

Influencing Factors on Self-efficacy for Teachers in Guangxi Universities

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Abstract

The self-efficacy in discipline construction refers to the self-efficacy perception of teachers in the field of discipline construction activities. In the discipline construction KAP mechanism, self-efficacy is formed by the external factors of discipline construction, the internal factors of the actors, and the interaction between people and the environment. This study shows that teachers' self-efficacy in discipline construction is significantly influenced by discipline construction knowledge, discipline construction attitude, and discipline construction behavior. Discipline construction attitude plays a certain mediating role in the KAP mechanism. Whether the discipline organization receives external policy support has no obvious regulatory effect on self-efficacy in the discipline construction mechanism. Therefore, policymakers can enhance teachers' self-efficacy through the application of the discipline construction KAP mechanism in the policy process, promoting the development of disciplines.

Keywords: Self-efficacy; Discipline Construction; Teacher; KAP; Influencing Factors

Introduction

Self-efficacy is a concept put forward by the famous American psychologist Bandura. Self-efficacy refers to people's confidence that they can use their skills to complete a certain job behavior (Bandura, 1977,2002,2013). Self-efficacy has two core elements: confidence and competence. At work, people with high self-efficacy have full confidence in their own abilities, take the initiative to try high-challenge tasks, set higher goals, and have the courage to make and fulfill promises, so their work performance will be higher. For the field of higher education, discipline construction is a specific activity area. Discipline construction covers aspects such as the direction of discipline development, talent cultivation, team building, scientific research, social services, cooperation and communication. Therefore, studying the self-efficacy of teachers is of great significance for promoting discipline development, university development, teacher development, student development, and social development. In the current Chinese higher education system, discipline construction enjoys special support from the "Double First-Class" policy (MOE, 2022). Thus, for higher education in Guangxi, studying the self-efficacy of teachers in discipline construction has positive policy value for promoting discipline development.

From an international academic perspective, current scholars from various countries have achieved many results in their research on building first-class universities and disciplines. However, there are relatively few research findings that focus on promoting the development of disciplines from the perspective of teachers' self-efficacy. Based on the specific context of China's higher education, only a few scholars' research has paid attention to teachers' self-efficacy in discipline construction. A typical research outcome is that of Zhang Junfeng & Zhao Yingzhi (2020). The research finds that young teachers in colleges and universities generally pay attention to and support the construction of Double First-Class, and have a strong willingness to participate in the construction; However, young teachers lack of understanding of the essential meaning of Double First-Class construction and a clear action framework for participating in Double First-Class construction; In addition, because the Double First-Class construction has increased the work burden of young teachers, and the fund guarantee mechanism is not perfect, young teachers lack the confidence and motivation to participate in the Double First-Class construction.

Although there are still no systematic research results on self-efficacy for discipline construction, however, in the research topics related to academic development, teaching effectiveness, learning effectiveness, career development, and job burnout, discussions about the self-efficacy of university teachers are also frequently encountered. Liu Rui, Guo Yungui & Zhang Lihua (2016) have conducted research the impact of higher educational institution teachers' innovative self-efficacy on scientific research performance. Pan Xiaoxin (2022) studied the relationship between job pressure and scientific research self-efficacy of higher educational institution teachers. Xiong Jingjing (2023) considered that the teaching efficacy of higher educational institution teachers refers to the teachers' belief in their ability and effect to effectively complete teaching work and achieve teaching goals in higher education teaching activities. There have also been some meaningful studies conducted by scholars regarding the influencing factors of self-efficacy. Their studies have shown that teachers' self-efficacy is influenced by the interaction of multiple variables (Perera H N, Granziera H & Mcilveen P, 2018). Such as, Social and cultural context (Salanova, et al, 2022), Growth Mindset (Vinogradov, S. et al., 2023), Digital Competence (Talosa, A. et al., 2024), Organizational Support System (Butt, R. et al., 2025). These discussions and research results provide very valuable analytical perspectives and thinking dimensions for this research topic.

Due to the role of self-efficacy in specific activity domains, in order to further enhance teachers' self-efficacy and promote the development of the discipline, policymakers can adjust the discipline policies and specifically enhance teachers' self-efficacy in discipline construction. Therefore, if the policy adjustments need to have a guiding role in enhancing teachers' self-efficacy, it is necessary to understand the influencing factors of teachers' self-efficacy. For this reason, based on previous research results, this study introduces the KAP theory and explores the influencing factors of teachers' self-efficacy in discipline construction within the KAP framework of discipline construction. It is expected to obtain effective

intervention perspectives from the research results and provide valuable optimization strategies for the adjustment of discipline policies.

Research Hypotheses

In order to analyze the influencing factors of teachers' sense of self-efficacy, this study proposed 12 research hypotheses. As the content of discipline-building includes a variety of discipline-building tasks and goals, this study identifies the key factors that have an important impact on teachers' discipline-building action by summarizing previous theories and consulting relevant literature, and introduces the KAP theory to build the theoretical framework of discipline-building KAP, and puts forward 12 research hypotheses. Through the elaboration of the hypothetical problem, the core task of this study is to explore the direct influence of the KAP components of discipline-building on teachers' self-efficacy, the mediating mechanism, and the moderating role of the type of discipline-building. Finally, the influencing factors of teachers' self-efficacy are revealed from these influencing mechanisms.

1. The hypotheses about the inner influence mechanism of the discipline-building KAP framework

From the perspective of the discipline-building KAP theoretical framework, this study analyzes the influence mechanism of KAP on self-perceived. It is necessary to explore the action mechanism of KAP in discipline-building. According to the KAP theoretical model, there is an inherent causal relationship among knowledge, attitude, and behavior. Hines (1987) and other scholars found that even though the interference of external factors such as social pressure, economic conditions, and implementation opportunities would cause deviations in the consistency of environmental protection attitudes and behaviors, they still had a certain correlation. A large number of studies have shown that knowledge directly affects attitude, attitude directly affects action, and knowledge indirectly affects action through attitude (Hines J M, 1987; Mancuso, 2010; Shen Qi, 2019; Alsarawi, 2023; Yan Qiming, 2024). The research findings of these scholars provide a theoretical basis for this study to analyze the relationships among knowledge about discipline building, discipline-building attitudes, and discipline-building behaviors in the context of discipline building. To verify the action mechanism in discipline-building KAP, the following hypotheses are proposed:

H1: Discipline-building knowledge positively influences discipline-building attitude.

H2: Discipline-building attitude positively influences discipline-building behavior.

H3: Discipline-building knowledge positively influences discipline-building behavior.

2. The hypotheses about the mechanism of discipline-building KAP framework affecting self-efficacy

According to the self-efficacy theory proposed by Bandura, the formation of self-efficacy is influenced by both internal and external factors. It can be seen that the teacher's individual experience and achievements in the discipline-building, experience of observing other people's experience, support and feedback from society (organization), the emotional state, and the nature of the specific task are all factors influencing the teacher's self-efficacy

in discipline construction. These can be summarized as external factors (social factors, school factors), internal factors, and the interaction effects of human and environment.

Based on self-efficacy and KAP two-way effect, and the hierarchical progression mechanism of KAP, this study envisages, the factors of discipline-building KAP framework have a significant effect on teachers' self-efficacy. Previous studies have shown that self-efficacy is significantly related to job performance. Tierney et al (2011) proposed that the enhancement of employees' innovative self-efficacy was significantly positively correlated with the improvement of their creative performance. Liu Rui, Guo Yungui & Zhang Lihua (2016) proposed that teachers' innovative self-efficacy has a positive impact on scientific research performance. Wang Xianya (2014) proposed that research self-efficacy positively regulates the relationship between challenging research stressors and research performance. In other words, the higher the teachers' research self-efficacy, the stronger the positive impact of challenging research stressors on research performance. Yu Xia & Yan Dan et al. (2024) proposed that scientific research self-efficacy positively affects the academic knowledge sharing behaviors of higher educational institution teachers. It can be seen that creative performance, scientific research performance, and knowledge sharing behavior, as part of the action factors of the KAP framework, are positively affected by self-efficacy. In conclusion, there is a bidirectional effect between self-efficacy and KAP components. Therefore, this study puts forward the following hypotheses.

H4: Discipline-building knowledge positively affects self-efficacy.

H5: Discipline-building attitude positively affects self-efficacy.

H6: Discipline-building behavior positively affects self-efficacy.

