Pak. j. life soc. Sci. (2024), 22(1): 5487-5498 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences
www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2024-22.1.00405

RESEARCH ARTICLE

Mobile Interactive Teaching Model of College Ideological and Political Courses in Guangxi

Gao Liebo[1], Prapai Sridama[2 *], Piyanan Issarawit[3], Kanakorn Sawangcharoen[4]

[1,2,3,4] Department of Education Management and Innovation in Learning Management, The Graduate School of Bansomdejchaopraya Rajabhat University, Thailand

ARTICLE INFO

Received: May 19, 2024

Accepted: Jul 16, 2024

Keywords

Constructivist learning
Interaction theory
Yuketang
Xuetangx

***Corresponding Author:**

prapaikmutnb@gmail.com

ABSTRACT

This study aims to explore and evaluate a Mobile Interactive Teaching (MIT) model to improve the interactivity of teaching and the learning effect of students. A sample of 120 teachers engaged in ideological and political education in five colleges and universities in Guangxi were selected using random sampling technique and questionnaires were used to understand their views on mobile interactive teaching. The MIT model based on the constructivist learning theory and interaction theory, a set of mobile interactive teaching model with multiple functional modules was designed by combining mobile technologies such as "Yuketang" and "Xuetangx" apps. Further, a comparative teaching experiment was conducted in college N using this teaching model. The experiment was divided into an experimental group and a comparison group with 15 teachers in each group. Teachers in the experimental group taught using the MIT model while those in the comparison group did not teach using the MIT model. The experimental group's performance on each teaching dimensions increased significantly: "Student Academic Achievement" increased from approximately 4.03 to about 4.27. "Student Engagement" rose from approximately 3.75 to about 4.52. "Knowledge Acquisition" went up from approximately 4.1 to about 4.45. "Student Satisfaction" moved from approximately 3.98 to about 4.37. "Classroom Atmosphere" improved from approximately 3.73 to about 4.53. "Course Coverage" advanced from approximately 4.15 to about 4.35. "Student Self-confidence" increased from approximately 4.28 to about 4.43. Thus, it can be proved that the teaching model can effectively improve the quality of teaching.

INTRODUCTION

In the context of the information age of the 21st century, mobile technology has been widely used in the field of education, effectively enhancing the accessibility of educational resources and the quality of educational services, and providing infinite possibilities for the innovation of educational methods and educational content. Mobile technology has had a profound impact on higher education, especially on the teaching reform and development of ideological and political courses. Many Chinese scholars have begun to explore the effective path for the deep integration of mobile technology and ideological and political education, aiming to overcome the difficult problems of educational reform through theoretical innovation and practical exploration. Nevertheless, there are still few research results on the deep integration of mobile technology and ideological and Political education, especially on how to improve the teaching mode and structure.

Given this, this study explores how to make full use of mobile technology to optimize the teaching process of ideological and political courses in Guangxi universities based on constructivism theory and interaction theory. This study tries to build a new teaching mode of "Before Class - During Class - After Class", aiming to improve the teaching quality and effect of ideological and political courses in Guangxi universities, and provide innovative references for the teaching of ideological and political courses in Chinese universities.

This study concludes that compared with the traditional teacher-led teaching mode, the mobile interactive teaching mode can not only enhance students' interest and motivation in learning, but also stimulate students' innovative ability and learning initiative, and promote their in-depth understanding and mastery of the course content by enhancing teacher-student interaction. Especially in today's rapid development of digitization and informatization, the model advocated in this study is of great practical significance and wide application value for adapting to various factors such as educational policies, social needs, and technological advances.

In terms of the research framework, this study is divided into two main phases: first, the current educational status and challenges of ideological and political courses in Guangxi universities are studied through a questionnaire survey. Second, designing a mobile interactive teaching model and applying the model to conduct teaching comparison experiments. This study is not limited to the Guangxi region, and its results and findings can be used as an important reference for the educational reform of ideological and political courses in colleges and universities across the country.

