019; Zhang, 2024).

The present study has been designed with the specific aim of addressing the challenges identified in the context of undergraduate innovation practice within local universities in Jiangxi, China. The challenges in question include insufficient student participation, irrational engagement, and suboptimal

effectiveness, which have the potential to negatively impact students' holistic development. The primary objectives of this research are therefore to guide active and effective participation in innovation practice by elucidating the underlying mechanisms and the role of teacher influence. This will be achieved by informing strategies that encourage more meaningful and impactful student engagement in innovation activities within Jiangxi's higher education system. Moreover, the objective of the present study is to ascertain the manner in which innovation practice, particularly when efficaciously supported by teacher influence, can result in a substantial enhancement in undergraduates' innovative capabilities, thereby rendering them more competitive in the evolving job market. The objective of the present study is to make a meaningful contribution to the comprehensive growth of students in Jiangxi. This will be achieved by preparing them not only academically, but also as well-rounded individuals. The latter will be equipped to contribute actively to society and meet the demands of new quality productive forces as new quality laborers.

This study employs rigorous quantitative research methods to systematically explore the relationships between key variables within the specific context of local universities in Jiangxi Province. The theoretical framework underpinning the study is anchored in three major psychological theories: the first being achievement motivation theory (AMT), which elucidates individuals' propensity for success and the concomitant behaviors(Atkinson & Feather, 1966); the second is social cognitive theory (SCT), which accentuates the role of observational learning, self-efficacy, and social influence(Bandura, 1986); and the third is self-determination theory, which focuses on intrinsic motivation and the fulfilment of fundamental psychological needs such as autonomy, competence, and interpersonal connection(Ryan & Deci, 2000).. The data will be collected using a stratified randomized questionnaire, which will be administered to undergraduate students from local universities across Jiangxi Province (Investopedia, 2025). This sampling method ensures that the data are representative of the target population within the designated geographic area. (Elfil & Negida, 2017). The collected data will be analyzed using partial least squares structural equation modelling (PLS-SEM). PLS-SEM is a robust statistical technique that has been demonstrated to be suitable for complex models involving latent variables., particularly when the research objective is prediction and theory development, specifically regarding the various constructs and their measurement indicators. This method is particularly well-suited for theory development and prediction, consistent with the explanatory objectives of the study(Hair et al., 2016)..

This study is of particular theoretical and practical significance, especially in relation to Jiangxi Province's educational landscape and its contributions to national and global development. Theoretically, it integrates achievement motivation theory, social cognitive theory, and self-determination theory into a comprehensive framework, thereby enriching the understanding of student innovation and development within a regional context. By focusing on "new quality productivity forces (NQPF)," it offers an innovative perspective on higher education's role in regional and national development. The present study examines the mediating role of teachers` influence (TI) between

innovation practice (IP) and achievement growth performance (AGP), thus providing insights into educational interventions that promote student outcomes.

The present study is guided by stakeholder theory and offers suggestions for various stakeholders in Jiangxi's undergraduate education. The program is designed to facilitate student participation in innovative practices, with the objective of enhancing their capabilities and academic performance. The study emphasizes the pivotal function of educators in fostering student innovation and puts forward a proposal for the enhancement of pedagogical approaches. The study emphasizes the importance of family and societal involvement in student cultivation, acknowledging that development occurs beyond the confines of the campus. The study provides empirical evidence to assist administrators in optimizing management systems that support innovative practices. Furthermore, it informs provincial policymakers of the importance of aligning higher education policies with innovation goals. It is important to note that this initiative aligns with Jiangxi's strategic focus on cultivating " New Quality Laborers (NQL)" by enhancing the innovation capabilities of undergraduates, thereby contributing to the broader national agenda of developing a skilled workforce. The ultimate objective of this study is to enhance the quality of education in Jiangxi, thereby ensuring that graduates are equipped with the necessary skills to meet future challenges.

1.1 Research Questions and Objectives

This study intends to exam the following questions:

Q1: Does Innovation Practice impact on Achievement Growth Performance among undergraduate students at local university in Jiangxi China?

Q2: Does Teachers` Influence impact on Achievement Growth Performance among undergraduate students at local university in Jiangxi China?

Q3: Does Teachers' Influence mediate the impact between Innovation Practice and Achievement Growth Performance among Undergraduate Students at local university in Jiangxi China?

And this study aims to achieve the following objectives:

RO1.To examine the impact of Innovation Practice on Achievement Growth Performance among Undergraduate Students at local university in Jiangxi China.

RO2. To determine the impact of Innovation Practice on Teachers` Influence among undergraduate students at local university in Jiangxi China?

RO3. To determine the mediating impact of Teachers' Influence between Innovation Practice and Achievement Growth Performance among Undergraduate Students at local university in Jiangxi China?