3. The hypotheses about the mediating effect of attitude in the discipline-building KAP framework

The KAP theory reveals the internal connection among an individual's knowledge, attitude, and behavior. Past research results have proved that attitude acts as a mediating variable for knowledge influencing behavior in the KAP model (Peciuliauskiene, 2022; Saemi, E, et al., 2012; Safdar, M, 2021; Alsarawi, A, 2023; Atak, N, 2008; Baldwin, 2023; Bandura, A., 2023). The research results show that attitude plays a significant mediating role in the transformation process from knowledge to behavior. A positive attitude can promote the transformation from knowledge to positive behavior, while a negative attitude may hinder this transformation. In the field of discipline construction, no research results based on the KAP theoretical framework have been found to suggest the mediating mechanism and degree of action of attitude. Therefore, this study proposes research hypothesis H7.

H7: A discipline-building attitude partially mediates the impact of discipline-building knowledge on discipline-building behavior.

Considering H1, H2, H3, H4, H5, H6, and H7, this study hypothesized that discipline-building attitude partially mediates the influence of discipline-building KAP components on self-efficacy. Therefore, the following hypotheses are proposed:



H8: A discipline-building attitude partially mediates the impact of discipline-building knowledge on self-efficacy.

H9: A discipline-building attitude partially mediates the impact of discipline-building behavior on self-efficacy.

4. The moderating effect of the mechanism of the KAP framework affecting self-efficacy.

A large number of research results have directly or indirectly proved that self-efficacy and KAP components have a two-way effect (Hines J M, 1987; Shen Qi, 2019; Tang, N, 2021; Bandura, A, 2023; Ngoc Hoi, V, 2023). Therefore, this study selected Types of discipline-building as the moderating variable to examine whether these types have a moderating effect on the mechanism by which the KAP framework affects self-efficacy. The following hypothesis is proposed:

H10: The type of discipline-building has a moderating effect on the influence of discipline-building knowledge affect self-efficacy.

H11: The type of discipline-building has a moderating effect on the influence of discipline-building attitude affect self-efficacy.

H12: The type of discipline-building has a moderating effect on the influence of discipline-building behavior affect self-efficacy.

5. Research model on the influencing factors of self-efficacy.

This study is based on the KAP theory (Knowledge-Attitude-Practice, Knowledge-Attitude-Practice Theory) and the self-efficacy theory, and combines in-depth analysis of relevant academic literature to construct a comprehensive theoretical framework for discipline-building. This study proposes a KAP theory framework for discipline-building and further puts forward 12 research hypotheses related to self-efficacy within this framework. These hypotheses cover different dimensions of discipline-building, such as teachers' teaching ability, the influence of teachers on students' academic performance, and scientific research innovation ability. By combining self-efficacy with the KAP theory, this study attempts to reveal the interaction mechanism among knowledge, attitude, and behavior in the process of discipline-building, as well as the influence mechanism of knowledge, attitude, and behavior on teachers' self-efficacy. Therefore, the core elements of the KAP theory incorporate self-efficacy as a key variable in this study, forming a multi-dimensional and multi-level analytical framework (Show in Figure 1).

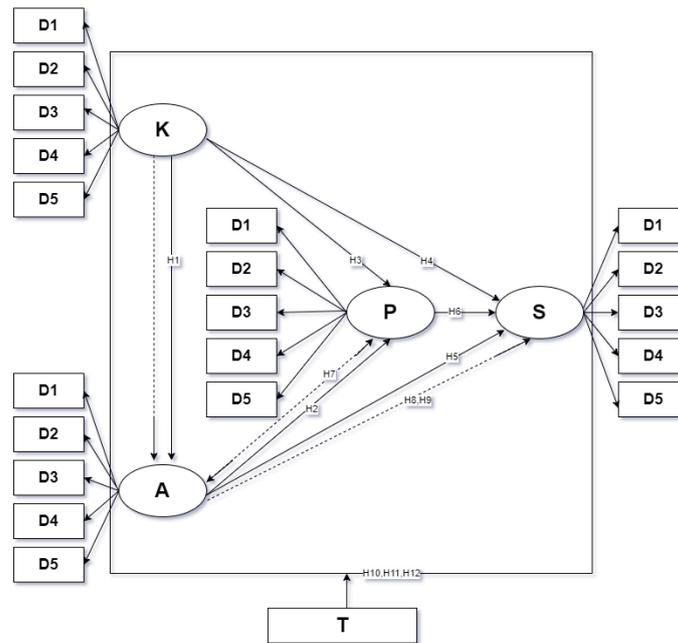


Figure 1 The research hypothesis model

Research Methodology

1. Research Instruments

In order to ensure the content validity of the scale framework, this study uses the Delphi method combined with discipline policies and actual scenarios of discipline-building to screen the key influencing factors of self-efficacy. The Delphi method is usually a multi-round process, gradually converging experts' opinions through iteration, and finally reaching consensus on the importance and comprehensiveness of the influencing factors. Based on the KAP theory and the connotation characteristics and influencing factors analysis of teachers' self-efficacy, this study, combining literature and policy texts, selected 73 influencing factors from 19 dimensions, compiled a consultation questionnaire, and invited 5 experts (all professors with doctoral degrees) from related fields such as discipline-building management, team leaders of disciplines, and academic leaders to judge each indicator according to the criteria of importance, sensitivity, and operability. Ultimately, experts reached a consensus on the structural elements of the self-efficacy scale. This study obtained the key dimensions for measuring teachers' self-efficacy and developed a questionnaire. This questionnaire consists of 3 main factors, 19 analytical dimensions, and a total of 59 measurement questions (the dimensions of the scale are detailed in Table 1).

Table 1 The dimensions of the scale

Variable	Latent variable	Observed variable	Variable	Latent variable	Observed variable	
K	1.Discipline institutional knowledge	1.Discipline policy	A	1.Attitude towards the role of discipline-building	1.Promote discipline development	
		2.Discipline-building performance			2.Promoting students' development	
		3.Discipline assessment			3.Management mechanism construction	
	2.Knowledge of research tasks	1.Research project		2.Action attitude towards discipline-building (indicates the recognition attitude towards discipline-building behavior)	1.Teacher participation activities	
		2.Research platform construction			2.Functional department work	
		3.Transformation of scientific research results and social services			3.Management mechanism construction	
	3.Talent cultivation knowledge	1.Teaching task		3.Attitude towards the effect of the organization's discipline-building policy	1.Policy issuance	
		2.Student training			2.Policy behavior	
		3.Teaching knowledge			3.Policy effects	
	4.Discipline team building knowledge	1.Training and introduction of teachers		4.Training attitude towards discipline-building	1.Training content	
		2.The appointment and promotion of teachers			2.Individual Participation	
		3.Assessment of teachers' positions			3.Training effect	
	5.Discipline development knowledge	1.Program site construction		/	/	/
		2.Mechanism of discipline development		/	/	/
		3.Academic exchange and cooperation		/	/	/

Variable	Latent variable	Observed variable	Variable	Latent variable	Observed variable
P	1.Talent cultivation behavior	1.Teaching platform construction	S	1.Understanding discipline-building	1.Adaptability
		2.Curriculum construction			2.Ability to work
		3.Major construction			3.Work confidence
	2.Scientific research behavior	1.Research platform construction		2.Discipline ability	1.Teaching tasks
		2.Scientific research work			2.Research tasks
		3.Social service			3.Team building
	3.Team building behavior	1.Teaching team			4.Work effectiveness
		2.Scientific research team			5.Job recognition
		3.The faculty		3.Career development	1.Professional identity
	4.Academic exchange	1.Exchanges at home and abroad			2.Discipline capability enhancement
		2.Discipline competition			3.Career Development
		3.Academic Improvement		4.Interpersonal relationships	1.Teacher-student relationship
	5.Expert consultation	1.Degree point construction			2.Colleague relationship
		2.Discipline assessment			3.Interpersonal difficulties
		3.I offer suggestions and suggestions		5.Psychosomatic efficacy	1.Passion for work
/	/	/	2.Perseverance in work		
/	/	/	3.Job satisfaction		

2. Verification of research hypotheses and analysis methods

The analytical methods regarding the influencing factors of teachers' self-efficacy. First, drawing on KAP theory, it is hypothesized that teachers' discipline-building knowledge, attitude, and behavior directly impact self-efficacy. Second, Within the KAP framework, with discipline-building attitude serving as a mediating variable, this study analyzes the mechanism



by which discipline-building knowledge and behavior influence self-efficacy and proposes corresponding research hypotheses. Third, due to the fact that there is not a simple linear relationship between the components of KAP, the discipline-building environment may influence the self-efficacy mechanism of the KAP framework. Therefore, this study selects the type of discipline-building as a moderating variable, constructs three types of moderating mechanisms, and proposes corresponding transfer research hypotheses. Finally, based on the research hypothesis, this study proposed to analyze the influencing factors and related requirements of self-efficacy in the structural equation model (SEM). To ensure the reliability of the questionnaire and sample data, the discipline-building efficacy questionnaire needs to undergo two data validations.