To summarize, this study focuses on how to effectively integrate mobile technology with the education of ideological and political courses in colleges and universities in the context of the increasing popularity of modern information technology, aiming to provide theoretical and practical support for improving the quality of education and teaching effect in colleges and universities in Guangxi and even in China as a whole.

Objectives

The objectives of this were:

1. To design the Mobile Interactive Teaching (MIT) model
2. To evaluate the Mobile Interactive Teaching (MIT) model

THEORIES AND RELATED RESEARCH

Ideological and political theory course in colleges and universities

The ideological and political theory course in colleges and universities is a set of courses offered uniformly in Chinese colleges and universities for the education of mainstream ideological thoughts and theories. It does not refer to one course in particular, but contains a series of courses that are interconnected. In this article, it refers specifically to the compulsory courses for undergraduates in colleges and universities, which mainly include Basic Principles of Marxism, Introduction to Mao Zedong Thoughts and the Theoretical System of the Chinese Characteristics Socialism, Outline of Chinese Modern History, Ideology and Morality and Rule of Law, Situation and Policies, and General Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era.

Teaching methods of ideological and political theory courses

Teaching methods refer to “in order to achieve the teaching objectives of a course, the modes, approaches, and means adopted by teachers and students in the same activity, including both teaching and learning parts” (Gu, 1998). Compared with traditional teaching methods, “with the development of modern theories of teaching, the scope of research on teaching methods not only

includes teaching content, teaching process, teaching methods, teaching principles, teaching laws, but also encompasses teaching subjects, teaching objectives, the art of teaching, evaluation of teaching quality, theories and methods of learning, and the qualities of teachers. Teaching methods are viewed as the sum total of instructional approaches and activities used by teachers and students to achieve instructional objectives" (She, 2018). In this article, it specifically refers to the teaching methods of ideological and political theory courses. In China, the scholarly research on teaching methods for ideological and political theory courses is extensive. As of December 2016, there were a total of 169 books and 6168 articles related to the teaching methods of ideological and political theory courses (She, 2018). The research primarily focuses on ten types of teaching methods: case-based teaching methods, thematic teaching methods, interactive teaching methods, MOOCs or micro-lesson teaching methods, inquiry-based teaching methods, experiential teaching methods, emotional teaching methods, situational simulation teaching methods, and lecture-based teaching methods. In this article, it focuses specifically on interactive teaching methods, emphasizing on the integration of mobile technology with interactive teaching methods of ideological and political theory courses in Guangxi, in order to realize the reform and innovation of ideological and political course teaching mode in Guangxi colleges and universities, and to solve the teaching problems of ideological and political theory courses in Guangxi colleges and universities.

Constructivism learning theory

Constructivist learning theory was originally developed by Jean Piaget, one of the most influential Swiss psychologists in the field of cognitive development, "During the 1990s, the rise of constructivism and its associated theories in psychology and education represented a paradigm shift for educators and instructional designers to a view of learning that is necessarily more social, conversational, and constructive than traditional transmissive views of learning Jonassen & Land, 2012)". Since then, constructivist learning theory has begun to emerge and gradually become one of the mainstream learning theories in western developed countries. In China, constructivist learning theory is widely used in education and teaching. Under the constructivist teaching model, teachers merely assist and facilitate students in creating their own meaning. Students are seen as the primary source of cognition and the active creators of knowledge meaning (He, 1999). In this article, it is guided according to the principles of constructivist learning theory, that is, it emphasizes the teacher's teaching-led role in teaching and the students' identity as learning subjects. It mainly includes the following aspects: (1) Contextual learning: teachers utilize mobile Internet technology to link or create various contexts and activities for students to participate in to enhance their understanding and mastery of what they have learned. (2) Social interaction: Teachers should help students understand and master new knowledge and skills through a variety of social interactions, such as group discussions, mobile APPs or social media sharing. (3) Self-construction: students can build up their knowledge and understanding through self-reflection and self-exploration. (4) Learning Community: Mobile interactive technology enables the teaching mode of two-way learning between teachers and students as well as reciprocal learning and support between students. It breaks through the boundaries of classroom teaching, achieves mutual communication and collaboration at anytime and anywhere, promotes the mutual collision of different ideas and experiences, achieves the purpose of meaning construction, and jointly accomplishes the exploration of new knowledge and the enhancement of ability.