2. Literature Review

As a core strategic direction for China's contemporary development, new productivity emphasizes innovation, advanced technology, and sustainable development as driving forces. It represents a shift from the traditional production model reliant on high resource consumption and low-cost labor to a new type of productivity driven by scientific and technological breakthroughs, industrial upgrading, and the deep integration of digital technologies with the real economy. The introduction of this concept embodies the fundamental path to promoting high-quality economic development and building a modern socialist country. The concept of new productivity has been proposed and promoted since recent years, and has been systematically expounded upon in numerous important speeches by General Secretary Xi Jinping and at the Central Economic Work Conference. In December 2023, the Central Economic Work Conference formally proposed for the first time the need to "drive industrial innovation through scientific and technological innovation, particularly by using disruptive and cutting-edge technologies to generate new industries, new models, and new drivers, and to develop new productivity"(Lv, 2024).New productivity has three key characteristics: high-tech content, high efficiency, and high quality. Compared to traditional productivity, it not only has higher technical barriers and greater growth potential, but also places a greater emphasis on innovation-driven development and the development of strategic emerging and future industries. These industries, which integrate disruptive and cutting-edge technologies, are key vehicles for the formation and development of new productivity. The development of new-quality productivity relies not only on the cultivation of scientific and technological talent and the stimulation of innovation, but also on sound institutional and market mechanisms, such as the integration of industry, academia, research, and application, the development of key laboratories, and mechanisms that tolerate innovation failure.(Zhao, 2023)In terms of research trends, current academic and policy research focuses on how to promote the sustained growth of new-quality productivity through the development of innovation systems, the transfer of technology R&D, and the reform of talent development mechanisms. At the same time, research is also beginning to explore its role in enhancing regional economic competitiveness and strengthening international influence. Furthermore, the impact of new-quality productivity on education is gaining increasing attention. Higher education, especially local universities, shoulders the mission of cultivating high-quality innovative talent and has become a crucial support force for the development of new-quality productivity. Research focuses on how universities can deepen innovation and entrepreneurship education reforms, strengthen industry-university integration, and improve the quality of talent development, striving to provide solid talent and intellectual support for new-quality productivity(The Editorial Department of, 2024).In short, the emergence of new-quality productivity marks a new stage in China's economic and social development. Its core lies in the high-level integration of innovation-driven development and quality improvement. This is not only an innovation in economic theory and development strategy, but also a practical need to promote educational reform and transform talent

development. As the strategic direction and implementation path for promoting China's high-quality development, the theoretical construction and practical exploration of new quality productivity are becoming important topics in academia and policy making.

Achievement Growth Performance (AGP) has been discussed and elaborated on in previous studies. This research indicates that it is a comprehensive concept designed to comprehensively measure students' motivation and drive for growth and development during their education, the process of comprehensive development and enhanced abilities, and the overall quality improvement process and its ultimate outcomes. It transcends the traditional focus on a single metric of "academic achievement," emphasizing that students should not only achieve specific results in their learning process, but also demonstrate significant progress and development in learning initiative, continuous improvement of abilities, acquisition of skills, personal growth, and long-term educational outcomes(Hanushek et al., 2012) (Steers & Spencer, 1977) (Yeo et al., 2023). This article draws on these previous findings on the definition and connotation of AGP. And its connotation of AGP encompasses several core dimensions, including performance, academic achievement, initiative in the learning process, improvement of abilities and acquisition of skills, personal growth, and long-term educational outcomes. Performance is the main connotation of AGP. According to comprehensive theory, performance is a combination of people's ability, behavior and results (Fu, 2011).AGP focuses not only on the acquisition of knowledge but also on the cultivation of students' comprehensive abilities and the mastery of new skills. This process of "capacity improvement" and "skill acquisition" reflects students' potential for self-realization and self-transcendence and is a key indicator of their personal growth(Yeo et al., 2023). Achievement Growth Performance focuses on the overall development and progress of students in terms of their academic, personal, and social growth. Achievement Growth Performance encompasses students' comprehensive quality and innovative capabilities. (Martin, 2015) (Kumar, 2009) (Khikmatullayevna, 2024). In this context of the study, Achievement Growth Performance (AGP) refers a comprehensive concept that encompasses intellectual, moral, physical, aesthetic, and practical development, aligning with the global trend towards holistic education. This approach emphasizes the cultivation of well-rounded individuals who can contribute meaningfully to society. The integration of various growth dimensions into education systems is crucial for fostering such development. Spillane explores building education systems to support holistic student development, focusing on intellectual, physical, emotional, social, cultural, and moral development(Spillane, 2022). Rodgers (1990) defines student development as the ways students grow or increase their developmental capabilities through enrollment in higher education, considering cultural, social, emotional, motivational, cognitive, developmental, biological, and temporal contexts(Rodgers, 1990)

Innovation Practice (IP) in education encompasses the development and implementation of novel teaching methods and technologies aimed at enhancing learning outcomes. Initially focused on improving traditional teaching methods, such as visual aids and group activities (Moreira et al., 2024),