Firstly, exploratory factor analysis (EFA) is used in the pre-research to verify the validity of the questionnaire during the pre-research.

Secondly, in the formal research, to further determine the reliability of the questionnaire and data in a large sample size, confirmatory factor analysis (CFA) is used to test the reliability and validity of the questionnaire after the formal research.

Finally, after the verification of the above two steps, the structural path analysis of influencing factors is conducted. The influence factor diagram of the structural equation based on the research hypothesis is shown in Figure 2.

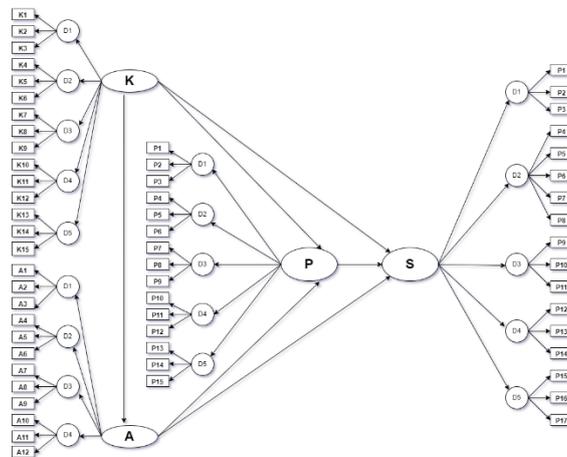


Figure 2 The influence factor diagram of the structure equation based on the research hypothesis

3. Validation of the scale

3.1 Population

This research involves is not less than 500 people. The subjects of the questionnaire are all teachers of First-Class Discipline which have received funding from the Guangxi Government since 2018. Among them, some teachers are from the national First-Class Discipline since 2017 (these disciplines also belong to the Guangxi First-Class Discipline). In addition, the expert in this study are the managers of the Guangxi education administration department and they responsible for the discipline construction, and the managers of the First-Class Discipline or teachers in Guangxi universities.

3.2 Sample

In the preliminary survey, 350 questionnaires were collected, and in the formal survey, 498 valid samples were obtained. The teachers involved in the questionnaire were related to discipline: philosophy, engineering, science, medicine, agriculture, humanities and social sciences. The core content of this study is to analyze the influencing factors of teachers' self-efficacy in the framework of discipline-building KAP. Therefore, this study designed a series of discipline-building scales for teachers, and pushed the questionnaires to the first-class discipline-building team of Guangxi universities through the Internet survey platform (Question star) and the Internet communication platform (Wechat). In the process of collecting survey data, this study took the initiative to have in-depth communication with the leader of First-Class Discipline or the backbone members of the discipline team, indicating the purpose of this survey and the great need for their friendship support. They were then tasked with calling on members of relevant discipline to actively fill out questionnaires.

3.3 Questionnaire' pre-research verification

Before conducting a formal survey with a large sample, a small sample pre-survey should be carried out first in this study. The calculation formula based on the representative view that in a questionnaire survey, the optimal ratio of the total number of scale items to the total sample size should be between 1:5 and 1:10. (Wu Minglong,2010). Therefore, the scale items used in this study are 65 items, so the pre-survey sample size should be between 325 and 650. In this regard, the pre-survey sent 350 questionnaires to higher educational institution teachers in Guangxi provinces through the questionnaire Star platform, and recovered 350 questionnaires with a recovery rate of 100%. The reliability and validity of the questionnaire data were tested by SPSS27 software, and it was found that the reliability and validity of the questionnaire were in line with the measurement standards.

(1) Reliability analysis

Cronbach 's Alpha coefficient test is carried out on the whole scale in this study (the discipline-building knowledge scale, the discipline-building attitude scale, the discipline-building behavior scale, the self-efficacy scale). When the Cronbach's alpha coefficient (α coefficient) is greater than 0.7, the questionnaire is considered to have good internal consistency, and the larger α coefficient value, the higher the reliability and the smaller the error (Wu Minglong,2010).

The test results are shown as fallow. The overall reliability of each scale is 0.967, 0.961, 0.966, 0.970, so the scale has good reliability. Moreover, the Cronbach's Alpha coefficient after the deletion of the items contained in each scale was smaller than the Cronbach's Alpha coefficient of the scale in which it was placed. The deletion of any item did not significantly improve the Cronbach's Alpha coefficient. This means that all the scale has good internal consistency and reliability, meet the requirements of the survey.

(2) Validity analysis

1) The results of KMO(Kaiser-Meyer-Olkin) test and Bartlett sphericity test. The results of KMO(Kaiser-Meyer-Olkin) test and Bartlett sphericity test were analyzed to determine

whether the scale was suitable for factor analysis. KMO is the sampling appropriateness measure of Kaiser-Meyer-Olkin ($0 < KMO < 1$). The closer the KMO value is to 1, the more common factors between variables, the lower the net correlation coefficient between variables, and the more suitable for factor analysis. According to Kaiser (1974), when the KMO value is less than 0.5, it is less suitable to conduct factor analysis, and the general criteria for factor analysis should be at least greater than 0.6 (Wu Minglong, 2010).

In this study, KMO value of all scales was above 0.9, and the P-value was less than 0.01, so all scales were suitable for exploratory factor analysis (EFA). Table 2. presents the KMO values of the discipline-building knowledge scale, the discipline-building attitude scale, the discipline-building behavior scale, the self-efficacy scale, and the results of Bartlett sphericity test.

Table 2 KMO and Bartlett tests

		Knowledge	Attitude	Behavior	Self-efficacy
KMO value		0.984	0.973	0.982	0.984
Bartlett sphericity test	Approximate Chi-square	4572.289	3061.793	4532.565	5334.404
	DOF	105	66	105	136
	Salience	<0.001	<0.001	<0.001	<0.001

2) Common factor analysis of variance. Common factor variance (also known as variable commonality or commonality) reflects how much of the variance of the original variable can be explained by common factors. Commonality (i.e., the extracted values in the tables) ranges from 0 to 1, and the greater the value, the higher the degree to which the variable can be explained by the common factor. According to the level of commonality, this can be judged whether the corresponding test should be retained. If the commonality is less than 0.2, it indicates that the quality of the corresponding test is not good, and it can be considered to delete. In this study, the common factor variance of each scale is shown that all the measurements of the scales can be retained.

3) Total variance interpretation analysis. The total variance explanation value is the cumulative variance explanation rate. The level of the cumulative variance explanation rate reflects the extent to which the extracted factors explain the original indicators. The higher the cumulative variance explanation rate of several factors, the more these factors can explain the original indicator. In general, principal components with eigenvalues greater than 1 can be retained, and the higher the cumulative variance explanation rate (cumulative %), the better.

In this study, the total variance interpretation analysis of each scale is shown that a main component can explain 68.517% of the discipline-building knowledge scale information, 65.028% of the discipline-building attitude scale information, 68.081% of the discipline-building behavior scale information, 67.933% of the self-efficacy scale information. This

indicates that it is ideal to retain 1 factor in each scale. After the total variance interpretation, this study used Scree Plot to verify the accuracy of the factor quantity determination. The broken lines all tend to be flat after 1, indicating that it is reasonable to extract one factor from each scale.

4. Verification of the reliability and validity for the formal survey data

In this study, the formal questionnaire was formed after the questionnaire was tested through pre-survey. In the formal investigation, the questionnaire platform (Questionnaire star) was used to distribute questionnaires to teachers in higher educational institution in Guangxi province. A total of 500 questionnaires were sent out. After screening, 2 invalid questionnaires were eliminated, and a total of 498 valid questionnaires were obtained, with a recovery rate of 99.6%.

(1) Reliability test

Formal survey data were used to test the Cronbach's Alpha coefficient (α coefficient) of the discipline-building knowledge scale, the discipline-building attitude scale, discipline-building behavior scale, and self-efficacy scale. Under normal conditions, when the Cronbach's alpha coefficient is greater than 0.7, the questionnaire is considered to have good internal consistency, and the larger α coefficient value, the higher the reliability and the smaller the error (Wu Minglong, 2010). The test results are shown that the deletion of any question did not significantly improve Cronbach's Alpha coefficient. This means that all the scale has good internal consistency and reliability, which meet the investigation requirements of this study.

(2) Reliability test / Confirmatory factor analysis (CFA)

In order to explore whether the factor structure model of the scale is consistent with the actual data collected and whether the indicator variable can be effectively used as the measurement variable of the potential variable, confirmatory factor analysis is carried out.

1) Model fit evaluation. The overall fitting coefficient was used to evaluate the scale fit. Analysis results show that, with reference to common reference standards (e.g. CFI>0.90, TLI>0.90, RMSEA<0.08, SRMR <0.08) (Wu Minglong, 2010), the model fitting indexes in this study all met the validity requirements of validation, and the structural validity of the scale was verified.