Interaction theory

Currently, the academic community's definition of the concept of "interaction theory" is mainly based on perspectives from economics, sociology, and social psychology. In this study, it refers to the interaction theory from the perspective of social psychology. In the perspective of social psychology, interaction theory generally refers to "symbolic interactionism". George Herbert Mead (1934), an

American social psychologist, is the founder of this theory. In his book Mind Self and Society, he described in detail the definition, categorization and connotation of “symbols”. In addition to Mead, W.l. Thomas, C.H. Cooley and others also made important contributions to the theory of symbolic interaction. Later, H.G. Blumer and M. Kuhn developed Mead's idea of “symbolic interactionism”. Symbolic interactionism is the theoretical origin of teacher-student interaction. In the perspective of symbolic interactionism, the classroom is a dynamic and continuous whole, and both teachers and students are engaged in verbal and non-verbal symbolic exchanges all the time. The process of teacher-student interaction is a process of meaningful symbolic interaction between the interacting parties, with the ultimate goal of achieving a unified understanding of symbols. As in all other areas of pedagogy, good curriculum design is fundamental to the realization of effective interactive learning systems. For this reason, this study takes the theory of symbolic interaction as the theoretical support, utilizes modern information technology in classroom teaching, carries out the teaching mode mainly based on teacher-student interaction, and constructs the mobile interactive model of ideological and political courses in Guangxi colleges and universities in terms of the interactive subject, interactive content and interactive ways. In the interactive subject, it emphasizes teacher-student and student-student interaction at any time and any place; in the interactive content, it emphasizes on optimizing the cognitive interaction, promote the emotional interaction; in the interactive ways, it emphasizes the situation “interaction”, cooperation “interaction”, the problem inquiry “interaction”(Barker, 1990).

Mobile technology in interactive teaching

The application of mobile technology in interactive teaching, especially in the field of higher education, has demonstrated many positive impacts and potential educational values. This section summarizes the application practices and related research results of mobile technology in interactive teaching.

Firstly, in terms of enhancing the interactivity of teaching and the quality of learning experience, the extensive use of mobile devices and applications has greatly enriched the educational resources and their accessibility, making the educational content no longer limited by time and space, and able to offer a creative, dynamic, interactive, cooperative, and even lighthearted procedure for acquiring knowledge (Zaheer, & et al., 2018).

Secondly, mobile technologies have shown significant results in interactive teaching and learning in many different subject areas, such as language teaching. There are numerous brand-new Android apps available for tablets and smartphones that help users learn English. These programs encourage autonomous study, practical language practice, and interactive learning (Murugan & Sai, 2017). Moreover, a number of facets of medical education have used educational technology. To maximize learning results, technology use and integration should be guided by educational needs. Particular roles and goals are necessary for the best outcomes. Certain technologies can be used to promote interactive learning in educational activities (Tuma, 2021). The student-teacher and student-student interactions have greatly improved since the introduction of the WhatsApp form of M-learning (Latif & et al., 2019). Furthermore, in health education area, the research proposes that applications offer special chances to improve instruction and learning. With this interactive teaching method, students build a repository of health-related apps which can be easily integrated into existing health education courses (Szucs & et. al., 2015).

Moreover, mobile technology is a major factor in interactive teaching when it comes to computer science education. Following an extensive analysis of various teaching strategies and technological aids, the researcher discovered that using technology to enhance instruction has been proven to be either more or equally successful than using traditional teaching techniques, and that using technology to enhance instruction fosters greater communication between educators and learners (Ain & et. al., 2019).

Related research

Wang (2013) believed that the integration of information technology into the teaching objectives, teaching methods, teaching preparation, teaching process and teaching feedback of ideological and political theory courses changes the traditional teaching mode of pure theoretical indoctrination, creates a new type of teaching environment, thus giving full play to the independent initiative of students' learning, and better integrating theoretical learning and practical learning together.