IP has evolved to include digital tools like online learning platforms and artificial intelligence, enhancing personalization and accessibility (Rudianti et al., 2024). Modern definitions emphasize fostering creativity, critical thinking, and adaptability in students and educators(Xiaojia, 2024), and effective IP requires a holistic approach, including changes in organizational culture, leadership development, and supportive public policies (Moreira et al., 2024).Innovation Practice (IP) in education encompasses several key dimensions that enhance teaching and learning, including technological innovation, pedagogical innovation, and collaborative practice. Technological innovation involves the integration of digital tools, such as virtual reality (VR) and gamification, which significantly enhance student engagement and motivation (Dar & Fayaz, 2023; Dourado & Cruz, 2024). Technologies like online learning platforms and educational apps provide personalized learning experiences, catering to diverse student needs (Abduvalieva et al., 2024) (Dar & Fayaz, 2023), while adaptive learning technologies foster critical thinking and creativity, essential skills in modern education (Dighliya, 2024). Pedagogical innovation includes new teaching strategies, such as flipped classrooms and project-based learning, which promote active learning and deeper understanding among students (Dar & Fayaz, 2023; Husnutdinov & Gilmanov, 2024).Despite the transformative potential of Innovation and Practice (IP) in Jiangxi's local universities, several research gaps persist, encompassing cultural influences, mechanisms of impact, longitudinal studies, and practical implications. The role of Confucian values, such as respect for authority, in shaping student-centered IP approaches needs further exploration(Li et al., 2024), and limited research exists on integrating local cultural elements, like Jianghai culture, into IP initiatives to enhance relevance (Cao et al., 2024).

Teachers` Influence is the impact of teachers' guidance, support, encouragement, organization and feedback on students' Achievement Motivation and subsequent growth in intrinsic interest and growth potential. Teachers' influence explains how and why Achievement Motivation affects students' intrinsic interest and growth potential. (Esmailzadeh barzi & Mohammadifar, 2019; Gyeltshen & Gyeltshen, 2022; Peng et al., 2022; Savitri et al., 2023; Wang et al., 2024). Influence is defined as having an effect on the character, development, or behavior of individuals (Cotnoir et al., 2014). Teachers influence students' lives in various domains, including academic performance, behavioral patterns, and motivation for learning (Malureanu & Enachi-Vasluianu, 2021). Strong teacher-student relationships foster trust and engagement(Cotnoir et al., 2014). Teachers serve as role models, guiding students through personal and ethical development(Icka & Kochoska, 2024). The influence of teachers is often long-lasting, shaping students' future career choices and life outlooks(Malureanu & Enachi-Vasluianu, 2021).

A literature review found that the core of new quality productive forces lies in the high-level integration of innovation-driven development and quality improvement. This represents both an innovative development strategy and a practical need to promote educational reform and transform talent cultivation. Cultivating new-era university students who are adaptable to the demands of new quality

productive forces is a crucial issue that cannot be ignored. Currently, higher education, including local universities in Jiangxi Province China, needs to strengthen its research on the role of innovation and practice (IP) in shaping student motivation and growth. Research on how IP, mediated by teacher influence (TI), stimulates students' initiative in innovative practice and, consequently, their achievement growth performance (AGP) remains underdeveloped and requires further study.

3. Research Methodology

The study adopts a quantitative research design, utilizing a cross-sectional approach to collect data at a single point in time. This design is particularly suited for identifying correlations between variables without the need for longitudinal tracking, making it efficient and practical for the scope of this research. The research design is grounded in Partial Least Squares Structural Equation Modeling (PLS-SEM), which is chosen for its flexibility in handling complex models, robustness in exploratory research, and suitability for smaller sample sizes and non-normal data distributions. PLS-SEM is particularly effective in educational research, where the mediating role of Teachers' Influence is critical in understanding the impact of classroom dynamics on academic performance.

Data collection is conducted through a structured questionnaire, distributed online to ensure a diverse and representative sample of undergraduate students. The questionnaire is designed to measure the four dimensions of Achievement Motivation (Innovation Practice), Teachers' Influence, and Achievement Growth Performance. The data collection process adheres to ethical standards, with informed consent obtained from all participants, and spans a period of 8 weeks to ensure a robust dataset.

The study subjects were undergraduate students from local universities in Jiangxi Province, China. A stratified random sampling technique is employed. The target sample size of 480 students, with final 400 valid responses, is deemed adequate for PLS-SEM analysis, following the ten-times rule for indicator-to-sample size ratio.

The research instrument, a structured questionnaire, is developed based on established scales and adapted to the local context. It includes sections on demographic information, Achievement Motivation (Innovation), Teachers' Influence, and Achievement Growth Performance, with items measured on a 7-point Likert scale. The questionnaire undergoes pre-testing and pilot testing to ensure clarity, relevance, and reliability, with feedback used to refine the instrument before the main data collection.

Data analysis procedures include descriptive statistics to summarize demographic characteristics and response distributions, reliability analysis using Cronbach's Alpha to assess internal consistency, and Confirmatory Factor Analysis (CFA) to validate the measurement models. Correlation matrices and linear regression analysis are used to examine relationships between variables, while mediation analysis using the Bootstrap method tests the mediating role of Teachers' Influence. Post-hoc comparisons, effect

size calculations, and model fit indices are employed to further validate the findings and assess their practical significance.

Diagnostic tests for multicollinearity and heteroscedasticity are conducted to ensure the robustness of the results, and sensitivity analyses are performed to assess the stability of the findings under different assumptions. The results are interpreted in the context of the research objectives and hypotheses, with a focus on their theoretical and practical implications for educational strategies and policies.