2) Component reliability (CR) and convergence validity (AVE) analysis. In order to further verify the fit degree of self-efficacy scale framework, it is necessary to conduct a confirmatory analysis of the factor structure and factor relationship of different core components. The confirmatory factor analysis involves two types of variables. The first is latent variables, which are variables that cannot be measured directly. In this study, four variables are self-efficacy, discipline-building knowledge, discipline-building attitude and discipline-building behavior. The second is observational variables, which can be directly measured. The observed variables in this study refer to those obtained by exploratory factor analysis (EFA). This study refers to 59 variables. Data analysis shows that the structural validity of the scale in this study is good. Generally, when the mean variance extract AVE>0.5 (Fornell C, Larcker D F, 1981) and the combined reliability CR>0.7 (Bagozzi R P, Kimmel S K, 1995), the consistency

between the items is acceptable. The above relevant data all meet the common reference standards ($AVE \geq 0.5$ and $CR \geq 0.7$ indicate that the scale has reliable convergence validity, which indicates that the tools used in this study to measure self-efficacy, discipline-building knowledge, discipline-building attitude and discipline-building behavior all have good reliability and convergence validity. In conclusion, it can be seen from the confirmatory analysis (CFA) that the model of this study is well adapted, the model and the data are highly matched, the factor structure of the theoretical hypothesis is supported by the data, and the observed variables effectively reflect the latent variables.

Data Analysis & Research Results

1. Description of demographic characteristic variables

In this study, the questionnaires were distributed to teachers in Guangxi universities through the Questionnaire Star platform. The details of the survey sample are shown in Table 3.

Table 1 Statistics of sample distribution information

Basic Information	Variable values	Sample size	Percentage (%)
Gender	male	273	54.8
	female	225	45.2
Age	Age 30 and under	88	17.7
	Ages 31-40	207	41.6
	41-50 years old	120	24.1
	Age 51 and older	83	16.7
Job titles	Teaching assistant	223	44.8
	Instructor	163	32.7
	Associate professor	72	14.5
	Professor	40	8
Academic qualifications	Bachelor's degree	215	43.2
	Master's degree	118	23.7
	PHD	165	33.1
Discipline type	Engineering	162	32.5
	Medicine	90	18.1
	Agronomy	91	18.3
	Science	96	19.3
	Philosophy, Humanities and Social Sciences	59	11.8
Types of discipline-building	National first-class discipline	135	27.1
	Guangxi first-class discipline	363	72.9



2. Analysis of the differences in self-efficacy based on population characteristics variables

1. Efficacy analysis in different genders

Gender of teachers, including male and female, is a binary variable. Therefore, an independent sample t-test was used to analyze the differences in discipline-building knowledge, discipline-building attitude, discipline-building behavior, and the level of self-efficacy of teachers in different genders. The test results are shown in Table 4.

Table 4 Table Analysis of differences based on gender

	Male (N=273) (M±SD)	Female (N=225) (M±SD)	t	P
Discipline-building knowledge	3.551±0.910	3.586±0.899	0.426	0.671
Discipline-building attitude	3.623±0.900	3.563±0.861	0.755	0.450
Discipline-building behavior	3.704±0.950	3.677±0.911	0.321	0.748
Self-efficacy	3.723±0.932	3.680±0.906	0.515	0.607

2. Efficacy analysis in different ages

The age of teachers is a four-categorical variable, so the method of one-way ANOVA is adopted. After variance homogeneity test, the homogeneity of variance was satisfied ($P > 0.05$), so the ANOVA test result was taken as the final result. For more results, see Table 5.

Table 5 Table Analysis of differences based on different age groups

	N	Mean ± Standard deviation (M±SD)	t	P
Knowledge	Age 30 and younger	88	3.580±0.822	0.103 0.959
	Ages 31-40	207	3.543±0.911	
	41-50 years old	120	3.598±0.961	
	Age 51 and older	83	3.568±0.898	
Attitude	Age 30 and younger	88	3.600±0.785	0.330 0.804
	Ages 31-40	207	3.558±0.905	
	41-50 years old	120	3.658±0.911	
	Age 51 and older	83	3.596±0.892	
Behavior	Age 30 and younger	88	3.672±0.836	0.085 0.968
	Ages 31-40	207	3.689±0.945	
	41-50 years old	120	3.727±0.985	



		N	Mean ± Standard deviation (M±SD)	t	P
Self- efficacy	Age 51 and older	83	3.670±0.929	0.115	0.951
	Age 30 and under	88	3.709±0.808		
	Ages 31-40	207	3.689±0.954		
	41-50 years old	120	3.743±0.957		
	Age 51 and older	83	3.675±0.902		

3. Efficacy analysis in different professional titles

The titles of teachers are four categorical variables, so the method of one-way ANOVA is adopted. After variance homogeneity test, the homogeneity of variance was satisfied ($P > 0.05$), so the ANOVA test result was taken as the final result. For more results, see Table 6.

Table 2 Analysis of differences based on different professional titles

		N	Mean ± standard deviation (M±SD)	t	P
Knowledge	Teaching assistant	223	3.565±0.881	1.685	0.169
	Instructor	163	3.538±0.905		
	Associate professor	72	3.477±0.939		
	Professor	40	3.858±0.940		
Attitude	Teaching assistant	223	3.533±0.846	2.908	0.034
	Instructor	163	3.576±0.870		
	Associate professor	72	3.627±0.962		
	Professor	40	3.973±0.921		
Behavior	Teaching assistant	223	3.667±0.907	1.357	0.255
	Instructor	163	3.686±0.933		
	Associate professor	72	3.629±0.986		
	Professor	40	3.970±0.950		
Self-efficacy	Teaching assistant	223	3.684±0.902	1.39	0.245
	Instructor	163	3.689±0.930		
	Associate professor	72	3.640±0.939		
	Professor	40	3.982±0.924		

4. Efficacy analysis in difference education background

The educational background of teachers is a tripartite variable, so the method of one-way ANOVA is adopted. After the homogeneity test of variance, the homogeneity of variance was satisfied ($P > 0.05$), so the ANOVA test result was taken as the final result. Multiple results are shown in Table 7.

**Table 7** Analysis of differences based on different educational backgrounds

		N	Mean \pm standard deviation (M \pm SD)	t	P
Knowledge	Undergraduate	215	3.581 \pm 0.889	0.232	0.793
	Master's degree	118	3.518 \pm 0.886		
	PhD	165	3.584 \pm 0.941		
Attitude	Undergraduate	215	3.562 \pm 0.838	1.851	0.158
	Master's degree	118	3.511 \pm 0.847		
	PhD	165	3.700 \pm 0.956		
Behavior	Undergraduate	215	3.687 \pm 0.910	0.857	0.425
	Master's degree	118	3.610 \pm 0.904		
	PhD	165	3.756 \pm 0.978		
Self-efficacy	Undergrad	215	3.691 \pm 0.896	0.756	0.470
	Master's degree	118	3.636 \pm 0.895		
	PhD	165	3.769 \pm 0.968		

5. Efficacy analysis in different academic discipline

The discipline type is five categorical variables, so the method of one-way ANOVA is used. After the homogeneity test of variance, the homogeneity of variance was satisfied ($P > 0.05$), so the ANOVA test result was taken as the final result. Multiple results are shown in Table 8.

Table 8 Table Analysis of differences based on different academic discipline types

		N	Mean \pm standard deviation (M \pm SD)	t	P
Knowledge	Engineering	162	3.634 \pm 0.891	0.41	0.802
	Medicine	90	3.555 \pm 0.903		
	Agronomy	91	3.555 \pm 0.920		
	neo-Confucianism	96	3.490 \pm 0.953		
	Philosophy, Humanities and Social Sciences	59	3.548 \pm 0.852		
Attitude	Engineering	162	3.728 \pm 0.898	1.562	0.183
	Medicine	90	3.580 \pm 0.888		
	Agronomy	91	3.514 \pm 0.886		



		N	Mean ± standard deviation (M±SD)	t	P
	Science	96	3.477±0.899		
	Philosophy, Humanities and Social Sciences	59	3.579±0.774		
	engineering	162	3.824±0.927		
	Medicine	90	3.680±0.882		
	Agronomy	91	3.628±0.952		
Behavior	Science	96	3.583±0.988	1.329	0.258
	Philosophy, Humanities and Social Sciences	59	3.625±0.880		
	Engineering	162	3.848±0.920		
	Medical science	90	3.661±0.852		
	Agronomy	91	3.672±0.938		
Self-efficacy	Science	96	3.553±0.981	1.750	0.138
	Philosophy, Humanities and Social Sciences	59	3.665±0.862		

3. Direct effect analysis

1. The direct effect analysis model of discipline-building knowledge effecting discipline-building attitude.

(1) H1: Discipline-building knowledge positively influences discipline-building attitude.