Wu and Wang (2015) believed that the development of network communication technology has led to the strong rise of cell phone applications, which profoundly affects the thinking and behavior of contemporary college students, and brings a new vision, new methods and new ways for ideological and political education in colleges and universities. The Internet thinking should be utilized to explore the new path of ideological and political work in colleges and universities with micro-content, user experience, and regular innovation, and actively strengthen the pertinence and effectiveness of ideological and political education in colleges and universities.

Li (2019) took the First VR Ideological and Political Education Training Room in Jiangsu as An Example, she believes that the path to improving the informatization teaching reform of ideological and political courses is to strengthen the collaboration between VR development enterprises and ideological and political disciplines in colleges and universities, allow resource development talents to enter the process of creating these disciplines, and provide support from a variety of sources, including funding, policy, and systems.

Liu (2022) found that the teaching of ideological and political courses should be based on respecting the teacher-led and student-subjective status, and should be based on design for the innovation of the interactive teaching mode of ideological and political courses, which requires teachers of ideological and political courses to have not only theoretical skills but also information literacy when designing the interactive teaching mode.

Bao (2021) took Beijing Institute of Technology (BIT) as an example, she believes that BIT has established a new model of three-dimensional teaching by strengthening the deep integration of ideological and political courses with modern information technology such as big data, cloud computing, virtual reality, augmented reality, etc., and carrying out the teaching practice of virtual simulation experience ideological and political courses, which establishes a new model of "interoperability between inside and outside the classroom, interconnectivity between online and offline, and the complementation of the virtual and the reality". Lv (2022) found that some teachers, after utilizing the "Yuketang" mobile teaching platform, have a positive impact on the pre-course teaching design, classroom interaction, and post-course feedback, which effectively improves the teaching effect.

RESEARCH METHODOLOGY

Population

In the first phase of the research, the online survey was conducted mainly by using Qestionnaire Star. Questionnaires were distributed online to teachers engaged in teaching ideological and political theory in 10 colleges and universities in 5 cities in Guangxi. The specific information is shown in Table 1.

Table 1: Sample information of teachers

Type		Number of persons	Percentage (%)
Gender	Male	44	36.7
	Female	76	63.3
Title	No title	27	22.5
	Assistant teachers	11	9.2
	Lecturer	30	25.0
	Associate Professor	37	30.8
	Professor	15	12.5
Teaching age	Less than 1 year	11	9.2
	1 to 3 years	28	23.3
	3 to 5 years	15	12.5
	5 to 10 years	13	10.8
	More than 10 years	53	44.2
Type of College	First-tier Undergraduate university	13	10.8
	Second-tier Undergraduate College	71	59.2
	Vocational College	36	30.0

From table 1, it is clear that there are more females than males. The highest number of associate professors participated in the survey with 37%. Teachers with More than 10 years of teaching experience are the most with 53%. Second-tier Undergraduate College has the highest percentage of teachers with 71%.

In the second phase of the research, 30 teachers (15 teachers in each of the experimental and comparison groups) participated in the questionnaire. The basic information of these 30 teachers is presented in the table below.

Table 2: Sample information of teachers

Type		Number of persons	Percentage (%)
Gender	Male	15	50%
	Female	15	50%
Title	No title	6	20%
	Assistant teachers	5	16.7%
	Lecturer	5	16.7%
	Associate Professor	7	23.3%
	Professor	7	23.3%
Teaching age	Less than 1 year	5	16.7%
	1 to 3 years	5	16.7%
	3 to 5 years	6	20.0%
	5 to 10 years	7	23.3%
	More than 10 years	7	23.3%
Whether the MIT model is applied to teach	YES	15	50%
	NO	15	50%

As can be seen from the table 2, the percentage of female gender is 50% in all cases. The percentage of teachers by title is more balanced, ranging from 16.7% to 23%. The percentage of teachers of all ages is balanced, ranging from 16.7% to 23%. The percentage of teachers applying the MIT teaching model is 50%.

Research instruments

Questionnaire: In the first research phase, relevant data reflecting the current situation of mobile interactive teaching in ideological and political theory courses in 10 colleges and universities in 5 cities in Guangxi were collected, which fully guarantees the scientific nature of the measurement tool and the broad representativeness of the sample. Based on the literature review and theoretical research, a questionnaire survey was designed in combination with the current situation of mobile interactive teaching in ideological and political theory courses in Guangxi universities, and it was evaluated by experts. The implementation of the questionnaire survey mainly relied on the dissemination of electronic questionnaires.