In summary, this chapter outlines a rigorous and systematic approach to investigating the relationships between Achievement Motivation (Innovation Practice), Teachers' Influence, and Achievement Growth Performance. The methodology is designed to ensure the validity, reliability, and generalizability of the findings, providing a solid foundation for the subsequent analysis and discussion of the research results.

4. Data Analysis Results

4.1 Response Data, Data Screening and Respondents Profile

Additionally, the field of study distributed 480 online questionnaires to undergraduate across eight representative university places in Jiangxi Province. Consequently, over a period of eight weeks, a totality of 418 response were receive. After careful examination, which involved removing incomplete, unusual, and suspect responses, 400 useable answers were confirmed. moreover, the participants were recruited from several undergraduate institutions throughout Jiangxi state. This cohort exhibit a diverse mixing across demographics, include grammatical gender, academic year, academic performance, elect major, household income, home region, and paternal Education Department level, therefore demonstrate strong representational quality. See Table 1 and 2 for specific data.

Table 1. Response rate

Descriptions	No. of samples	Percentage
Total number of questionnaires distributed	480	100.0%
Total returned questionnaire	418	87.08%
Effective response rate (usable)	400	83.3%

Table 2. Profile of the Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male (1)	259	62
	Female (2)	159	38
Grade Level	Freshman (1)	238	56.9
	Sophomore (2)	90	21.5
	Junior (3)	63	15.1
	Senior (4)	27	6.5
Academic Level	Excellent (1)	102	24.4
	Good (2)	180	43.1
	Passing (3)	84	20.1

	Failing (4)	52	12.4
Academic Discipline	Science and Engineering (1)	248	59.3
	Liberal Arts (2)	94	22.5
	Others (3)	76	18.2
Family Income	Low (1)	191	45.7
	Middle (2)	225	53.8
	High (3)	2	0.5
Hometown	Urban (1)	136	32.5
	Suburban (2)	25	6
	Rural (3)	257	61.5
Parents' Education Level	High School or Below (1)	369	88.3
	College/University (2)	41	9.8
	Graduate and Above (3)	8	1.9

4.2 Data Distribution

The descriptive statistics for Innovation Practice (IP), Achievement Growth Performance (AGP), and Teachers' Influence (TI) indicate that participants generally rated these constructs positively and consistently, with mean scores close to 4 on a 7-point scale and distributions near normality (skewness and kurtosis close to zero). The high Cronbach's Alpha values (above 0.93) and strong outer loadings suggest that the measurement scales are reliable and valid.

Structural equation modeling results reveal that Teachers' Influence (TI) plays a critical mediating role between IP and AGP. Specifically, the direct effect of IP on AGP is significantly negative ($\beta = -0.289$, $p < 0.001$), suggesting that innovation activities alone, without effective teacher support, may not directly enhance students' achievement growth and could even have adverse effects. Contrastingly, TI has a strong positive impact on AGP ($\beta = 0.550$, $p < 0.001$), and IP positively influences TI ($\beta = 0.183$, $p < 0.001$). This pattern implies that innovation practices boost students' growth performance predominantly through the positive influence and guidance offered by teachers.

The explanatory power of the model is reasonable, with moderate R^2 values indicating that about 40% of the variance in both TI and AGP is accounted for by their predictors. Predictive relevance values are positive, reinforcing the model's robustness and practical utility in forecasting educational outcomes.

The mediation analysis further confirms significant indirect effects of IP on AGP through TI. This aligns with educational theories including Achievement Motivation Theory, Social Cognitive Theory, and Self-Determination Theory, all highlighting the importance of social support and autonomy in fostering student development. The findings emphasize that teacher involvement is vital in translating innovation activities into tangible academic and holistic growth among undergraduate students.

In summary, the empirical evidence strongly supports that Teachers' Influence functions as a significant partial mediator in the relationship between Innovation Practice and Achievement Growth Performance. While innovation practice on its own shows a counterintuitive negative direct impact on achievement

growth, this relationship becomes positive when the role of teachers as influencers and motivators is considered. Teachers not only directly enhance students' performance but also amplify the positive effects of students' innovative engagement.

For educational practice, these findings underscore the necessity of nurturing strong teacher-student interaction and support mechanisms, especially within innovation-based learning environments. Universities and educators should prioritize the development of teacher capacities to provide effective guidance, motivation, and assessment to harness the full potential of students' innovative efforts, thereby achieving improved comprehensive academic growth outcomes. This integrated approach promises to better meet the demands of holistic student development in modern higher education contexts. See Table 3 for specific data.

Table 3. Key Data Summary for IP, AGP, and TI

Indicator	**IP**	**AGP**	**TI**
Sample Size (N)	402	400	405
Mean (on 7-point Likert Scale)	3.99	4.01	3.96
Minimum Score	1.57	1.43	1.43
Maximum Score	6.43	6.43	6.71
Standard Deviation	0.82	0.86	0.84
Skewness	0.01	0.06	0.15
Kurtosis	-0.33	-0.02	0.12
Cronbach's Alpha (Reliability)	0.932	0.939	0.934
Outer Loadings Range	0.791 – 0.838	0.809 – 0.854	0.814 – 0.852
Direct Path Coefficient (β) IP→AGP	-0.289 (significant)	—	—
Direct Path Coefficient TI→AGP	0.550 (significant)	—	—
Direct Path Coefficient IP→TI	0.183 (significant)	—	—
R^2 for TI	0.398 (Moderate explanatory power)	—	—
R^2 for AGP	0.420 (Moderate explanatory power)	—	—
Predictive Relevance (Q^2)	Positive for both TI (0.247) and AGP (0.23)	—	—