The discipline-building knowledge can explain 82.2% of the variance of discipline-building attitude, as shown in Figure 3. In addition, the non-standardized regression coefficient of discipline-building knowledge on discipline-building attitude is 0.885, and its coefficient reaches a significant state at the statistical level of 0.001, indicating that discipline-building knowledge has a positive impact on discipline-building attitude. The higher the level of discipline-building knowledge, the stronger the level of discipline-building attitude. The research hypothesis H1 is valid.

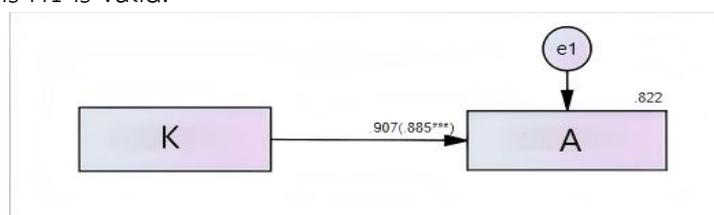


Figure 3 The analysis model of knowledge direct effect on attitude



(2) H2: Discipline-building attitude positively influences discipline-building behavior.

The direct effect analysis model of discipline-building attitude on discipline-building behavior is explored. The discipline-building attitude can explain 88.0% of the variance of discipline-building behavior, as shown in Figure 4. In addition, the non-standardized regression coefficient of discipline-building attitude on discipline-building behavior is 0.990, and its coefficient reaches a significant state at the statistical level of 0.001, indicating that discipline-building attitude has a positive impact on discipline-building behavior. The higher the level of discipline-building attitude, the stronger the level of discipline-building behavior, and the research hypothesis H2 is established.

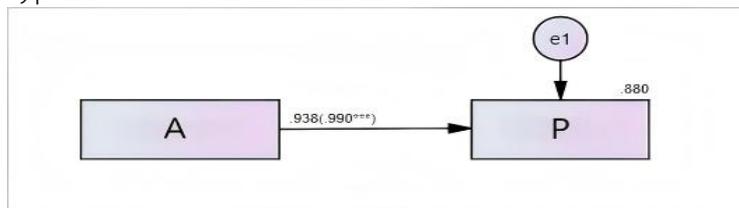


Figure 4 The analysis model of attitude direct effect on behavior

(3) H3: Discipline-building knowledge positively influences discipline-building behavior.

The direct effect analysis model of discipline-building knowledge on discipline-building behavior is explored. The discipline-building knowledge can explain 87.3% of the variance of discipline-building behavior, as shown in Figure 5. In addition, the non-standardized regression coefficient of discipline-building knowledge on discipline-building behavior is 0.963, and its coefficient reaches a significant state at the statistical level of 0.001, indicating that discipline-building knowledge has a positive impact on discipline-building behavior. The higher the level of discipline-building knowledge, the stronger the level of discipline-building behavior. The research hypothesis H3 is valid.

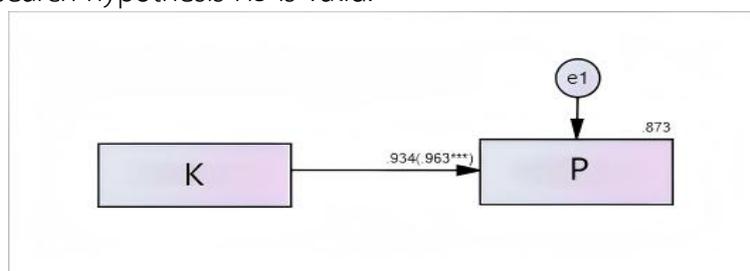


Figure 5 The analysis model of knowledge direct effect on behavior

(4) H4: Discipline-building knowledge positively affects self-efficacy.

The direct effect analysis model of discipline-building knowledge on self-efficacy was explored, and discipline-building knowledge can explain 87.9% of the variance of self-efficacy, as shown in Figure 6. In addition, the non-standardized regression coefficient of discipline-building knowledge on self-efficacy is 0.954, and its coefficient reaches a significant state at the statistical level of 0.001, indicating that discipline-building knowledge has a



positive impact on self-efficacy. The higher the knowledge level of discipline-building, the stronger the level of self-efficacy. The hypothesis H5 is valid.

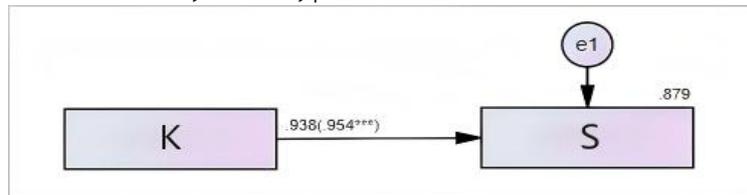


Figure 6 The analysis model of knowledge direct effect on self-efficacy

(5) H5: Discipline-building attitude positively affects self-efficacy.

To explore the analysis model of the direct effect of discipline-building attitude on self-efficacy, discipline-building attitude knowledge can explain 86.8% of the variance of self-efficacy, as shown in Figure 7. In addition, the non-standardized regression coefficient of discipline-building attitude on self-efficacy is 0.971, and its coefficient reaches a significant state at the statistical level of 0.001, indicating that discipline-building attitude has a positive impact on self-efficacy. The higher the level of discipline-building attitude, the stronger the level of self-efficacy. The hypothesis H5 is valid.

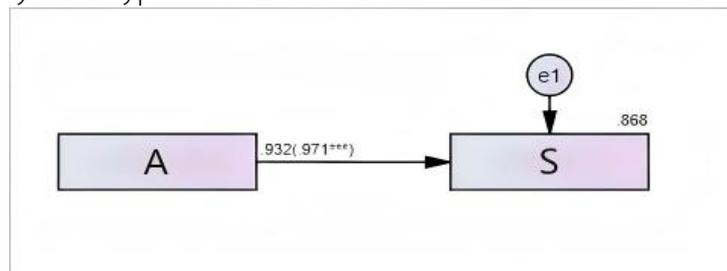


Figure 7 The analysis model of attitude direct effect on self-efficacy

(6) H6: Discipline-building behavior positively affects self-efficacy.

The analysis model of the direct effect of discipline-building behavior on self-efficacy is explored, and the discipline-building behavior can explain 91.6% of the variance of self-efficacy, as shown in Figure 8. In addition, the non-standardized regression coefficient of discipline-building behavior on self-efficacy is 0.945, and its coefficient reaches a statistically significant state at the level of 0.001, indicating that discipline-building behavior has a positive impact on self-efficacy. The higher the level of discipline-building behavior, the stronger the level of self-efficacy. The research hypothesis H6 is valid.

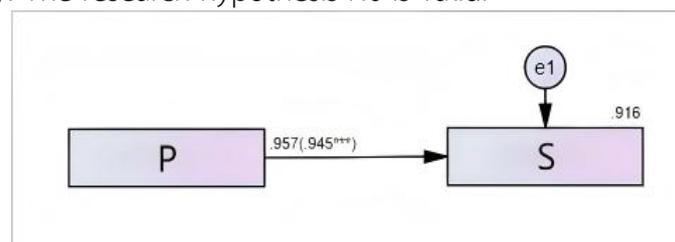


Figure 8 The analysis model of behavior effect on self-efficacy

4. Mediating effect analysis



1. H7: discipline-building attitude plays a partial mediating role in the influence of discipline-building knowledge impact on discipline-building behavior.

The mediation path model that attitude acts on the path that knowledge influences behavior shown in Figure 9. Under the condition of attitude, compared with the direct model of discipline-building knowledge effect on discipline-building behavior, the influential effect is significant decreased, but the influence of discipline-building knowledge effect on discipline-building behavior ($B=0.485$, $p<0.001$) is significant. In addition, discipline-building knowledge had a positive impact on discipline-building attitude ($B=0.885$, $p<0.001$). Discipline-building attitude can significantly positively affect discipline-building behavior ($B=0.540$, $p<0.001$), which lays a foundation for further use of mediation effect.

This study used the self-help method to repeatedly sample 1000 times to test the mediating effect, as shown in Table 9. In terms of specific mediating effect analysis, the specific mediating effect of attitude is 0.478, $p=0.001$, and the 95% deviation correction interval is [0.366,0.576], which does not include 0.

Therefore, it can be seen that, both indirect effects exist, indicating that discipline-building attitude acts as an intermediary factor in the process that discipline-building knowledge affects discipline-building behavior, in which the direct effect is 0.485 and the indirect effect is 0.478, accounting for 25.39% and 25.03%, respectively. The research hypothesis H7 is established.