In the second research phase, a comparative teaching experiment was conducted in college N using this teaching model. The experiment was divided into an experimental group and a comparison group with 15 teachers in each group, totaling 30 teachers. Teachers in the experimental group taught using the mobile interactive teaching model while those in the comparison group did not teach using the model. Since then, a questionnaire was administered to the teachers of these two groups.

Mobile Interactive Teaching (MIT) Model: This study draws on the smart classroom teaching model designed by Bian Jinjin and Xu Fuyin, and designs a cross-cutting mobile interactive teaching model based on constructivist learning theory and interaction theory. The horizontal dimension of this model is divided into teacher, student, and technique, and the vertical dimension is divided into before class, during class, and after class. before class, the teacher needs to complete the need analysis and instructional design with the help of APPs. Before class, the teacher needs to complete the need analysis and instructional design with the help of APPs. During class, the teacher and students implement the interaction and participation together. After class, the teacher and the students should carry out their teaching and learning activities around the two core elements of "Assessment and Feedback" and "Community Interaction and Extended Learning". The model is shown at figure 1.

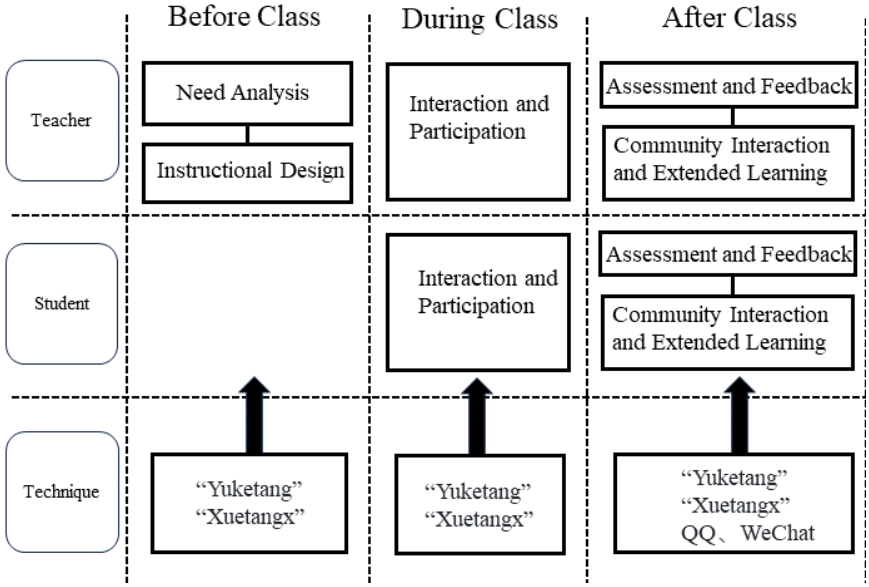

Figure 1: Mobile interactive teaching (MIT) model

In order to provide a more complete and intuitive description of the mobile interactive teaching model, a table is introduced. This table describes in detail the core elements of teaching in three different teaching cycles (Before Class, During Class, After Class), the functional modules and

technical support of the application, and the theoretical support corresponding to the core elements of teaching. Details are in the table 3.