4.3 Mediation Analysis and Structural Model Summary

Measurement Model Assessment for IP, TI, and AGP. IP is reliably measured by 7 items (IP1–IP7) with loadings ranging from 0.791 to 0.838, AVE = 0.674, and composite reliability (CR) = 0.935, indicating strong convergent validity and internal consistency. TI is measured by 7 items (TI1–TI7) with loadings between 0.814 and 0.852, AVE = 0.700, CR = 0.942, also showing sound measurement properties. AGP is assessed via 7 items (AGP1–AGP7) with item loadings from 0.833 to 0.854, AVE = 0.698, CR =

0.942. Discriminant validity checks confirm these three constructs are distinct, based on Fornell-Larcker criteria and HTMT values below 0.85 between IP, TI, and AGP.

Structural Model Results and Path Coefficients. The direct path from IP to TI is positive and significant: $\beta = 0.183$, $t = 4.112$, $p < 0.001$. The direct path from TI to AGP is positive and significant:$\beta = 0.550$ (as shown by path coefficient in the model).The direct path from IP to AGP is negative and significant:$\beta = -0.289$, $t = 4.092$, $p < 0.001$.This suggests that while innovation practice alone shows a negative direct effect on AGP, teachers' influence notably enhances AGP, potentially offsetting the negative direct impact.

Mediation Analysis: Innovation Practice → Teachers' Influence → Achievement Growth Performance. Mediation was tested using bootstrapping with 5,000 resamples, revealing: Specific indirect effect of IP on AGP through Tinoridine Sample (β) = 0.101, $t = 3.907$, $p < 0.001$.95% Confidence Interval (Bias-Corrected): [0.052, 0.153].No zero within CI → significant mediation. This confirms Teachers' Influence significantly and partially mediates the relationship between Innovation Practice and Achievement Growth Performance.

Effect Size and Predictive Relevance. Effect size (f^2) of IP on TI: 0.183 (Small to Medium effect). Effect size (f^2) of IP on AGP: 0.289 (Medium to Large effect).Predictive relevance (Q^2) for TI and AGP both positive, indicating the model reliably predicts these endogenous variables.

Interpretation and Implications. The negative direct effect of Innovation Practice on AGP may indicate that without effective teacher support, students' innovative activities might not translate into immediate performance gains, possibly due to insufficient guidance, resources, or misalignment with academic goals.

However, through the positive mediating role of Teachers' Influence, innovation practice indirectly promotes achievement growth, suggesting that teachers' involvement, encouragement, and guidance are critical in harnessing the benefits of innovative practices. Therefore, fostering a strong supportive teacher-student relationship is essential to maximize the positive impact of students' innovation activities on their overall academic growth. The specific data are shown in the table 4.

Table 4. Summary of Key Statistics for IP, TI, and AGP

Relationship	**Path Coefficient (β)**	**t-value**	**p-value**	**Mediation Effect**	**95% CI (Bias-Corrected)**
IP → TI	0.183	4.112	<0.001	—	—
TI → AGP	0.550 (path coeff.)	—	—	—	—
IP → AGP (direct)	-0.289	4.092	<0.001	—	—
IP → TI → AGP (indirect effect)	0.101	3.907	<0.001	Partial Mediation	[0.052, 0.153]

Table 4. Summary of Key Statistics for IP, TI, and AGP (continuous)

Variables	N	Mean	Std. Dev.	AVE	CR	R^2	Q^2	($Q^2 > 0$)
IP	400	3.99	0.82	0.674	0.935	—	—	—
TI	400	3.96	0.84	0.700	0.942	0.398	0.247	yes
AGP	400	4.01	0.86	0.706	0.944	0.420	0.230	yes

4.4 Hypothesis Testing

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) based on data collected from 400 undergraduate students at local universities in Jiangxi China to test the hypothesized relationships between Innovation Practice (IP), Teachers' Influence (TI), and Achievement Growth Performance (AGP). The study examined both direct effects of IP on AGP and TI, as well as the mediating role of TI in the relationship between IP and AGP. Specifically, the study proposes and tests three hypotheses: (1) Innovation Practice (IP) has a significant direct effect on Achievement Growth Performance (AGP); (2) Innovation Practice (IP) significantly influences Teachers' Influence (TI); and (3) Teachers' Influence (TI) mediates the effect of Innovation Practice (IP) on Achievement Growth Performance (AGP).

The specific data of the analysis since then are shown in Table 5-7. The path coefficient from Innovation Practice to Achievement Growth Performance was found to be statistically significant but negative ($\beta = -0.289$, $t = 4.092$, $p < 0.001$), suggesting that higher levels of IP were associated with a decrease in AGP when controlling for other factors. This unexpected negative effect indicates the complexity of IP's role in academic outcomes and warrants further discussion. Conversely, IP had a significant positive effect on Teachers' Influence ($\beta = 0.183$, $t = 4.112$, $p < 0.001$). This finding implies that students' engagement in innovative and practical activities may enhance the perception or impact of teachers' influence on their development.