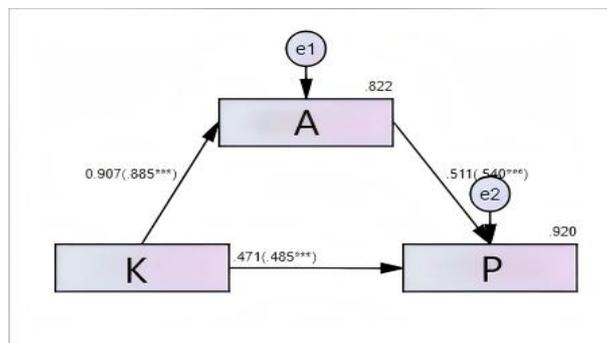


Figure 9 The mediating path of attitude in the process of knowledge influencing behavior

Note: (1) Standardized regression coefficient outside parentheses and non-standardized regression coefficient inside parentheses; (2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 9 The mediating effect of attitude in the process of knowledge influencing behavior

Parameter	Estimate	Bootstrapping Bias-Corrected 95% CI		p
		Lower	Upper	
indirect	0.478	0.366	0.576	0.001
direct	0.485	0.370	0.616	0.003
total	1.910	1.860	1.948	0.002

Note: Results of the Bias-corrected Percentile Method analysis are reported here

2. H8: discipline-building attitude plays a partial mediating role in the influence of discipline-building knowledge impact on self-efficacy.

The mediation path model that attitude acts on the course that knowledge influences self-efficacy shown in Figure 10. Under the condition of attitude, compared with the direct model of the discipline-building knowledge effect on self-efficacy, the influential effect is significant decreased, but the influence of discipline-building knowledge effect on self-efficacy is significant ($B=0.531, p < 0.001$). In addition, discipline-building knowledge had a positive impact on discipline-building attitude ($B=0.885, p < 0.001$). Discipline-building attitude can significantly positively affect self-efficacy ($B=0.478, p < 0.001$), which lays a foundation for further use of mediation effect.

This study also used the self-help method to repeatedly sample 1000 times to test the mediating effect, as shown in Table 10. In terms of specific mediating effect, analysis, the specific mediating effect of attitude is 0.423, $p=0.001$, and the 95% deviation correction interval is [0.320,0.527], which does not include 0.

Therefore, it can be seen that, both indirect effects exist, indicating that discipline-building attitude acts as a mediating effect in the process that discipline-building knowledge affects self-efficacy, in which the direct effect is 0.531 and the indirect effect is 0.423, accounting for 44.34% and 55.66%, respectively. The H8 hypothesis is established.

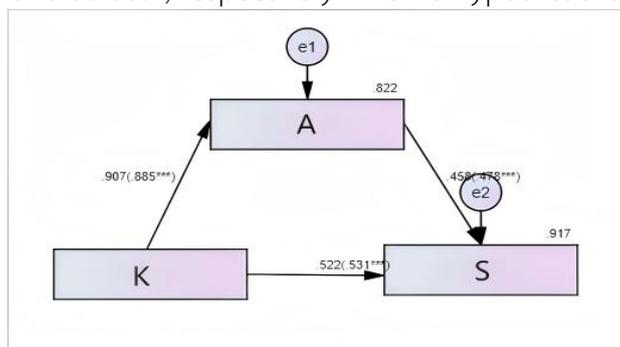


Figure 10 The mediation path of attitude in the process of knowledge influencing self-efficacy

Note: (1) Standardized regression coefficient outside parentheses and non-standardized regression coefficient inside parentheses; (2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 10 The mediation effect of attitude in the process of knowledge influencing self-efficacy

Parameter	Estimate	Bootstrapping Bias-Corrected		p
		95% CI		
		Lower	Upper	
indirect	0.423	0.320	0.527	0.001
direct	0.531	0.416	0.641	0.003
total	0.954	0.918	0.984	0.002

Note: Results of the Bias-corrected Percentile Method analysis are reported here.

3. H9: discipline-building attitude plays a partial mediating role in the influence of discipline-building behavior impact on self-efficacy.

The mediation path model that attitude acts on the course that behavior influences self-efficacy shown in Figure 11. Under the condition of attitude, compared with the direct model of the discipline-building behavior effect on self-efficacy, the influential effect is significant decreased, but the influence of behavior impact on self-efficacy is still significant ($B=0.683, p<0.001$). In addition, behavior had a positive impact on attitude ($B=0.889, p<0.001$). Attitude can significantly positively affect self-efficacy ($B=0.295, p<0.001$), which lays a foundation for further use of mediation effect.

This study also repeated sampling 1000 times in the method of extruded self-help for inspection intermediary effect, as shown in table 11. The specific mediation effect of attitude is 0.423, $p = 0.003$, 95% of its deviation correction interval [0.169, 0.337] does not contain 0 respectively.

Therefore, both indirect effects exist, indicating that discipline-building attitude acts as an intermediary effect in the process that discipline-building behavior affects self-efficacy, in which the direct effect is 0.683 and the indirect effect is 0.262, accounting for 72.28% and 27.72%, respectively. The hypothesis H9 is established.

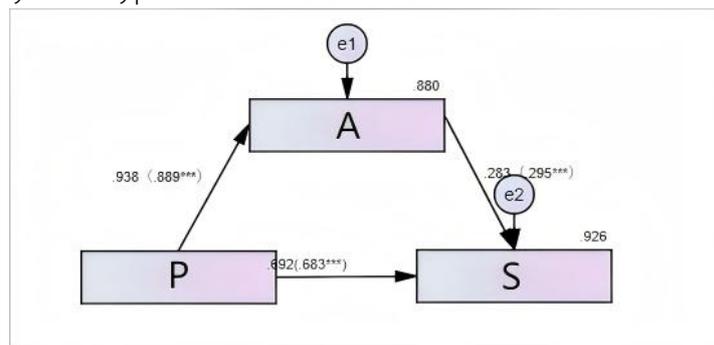


Figure 11 The mediation path of attitude in the process of behavior influencing self-efficacy

Note: (1) Standardized regression coefficient outside parentheses and non-standardized regression coefficient inside parentheses; (2) * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Table 11 The mediating path of attitude in the process of behavior influencing self-efficacy

Parameter	Estimate	Bootstrapping Bias-Corrected 95% CI		P
		Lower	Upper	
indirect	0.262	0.169	0.337	0.003
direct	0.683	0.605	0.776	0.001
total	0.945	0.921	0.968	0.002

Note: Results of the Bias-corrected Percentile Method analysis are reported here.

5. Moderating effect analysis

1. H10: The type of discipline-building has a moderating effect on the influence of discipline-building knowledge affect self-efficacy.

After centralizing (or standardizing) the independent variable (discipline-building knowledge) and the moderating variable (discipline-building type), the interaction 1 is calculated. The moderating effect results of the moderating variable are shown in Figure 12 and Table 12. Estimate is -0.028, p value is 0.425 ($p > 0.05$), indicating that the discipline-building type does not significantly affect the influence of discipline-building knowledge impact on self-efficacy. The research hypothesis H10 is not valid.

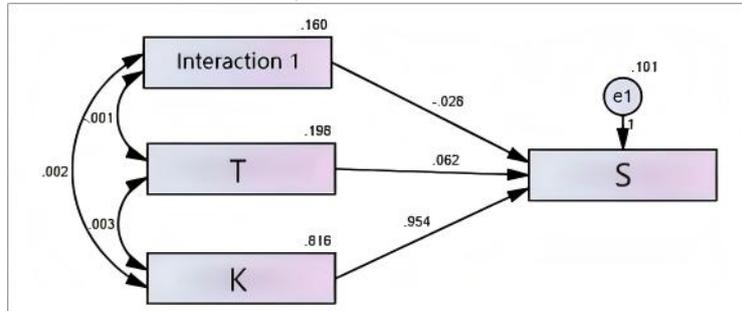


Figure 12 The moderating path of discipline-building types in the process of knowledge influencing self-efficacy

Table 12 The moderating effect of discipline-building type in the process of knowledge influencing self-efficacy

			Estimate	S.E.	C.R.	p
S	<---	T	0.062	0.032	1.922	0.055
S	<---	Interaction item 1	0.028	0.036	-0.797	0.425
S	<---	K	0.954	0.016	60.477	<0.001

2. H11: The type of discipline-building has a moderating effect on the influence of discipline-building attitude affect self-efficacy.

After centralizing (or standardizing) the independent variable discipline-building attitude and the moderating variable discipline-building type, the interaction 2 is calculated. The moderating effect results of the moderating variables are shown in Figure 13 and Table 13. Estimate is -0.035, $p = 0.358 > 0.05$, indicating that discipline-building type does not significantly affect the influence of discipline-building attitude impact on self-efficacy. The research hypothesis H11 is not valid.