Table 3: MIT model content details

Teaching Cycle	Core Elements of Teaching	Functional Modules and Technical Support	Theoretical Support
Before Class	Needs Analysis	(1) Learning situation analysis: Utilize "Xuetangx" to understand learners' basic knowledge level, learning needs, and learning styles.. (2)Course objective setting: Use "Xuetangx" to determine teaching objectives based on needs analysis.	Constructivism Learning Theory
	Instructional Design	(1) Interaction design: "Yuketang" is used to design interaction methods suitable for mobile learning, such as real-time questioning, instant feedback, group discussion, mutual evaluation, etc. (2) Personalized learning path design: Use "Yuketang" to design personalized learning suggestions and paths according to the characteristics of different learners. (3) Modularized course content design: "Yuketang" divides the course content into several small modules according to different topics or knowledge points, which is convenient for learners to study flexibly.	Constructivism Learning Theory
During Class	Interaction and Participation	(1) Project collaboration and research: With the help of "Xuetangx", the teacher releases tasks, and students work in groups to complete specific tasks. (2)Real-time communication and feedback: Use "Yuketang", the teacher and students and students can communicate and give feedback in real time, including randomly ordering students to answer questions, discussing questions in groups, evaluating each other's teaching and learning in the flipped classroom, real-time pop-up interaction, etc. (3)Online interactive discussion: Use "Yuketang" to set up specific topics and encourage students to express their views and conduct discussions online. (4)Mobile polls and surveys: Use "Yuketang" to conduct instant surveys or polls to understand students' opinions and feedback.	Interaction Theory
After Class	Assessment and Feedback	(1) Online testing and assessment: Using "Xuetangx", to conduct online knowledge tests and evaluate the learning process and performance of students. (2) Teaching feedback and correction: Using "Yuketang",, students evaluate the teacher's teaching, and the teacher can adjust the teaching program and content based on the students' evaluation and real-time testing.	Constructivism Learning Theory
	Community Interaction and Extended Learning	(1) Building learning communities: Social software (e.g., WeChat, QQ, etc.) is utilized to build learning communities to promote knowledge sharing and experience exchange. s (2) Expanding resource links: Teachers use "Xuetangx" to upload materials related to course content, make announcements, and provide links to external learning resources to encourage students to expand their learning.	Constructivism Learning Theory

		(3) Display of learning outcomes: Students use “Yuketang” to submit their own micro-videos or micro-movies as homework, and the teacher gives comments and suggestions.	

Data collection

In the first research phase, the actual number of questionnaires collected was 142, and the total number of valid questionnaires was 120, with an effective recovery rate of 84.5%.

In the second research phase, the actual number of questionnaires collected was 30, and the total number of valid questionnaires was 30, with an effective recovery rate of 100%.

DISCUSION AND RESEARCH RESULTS

The content of this section focuses on the analysis of the data collected in the first research phase. This analysis included reliability and validity tests, The overall score of the questionnaire, analysis of differences, analysis of influencing factors, and moderation analysis.

Reliability and validity tests

Reliability analysis: Cronbach's alpha reliability coefficient was chosen to examine three scales of this questionnaire: Teachers' attitudes and experiences with mobile interactive teaching software and devices (independent variable, abbreviated as X); Students' attitudes toward mobile learning and technological conditions from the teacher perspective (moderator variable abbreviated as M); and Effectiveness Teaching and Students Interaction (dependent variable, abbreviated as Y). The results of reliability operations for the three scales of this questionnaire are as follows.

Table 4: Reliability analysis

Scale	Cronbach Alpha	Number of questions
X	0.952	13
M	0.955	12
Y	0.951	11

In the process of validity test, X, M, and Y all passed the validity test.

The overall score of the questionnaire

Through the data of this questionnaire research, the status quo of mobile interactive teaching in Guangxi teachers' colleges and universities can be obtained as follows:

Table 5: Analysis of the current situation

		N	Minimum Value	Maximum Value	Mean Value	S. D
X	Teachers' familiarity and experience with mobile interactive technology (abbreviated as X1)	120	1.00	5.00	3.68	0.75
	Teachers' acceptance of mobile interactive pedagogy (abbreviated as X2)	120	1.00	5.00	4.08	0.72
X		120	1.00	5.00	3.83	0.68
M	Students' attitudes and adaptability to mobile interactive learning (abbreviated as M1)	120	1.00	5.00	3.89	0.68
	Technical support and environmental conditions of the school (abbreviated as M2)	120	1.00	5.00	3.64	0.79
M		120	1.00	5.00	3.77	0.68
Y		120	2.36	5.00	3.95	0.59

The table 5 shows that the three variables above (X,M,Y） are all between average and satisfactory.