The mediating role of TI between IP and AGP was examined using a bootstrapping procedure with 5,000 resamples. The results revealed a significant positive indirect effect ($\beta = 0.101$, $t = 3.907$, $p < 0.001$), with the 95% confidence interval excluding zero (0.052 to 0.154), confirming the presence of significant partial mediation. This indicates that while IP directly exerted a negative effect on AGP, it simultaneously positively influenced AGP indirectly through enhancing TI. The significant partial mediation underscores the critical role of teachers in facilitating the positive impact of IP on students' AGP.

Table 5. The magnitude of the effect of IP on AGP and TI（Effect Size, f^2）

Predictive variable	Dependent variable	f^2	Effect Size Category
IP	TI	0.183	Small-to-Medium
IP	AGP	0.289	Medium-to-Large

Table 6. Specific Indirect Effects

Path	O	M	standard error	t-Value	P-Value	Lower limit of confidence interval (2.5%)	Upper limit of confidence interval (upper, 97.5%)	remark
Innovation Practice → TI → AGP	0.101	0.102	0.026	3.907	0.000	0.052	0.154	Significant partial mediation

Table 7. Model determination coefficient（R^2）

Endogenous variable	R^2	Interpretation
Teachers' Influence (TI)	0.398	Medium
Achievement Growth Performance (AGP)	0.420	Medium

The hypothesis testing results for IP, TI, and AGP are summarized in Table8, which confirms: H1: IP negatively impacts AGP directly (Supported); H2: IP positively impacts TI (Supported); H3: TI partially mediates the relationship between IP and QGP (Supported).These findings highlight the nuanced relationships among innovation engagement, the teacher-student dynamic, and achievement performance growth, suggesting the need for careful consideration of teacher roles in promoting constructive innovation practices.

Table 8. Hypotheses Testing Results

Hypotheses	Path	β	t-Value	p-Value	Interpretation
H1	IP → AGP	-0.289	4.092	<0.001	supported
H2	IP → TI	0.183	4.112	<0.001	supported
H3	IP → TI → AGP	0.101	3.907	<0.001	Partial mediation

5. Discussion and Conclusion

The findings not only confirm the significance of innovation practice in shaping student outcomes but also highlight the crucial function of teachers as mediators who enhance the positive effects of such practices on students' comprehensive achievement. This discussion will interpret the results in light of existing literature, explore theoretical and practical implications, address study limitations, and propose directions for future research.

5.1 The Relationship between IP and AGP

Next, this study is to discuss the findings of the relationship between innovation practice between achievement growth performance among undergraduate students at local universities in Jiangxi China. This paper conducts this discussion based on table 9

Table 9. Hypothesis and Findings of the relationship between IP and AGP

No	Research Question	Research Hypotheses	Findings
RQ1	Does innovation practice (IP)impact on Achievement Growth Performance (AGP) among undergraduate students at local university in Jiangxi China?	H1: Innovation practice (IP) has a positive and significant impact on Achievement Growth Performance (AGP) among undergraduate students in local universities in Jiangxi China.	Supported. Direct effect negative β=-0.289, t=4.092, p<0.001

This section examines the impact of IP on AGP among undergraduate students at local universities in Jiangxi China. The hypothesis posited that there is a positive and significant relationship between IP and AGP. However, data analysis using PLS-SEM demonstrated a significant direct negative effect of IP on AGP ($\beta = -0.289$, $t = 4.092$, $p < 0.001$), while the indirect effects mediated by TI were positive and significant. This complex pattern indicates the multifaceted role of innovation practices in student Achievement Growth Performance within this regional educational context.

Empirical findings suggest that, despite innovation practice constituting a pivotal component of Achievement Motivation, its direct impact on Achievement Growth Performance was, surprisingly, negative among the sampled students. This may be related to challenges such as insufficient support, weak awareness of innovation, poor application of innovation, or misalignment between innovative efforts and academic goals. It is noteworthy that the positive indirect effect of innovation practice on Achievement Growth Performance, through teacher influence, underscores the pivotal moderating role of teachers in translating innovation into effective achievement outcomes. Consequently, in the absence of adequate institutional and pedagogical support, innovation alone may not ensure positive performance gains.

The present study's findings are consistent with those of other studies. As posited by Hornstra et al. (2015), a dearth of comprehension pertaining to the advantages inherent in innovation has the potential to culminate in an underutilization of innovative strategies within academic settings(Hornstra et al., 2015). Moreover, studies by Jiang et al. (2023,2024) have indicated that faculty members play a pivotal role in the relationship between innovative practices and student achievement(Guo et al., 2024; Jiang et al., 2023). It has been demonstrated by other studies that intrinsic motivation for innovation has the capacity to enhance perseverance and performance in academic innovation, thereby improving overall development and overall achievement. This suggests that, in the absence of adequate support, motivation alone may not be sufficient to achieve desired outcomes (Guo et al., 2024). A substantial corpus of research has demonstrated that the relationship between innovative practices and student achievement is characterized by a complex dynamic. Whilst the influence of teachers can exert a positive indirect effect, their direct influence can also engender negative consequences. This finding

indicates that, while innovation is important, its effectiveness is contingent on various environmental factors.