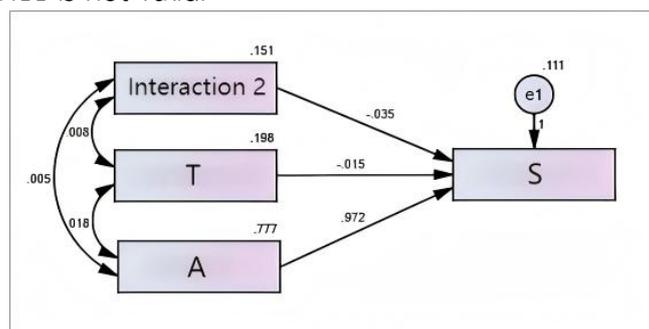


Figure 13 The moderating path of discipline-building types in the process of attitude influencing self-efficacy



Table 13 The moderating effect of discipline-building type in the process of attitude influencing self-efficacy

			Estimate	S.E.	C.R.	p
S	<---	T	-0.015	0.034	-0.442	0.658
S	<---	Interaction term 2	-0.035	0.039	-0.919	0.358
S	<---	A	0.972	0.017	57.282	<0.001

3. H12: The type of discipline-building has a moderating effect on the influence of discipline-building behavior affect self-efficacy.

After centralizing (or standardizing) the independent variable discipline-building behavior and the moderating variable discipline-building type, the interaction 2 is calculated. The moderating effect results of the moderating variables as shown in Figure 14 and tables 14. Estimate is 0.003, and $p = 0.927 > 0.05$, indicating that the type of discipline-building does not significantly affect the influence of discipline-building behavior impact on self-efficacy. The research hypothesis H12 is not valid.

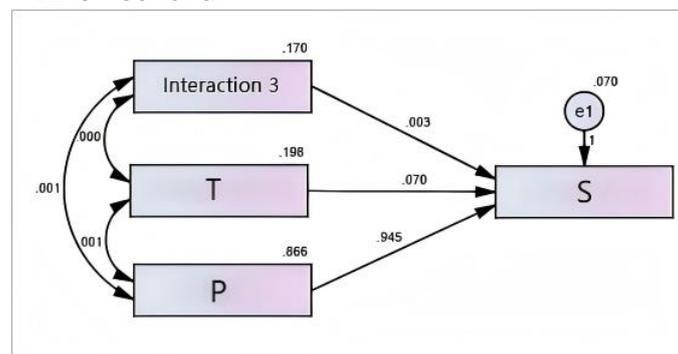


Figure 14 The moderating path of discipline-building types in the process of behavior influencing self-efficacy

Table 14 The moderating effect of discipline-building types in the process of behavior influencing self-efficacy

			Estimate	S.E.	C.R.	p
S	<---	Interaction item 3	0.003	0.029	0.092	0.927
S	<---	T	0.070	0.027	2.619	0.009
S	<---	P	0.945	0.013	74.207	<0.001

Research Conclusion

1. The analysis results of the demographic variables

The analysis results of the demographic variables reveal the general consistency of the self-efficacy in discipline construction among the teachers in Guangxi universities. Regardless of gender, age, academic background, technical rank, or the team they belong to in key disciplines, there are no significant differences in the self-efficacy of these teachers. This



indicates that the teacher team of first-class disciplines in Guangxi universities has a good overall quality and cohesion in discipline construction. This will provide a good impetus for the construction of first-class disciplines in Guangxi universities, and also offers useful references and inspirations for other universities in the region in terms of teacher team building, discipline construction, and school management.

2. The verification results of the direct effect hypothesis

In this study, the direct effects of the research hypothesis H1-H6 have been analyzed in the structural equation model (SEM). This study focuses on the degree to which the independent variable in the KAP model may explain the variance of the dependent variable, the non-standardized regression coefficient (b) and the significance level of the coefficient (p). Finally, it is explained that the research hypothesis (H1-H6) is verified.

3. The verification results of the mediating effect hypothesis

This study constructed the discipline-building attitude mediation path analysis model. The standardized regression coefficient (B) and non-standardized regression coefficient (b) and their significance coefficient (p) are analyzed emphatically. After that, the mediating effect was tested by repeated sampling 1,000 times with Bootstrap Method, and the specific mediating effect value, significance and deviation correction interval value of discipline-building attitude were analyzed. Finally, this study explained that the research hypothesis (H7-H9) is valid.

4. The verification results of the moderating effect hypothesis

After centralizing (standardizing) the independent variable (discipline-building knowledge) and the moderating variable (discipline-building type), Estimate-values and significance p-values of the interaction (1-3) were calculated to determine the moderating effects. Finally, it is explained that the research hypothesis H10-H12 is not valid.

5. Implications of the influence mechanism of KAP effect on self-efficacy

In this study, the KAP theoretical model was employed to analyze the influencing factors of self-efficacy. The findings revealed that, within the research hypothesis matrix proposed in this study, hypotheses H1-H9 were valid, whereas H10-H12 were not supported. The results of the hypothesis verification are presented in Table 15, and the path coefficients of the structural equation model are shown in Figure 15. Consequently, based on the verified hypotheses within the KAP theoretical model (H1-H9 being confirmed), enhancing teachers' self-efficacy can be achieved through the following approaches.

Table 15 The verification results of the research hypothesis

Hypothesis	Content	Verification result
H1	Discipline-building knowledge positively influences discipline-building attitude.	Valid
H2	Discipline-building attitude positively influences discipline-building behavior.	Valid
H3	Discipline-building knowledge positively influences discipline-building behavior.	Valid



Hypothesis	Content	Verification result
H4	Discipline-building knowledge positively affects self-efficacy.	Valid
H5	Discipline-building attitude positively affects self-efficacy.	Valid
H6	Discipline-building behavior positively affects self-efficacy.	Valid
H7	Discipline-building attitude plays a partial mediating role in the influence of discipline-building knowledge impact on discipline-building behavior.	Valid
H8	Discipline-building attitude plays a partial mediating role in the mechanism of discipline-building knowledge affecting self-efficacy.	Valid
H9	Discipline-building attitude plays a partial mediating role in the influence of discipline-building behavior impact on self-efficacy.	Valid
H10	The type of discipline-building has a moderating effect on the influence of discipline-building knowledge affect self-efficacy.	Not valid
H11	The type of discipline-building has a moderating effect on the influence of discipline-building attitude affect self-efficacy.	Not valid
H12	The type of discipline-building has a moderating effect on the influence of discipline-building behavior affect self-efficacy.	Not valid

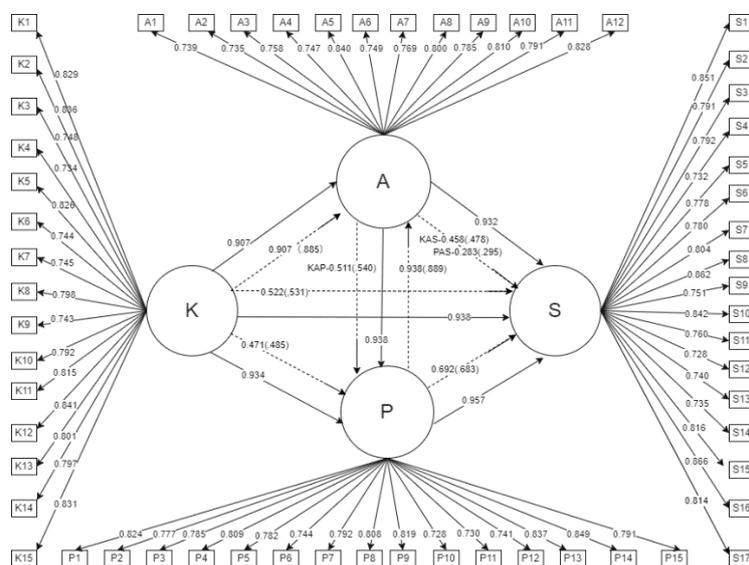


Figure 15 The path coefficient diagram of the structural equation model

1. Reinforce the path of the core variable

(1) Deepening of discipline-building knowledge (via H4). Teachers' discipline-building self-efficacy can be improved by establishing a systematic training system, building a knowledge sharing platform, and regularly carrying out the evaluation and feedback mechanism of discipline-building achievements.

(2) Optimization of discipline-building attitude (via H5). The discipline self-efficacy of teachers can be improved by carrying out discipline cultural immersion activities (visiting benchmarking departments or learning discipline history of development), implementing cognitive reconstruction training (changing the cognitive bias of "discipline-building = extra burden"), and establishing an attitude incentive mechanism (for example, incorporating discipline contribution into the evaluation index of professional titles).

(3) Promoting discipline-building behavior (via H6). Teachers' discipline-building self-efficacy can be improved by designing stepped practice projects (progressive mode from team participation to independent responsibility), establishing behavior visualization systems (construction progress display boards and achievement tracking platforms), and implementing peer mutual assistance mechanisms (establishment of discipline-building collaborative community).