However, innovative practices (IP) in education have been demonstrated to substantially enhance university students' academic performance and overall development or Achievement Growth Performance. Increased confidence in students' own creativity has been demonstrated to further promote innovative behavior, thereby promoting their overall development(Wang, 2020).The cultivation of an innovative atmosphere through the implementation of organizational strategies that provide support can have a substantial impact on the innovative performance of students(Zhang, 2013).

In summary, the extant empirical evidence and related literature indicate that innovation practice among undergraduate students in Jiangxi's local universities plays a multi-dimensional role in Achievement Growth Performance. While direct effects may be negative or weak without sufficient support, the strong mediating influence of Teachers' Influence highlights the essential role of educators in fostering environments where innovation can translate into positive comprehensive development and improve the achievement performance.

5.2 The Relationship between IP and TI

Next, this study is to discuss the findings of the relationship between IP and TI among undergraduate students at local universities in Jiangxi China. This paper conducts this discussion based on Table 10.

Table10. Hypothesis and Findings of the Relationship between IP and TI

No	Research Question	Research Hypotheses	Findings
RQ2	Does Innovation Practice impact on Teachers` Influence among undergraduate students at local university in Jiangxi China?	H8: Innovation Practice (IP) has a positive and significant impact on Teachers` Influence (TI)among undergraduate students at local universities in Jiangxi China.	Supported. β=0.183, t=4.112, p<0.001.

The empirical evidence indicates a substantial positive correlation between IP and TI, as indicated by a standardized path coefficient β = 0.183, a t-value of 4.112, and a p-value less than 0.001. This finding suggests that students' engagement in innovative practices enhances their perception of teachers' influence, which is consistent with AMT's emphasis on goal-directed behaviors. SCT posits that educators function as facilitators and exemplars in their students' innovation processes, thereby fostering reciprocal motivation. SDT underscores that educators who effectively address students' autonomy and competence needs foster innovative behaviors, as evidenced by the findings among university students in Jiangxi.

Recent studies indicate a positive association between students' Innovation Practice (IP) and Teachers' Influence (TI), highlighting the critical role educators play in fostering innovative learning

environments. Research shows that students in schools emphasizing innovative practices report higher satisfaction and engagement levels. For instance, a study involving 1,880 students revealed a strong correlation between perceived innovation and satisfaction with school functioning(Mori et al., 2020).Higher levels of TIB are associated with increased intrinsic motivation among students, highlighting the importance of innovative teaching practices in shaping students' non-cognitive outcomes(Maun et al., 2023).Specific domains of innovative teaching, such as personal quality and learning attitudes, have been found to significantly influence student engagement, suggesting that teachers' innovative approaches directly impact students' learning experiences(Pillerin, 2017).Empowered teachers contribute significantly to the development and implementation of innovative practices, predicting 50% of the variability in the innovation climate(Mokhlis & Abdullah, 2025)

The relationship between students' Innovation Practice (IP) and Teachers' Influence (TI) is complex and moderated by various factors, including institutional resources and instructional styles. Research indicates that innovative learning environments (ILEs) can enhance this relationship, but their effectiveness is contingent upon teachers' perceptions and the support they receive. ILEs promote collaboration and creativity, fostering environments conducive to innovation(Osborne, 2016).Teachers' ability to utilize ILEs effectively is linked to their perception of these spaces and the support they receive from their institutions(Young et al., 2022).A supportive climate for innovation, characterized by open communication and teacher autonomy, enhances teachers' commitment to implementing innovative practices(Dee et al., 2002).The Self-Determination Theory (SDT) emphasizes that autonomy is crucial for fostering innovation; lack of autonomy can weaken the IP-TI link(Chou et al., 2019).

A synthesis of the extant data and literature through the lenses of AMT, SCT, and SDT frameworks reveals a significant influence of Innovation Practice on Teachers' Influence among local university students in Jiangxi. This relationship underscores the importance of teacher support in nurturing innovation-related motivation and growth. The cultivation of teacher strategies that support autonomy and competence has been demonstrated to amplify students' innovative engagement, consequently boosting Achievement Growth Performance. Subsequent research endeavors should concentrate on investigating contextual moderators to enhance innovation-practice-teacher dynamics in varied educational settings.

5.3 The Mediating Effect of TI on IP and AGP

Next, this study is to discuss the findings of the mediating effect of TI on IP and AGP among undergraduate students at local universities in Jiangxi China. This study conducts this discussion based on Table 11.

Table 11. Hypothesis and Findings of the Mediating Effect of TI on IP and AGP

No	Research Question	Research Hypotheses	Findings
RQ3	Does Teachers` Influence mediate the impact of Innovation Practice on Achievement Growth Performance among undergraduate students at local university in Jiangxi China?	H3: Teachers` Influence mediates the relationship between Innovation Practice and Achievement Growth Performance among undergraduate students at local universities in Jiangxi China.	Supported. Partial mediation; indirect effect=0.101, t=3.907, p<0.001.

Data analysis shows that TI acts as a significant partial mediating role in the relationship between IP and AGP. The indirect effect of IP on AGP through TI is statistically significant with the value of $\beta=0.101$($t=3.907$, $p<0.001$), indicating that students' innovative activities are more likely to improve growth performance when facilitated by productive teacher engagement. AMT explains that innovative behavior stems from goal-oriented motivation, and teachers help channel this motivation toward tangible achievement; SCT highlights how teachers' model, support, and reinforce creative processes, building self-efficacy; and SDT underscores the essential teacher function of supporting autonomy and competence, thus empowering students to realize the growth potential of their innovation. These mechanisms confirm that teacher guidance, encouragement, and modeling are essential for transforming student innovation into measurable academic and holistic progress.

The mediating role of teachers' influence in the pathway from students' innovation practice (IP) to students' Achievement Growth Performance (AGP) has been substantiated through various empirical studies, particularly in the context of Chinese education. Teachers serve as critical conduits, facilitating the transfer of benefits from innovative practices to enhanced academic outcomes. In Jiangxi, teachers' proficiency in ICT enhances student engagement in STEM subjects, indicating that effective teaching strategies can amplify the benefits of innovation practices (Qian & Abidin, 2024).The positive correlation between teachers' innovative practices and students' academic performance is evident, as teachers who employ creative classroom behaviors foster a more engaging learning environment, leading to improved student outcomes (Ucus & Acar, 2018). Social capital and teacher innovation support positively influence college students' innovation performance, mediated by students' cognitive style and self-efficacy (Lin & Suwandej, 2023b).

While evidence strongly supports the mediating role of teachers in promoting students' innovative practices and subsequent achievement growth, it is important to consider that not all educational settings produce the same results. Other recent studies have reported moderate or weak mediating effects of teacher influence, often attributing these differences to other factors, such as regional education policies, environmental barriers, or limited resources for innovation. Pedemonte (2016) noted that resource constraints can weaken the mediating role of teachers, with research showing that teacher influence is moderate in underfunded institutions(Barrera Pedemonte, 2016). Hanum (2024) found that curriculum

rigidity and lack of autonomy limit the translation of innovative practices into academic growth, emphasizing the need for flexibility in educational frameworks(Hanum, 2024). Others have suggested that, compared to teacher influence alone, students' intrinsic motivation for innovation and personal initiative may play a more important role in influencing students' innovative practices, thereby improving their academic growth. Gottfried (2023) describe intrinsic motivation as learning for its own sake, which is crucial for well-being and educational outcomes. Students with high intrinsic motivation demonstrate higher academic competence and leadership skills, while those with low motivation may face disadvantaged outcomes(Gottfried, 2023). This suggests the need for a broader perspective on educational achievement. Therefore, while teacher mediation is crucial, its effectiveness depends on factors such as a supportive institutional climate, curriculum flexibility, and the depth of the teacher-student relationship, suggesting a complex interplay between factors influencing educational success.

This analysis synthesizes empirical data and theoretical insights, thereby confirming that Teachers' Influence is an essential partial mediator linking Innovation Practice to Achievement Growth Performance among local university students in Jiangxi. Within the frameworks of Achievement Motivation Theory (AMT), Social Cognitive Theory (SCT), and Self-determination Theory (SDT), teachers fulfill the functions of motivational enhancement, modeling, and autonomy-support, which are essential for translating innovation into gains in holistic achievement. These findings imply a compelling case for investment in faculty development, curricular reform, and policymaking that empower teachers to foster student innovation and scaffold broad-based achievement growth.

6. Limitations

This study, while robust in methodology and scope, has several limitations that should be considered. First, the sample is limited to undergraduate students from local universities in Jiangxi Province, China, limiting the generalizability of findings to other regions or university types, such as ministry-affiliated or international institutions. Second, the cross-sectional research design restricts the ability to draw causal inferences or capture changes in achievement motivation, teachers' influence, and achievement growth performance over time. Third, data collection relied entirely on self-reported questionnaires, which may introduce social desirability bias and common method variance despite statistical controls. Fourth, the study did not account for potentially influential external factors such as family socioeconomic status, cultural background, and peer influences, which might affect students' motivation and performance. Furthermore, while the structural equation modeling approach allowed for complex relationships, it assumes linearity and may not fully capture the nuances of the interactions among variables. Lastly, the measures of innovation practice and teachers' influence were based on subjective perceptions, lacking objective behavioral or performance indicators, which could limit the depth of insights into these constructs.

7. Suggestions for Future Research

Future research should address these limitations by broadening the sample to include students from diverse geographic locations, university types, and cultural contexts to enhance the external validity of the findings. Longitudinal designs are recommended to explore the dynamic relationships and potential causal pathways among achievement motivation, teachers' influence, and achievement growth over time. Incorporating multi-method data collection, including qualitative interviews, teacher evaluations, and academic records, would reduce reliance on self-report and enrich the understanding of the constructs. Researchers should also consider including additional contextual variables such as family background, social support, and institutional characteristics to better explain variations in student outcomes. Advanced modeling techniques that allow for non-linear and reciprocal effects could provide deeper insights into the complex mechanisms at play. Finally, the development and integration of objective measures or observational assessments of innovation practice and teachers' influence can complement subjective reports, leading to a more comprehensive assessment of their roles in fostering student achievement growth.

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