2. Synergistic pathways that strengthen mediation effects

(1) Knowledge-attitude synergistic enhancement (via H7/H8 mediation path). The discipline-building self-efficacy of teachers can be improved by developing knowledge internalization projects (such as the "learn-think-debate" trinity seminar institution), designing situational simulation training (such as enhancing the transformation of knowledge to attitude through role playing), and establishing a dual-channel feedback mechanism (simultaneous assessment of knowledge testing and attitude scale).

(2) Behavior-attitude dynamic reinforcement (via H9 mediating pathway). The discipline-building self-efficacy of teachers can be improved by implementing a institution (guiding teachers to record cognitive changes in practice), creating a positive reinforcement circulation system (setting up a "behavior-attitude" mutual promotion reward fund), and carrying out microteaching analysis (decoding the attitude dimension of typical construction behaviors).

3. Strengthen the path of systematic integration

Strengthen the three-way linkage mechanism of KAP. The first is to build a three-dimensional management system of knowledge graph → attitude radar → behavior dashboard. The second is to develop immersive training scenarios based on virtual reality (synchronously improving KAP elements). Third, the establishment of discipline-building capacity development center (to provide diagnostic-training-practice-evaluation full chain services)

4. Application Strategies of Moderating Variables. The results from the KAP theoretical framework have demonstrated that whether the teacher's discipline team receives national or local policy support does not affect the teacher's self-efficacy in discipline-building.



The reasons for this still need to be further explored. Nevertheless, in the context of higher education in China, the policy support from the state or local governments is extremely important for the development of disciplines. This is not only related to teachers, but also to students' learning conditions, teachers' research conditions, and the service of discipline teams to social needs. Therefore, in view of the invalidity of H10-H12 (the type of discipline-building has no regulating effect), it is possible to strengthen the support of discipline in basic education by establishing a standardized improvement plan (different discipline adopt the same efficiency improvement framework) (areas with no significant regulating effect need more basic investment). To improve teachers' discipline-building self-efficacy by developing interdisciplinary platforms (breaking through the limitations of discipline characteristics on teachers).

References

- Alsarawi, A., & Sukonthaman, R. (2023). Preservice teachers' attitudes, knowledge, and self-efficacy of inclusive teaching practices. *International Journal of Disability, Development and Education, 70*(5), 705-721.
- Atak, N., Gurkan, T., & Kose, K. (2008). The effect of education on knowledge, self-management behaviours and self-efficacy of patients with type 2 diabetes. *Australian Journal of Advanced Nursing, The, 26*(2), 66-74.
- Bagozzi R P, Kimmel S K. (1995). A comparison of leading theories for the prediction of goal-directed behaviours. *British Journal of social psychology, 34*(4): 437-461.
- Baldwin, C., Pickering, G., & Dale, G. (2023). Knowledge and self-efficacy of youth to take action on climate change. *Environmental Education Research, 29*(11), 1597-1616.
- Bandura, A. (2023). *Cultivate self-efficacy for personal and organizational effectiveness*. Principles of Organizational Behavior: The Handbook of Evidence-Based Management 3rd Edition, 113-135.
- Bandura, A. (2023). *Social cognitive theory: An agentic perspective on human nature*. John Wiley & Sons.
- Bandura. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychology Review, 84*(2), 191-215.
- Bandura. (2002). *Social cognitive theory: An agentic perspective*. Annual Review of Psychology, 52:1-26. Palo Alto: Annual Reviews, Inc.
- Bandura A. (2013). *Self-efficacy: The implementation of control*. Miao Xiaochun, trans. Shanghai: East China Normal University Press, 114-152.
- Butt, R., Rehmani, M., Irshad, H., & Anwer, N. (2025). The impact of green human resource management on green creativity: the mediating roles of green self-efficacy and green work engagement and the moderating role of environmentally specific servant leadership. *Environmental Engineering & Management Journal (EEMJ), 24*(2).
- Fornell C, Larcker D F. (1981). Evaluating structural equation models with unobservable variables and measurement error[J]. *Journal of marketing research, 18*(1): 39-50.



- Hines J M. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta analysis. *The journal of environmental education*, (2),1-8.
- Liu Rui, Guo Yungui & Zhang Lihua. (2016). Impact of creative self-efficacy on research performance: The role of research engagement and challenge research stress. *Journal of Beijing University of Posts and Telecommunications (Social Sciences Edition)*, (2), 86-96.
- Mancuso, C. A., Sayles, W., & Allegrante, J. P. (2010). Knowledge, attitude, and self-efficacy in asthma self-management and quality of life. *Journal of Asthma*, 47(8), 883-888.
- MOE. (2022). *China to further promote the Double First-Class Initiative, February 16.*
http://en.moe.gov.cn/news/press_releases/202203/t20220301_603547.html
- Ngoc Hoi, V. (2023). Augmenting student engagement through the use of social media: The role of knowledge sharing behaviour and knowledge sharing self-efficacy. *Interactive Learning Environments*, 31(7), 4021-4033.
- Pan Xiaoxin (2022). The effect of work pressure on self-efficacy of higher educational institution teachers in scientific research. *Journal of Longyan University*, 40(6):117-122. Doi: 10.16813/j.cnki.cn35-1286/g4.2022.06.019.
- Peciuliauskiene, P., Tamoliune, G., & Trepule, E. (2022). Exploring the roles of information search and information evaluation literacy and pre-service teachers' ICT self-efficacy in teaching. *International journal of educational technology in higher education*, 19(1), 33.
- Perera H N, Granziera H, Mcllveen P, 2018. Mcllveen P. (2018). Profiles of teacher personality and relations with teacher self-efficacy, work engagement, and job satisfaction. *Personality & Individual Differences*, (120): 171-178.
- Saemi, E., Porter, J. M., Ghotbi-Varzaneh, A., Zarghami, M., & Maleki, F. (2012). Knowledge of results after relatively good trials enhances self-efficacy and motor learning. *Psychology of Sport and Exercise*, 13(4), 378-382.
- Safdar, M., Batool, S. H., & Mahmood, K. (2021). Relationship between self-efficacy and knowledge sharing: systematic review. *Global Knowledge, Memory and Communication*, 70(3), 254-271.
- Salanova, M., Rodríguez-Sánchez, A. M., & Nielsen, K. (2022). The impact of group efficacy beliefs and transformational leadership on followers' self-efficacy: A multilevel-longitudinal study. *Current Psychology*, 41(4), 2024-2033.
- Shen Qi. (2019). *Investigation and SEM analysis of knowledge, attitude and behavior of Dairy Workers on food safety based on KAP Theory.* (Master's Thesis), Northeast Agricultural University.
- Talosa, A., Javier, B., & Dirain, E. (2024). Higher education students' technological characteristics and technological self-efficacy during Covid 19: Implications to flexible learning framework. *Multidisciplinary Science Journal*, 6(2).
- Tang, N. (2021). Cognitive abilities, self-efficacy, and financial behavior. *Journal of Economic Psychology*, 87, 102447.



- Tierney P, Farmer S M. (2011). Creative self-efficacy development and creative performance over time. *Journal of Applied Psychology*, 96(2): 277.
- Vinogradov, S., Chafee, M. V., Lee, E., & Morishita, H. (2023). Psychosis spectrum illnesses as disorders of prefrontal critical period plasticity. *Neuropsychopharmacology*, 48(1), 168-185.
- Wang Xianya, Lin Sheng, & Chen Liyun. (2014). The mechanism of challenging and hindering research stressors on research performance: The mediating role of research anxiety and achievement motivation. *Science of Science and Management of Science and Technology*, 35(3), 8-31.
- Xiong Jingjing. (2023). *A study on teachers' teaching efficacy and institutional support in local higher educational institution*. (Doctoral dissertation), Fujian Normal University.
- Yan Qiming, Tang Mingrui, Huang Shang, Bai Rumei, Wu Jize & Zhang Yan. (2024). Investigation on the status quo of medical students' scientific research integrity, knowledge and practice. *Western Quality Education*, (14),72-76. Doi: 10.16681/j.cnki.wcqe.202414016.
- Yu Xia, Yan Dan, Fan Jiajun & Chen Di. (2024). *The influence of research self-efficacy on academic knowledge sharing of university teachers: an analysis based on the role of intrinsic motivation and concern for status*,12,23-28. Doi: 10.16871/j.cnki.kjwh.2024.12.006
- Zhang Junfeng & Zhao Yingzhi. (2020). Young teachers' willingness, problems and countermeasures to participate in the construction of “double first-class”: a survey from 7 universities in Wuhan, *Higher Education Forum*, (11), 85-89.