Analysis differences

In the first research phase, it compares Gender, Title, Teaching age, and Type of College on X, M, and Y, respectively. Except for teaching age, which is significantly different on X, M, and Y, several others are not significantly different on X, M, and Y.

Table 6: Analysis of differences in teaching age

Factor		Less than 1 year	1 to 3 years	3 to 5 years	5 to 10 years	More than 10 years	F	P
X	X1	4.22±0.72	3.55±0.86	3.58±0.74	3.83±0.91	3.63±0.63	1.880	0.119
	X2	4.56±0.48	4.04±0.95	4.09±0.65	4.42±0.76	3.91±0.56	2.944	0.023
X		4.35±0.55	3.74±0.83	3.78±0.67	4.05±0.8	3.74±0.54	2.450	0.050
M	M1	4.35±0.55	3.76±0.83	3.98±0.66	4.09±0.64	3.8±0.59	2.213	0.072
	M2	3.88±0.93	3.51±0.98	3.53±0.82	3.88±0.65	3.63±0.66	0.813	0.519
M		4.11±0.71	3.63±0.84	3.76±0.6	3.99±0.64	3.71±0.61	1.409	0.235
Y		4.36±0.47	3.88±0.59	3.95±0.41	4.08±0.65	3.88±0.62	1.802	0.133

From table 6, it can be clearly seen that there is a significant difference between teachers' acceptance of mobile interactive pedagogy (X2), $p=0.023<0.05$.

In the first research phase, the independent samples t-test revealed that there was a significant difference between the performance of the experimental group and the comparison group on the seven dimensions of teaching. The details are given in the table below.

Table 7: Analysis of differences in teaching

Dimensions of Teaching	Used the MIT model for teaching	Not used the MIT model for teaching	T	P
Student Academic Achievement	4.27±0.22	4.03±0.23	2.84	0.008
Student Engagement	4.52±0.18	3.75±0.28	8.90	0.000
Knowledge Acquisition	4.45±0.27	4.1±0.41	2.76	0.010
Student Satisfaction	4.37±0.35	3.98±0.24	3.48	0.002
Classroom Atmosphere	4.53±0.16	3.73±0.22	11.36	0.000
Course Coverage	4.35±0.16	4.15±0.3	2.31	0.029
Student Self-confidence	4.43±0.18	4.28±0.16	2.44	0.021

The table 7 shows that the experimental group (Used the MIT model for teaching) performed better than the comparison group (Not used the MIT model for teaching) in all teaching dimensions.

Analysis of influencing factors

Table 8: Analysis of the impact of X on Y

Model		Unstandardized coefficient		Standardized coefficient	t	Significance
		B	Standard error	Beta		
(constant)		1.695	0.239		7.082	<0.001
X	X1	0.320	0.073	0.410	4.398	<0.001
	X2	0.265	0.077	0.322	3.455	0.001
R^2				0.442		

F	48.156
P	<0.001
Dependent variable: Y	

For results in table 8, the model fit was good with a fit R-square of 0.442. furthermore, the regression equation was significant (F = 48.156, p < 0.05), implying that at least one of the independent variables involved in this study can significantly influence the dependent variable self-efficacy.

Moderation analysis

M will moderate the relationship between X and Y. The theoretical relationship between the three variables is shown below:

Table 9: Moderation analysis

Model		Unstandardized coefficient		Standardized coefficient	t	P	R2	△R2
		B	Standard error	Beta				
Model 1	(Constant)	1.362	0.200		6.793	<.001	0.606	
	X	0.072	0.088	0.083	0.818	0.415		
	M	0.615	0.088	0.713	7.008	<.001		
Model 2	(Constant)	3.702	0.489		7.578	<.001	0.677	0.072 P<0.001
	X	-0.579	0.149	-0.671	-3.883	<.001		
	M	-0.098	0.159	-.114	-0.617	0.539		
	XM	0.192	0.037	1.534	5.159	<.001		
Dependent variable: Y								

From table 9, it can be clearly seen that

△R2 (Model 2-Model 1) is significant, P < 0.001, implying that, with the addition of the interaction term (X*M), the model fit is significantly improved.

Further, the regression coefficients of the interaction term passed the t-test with a significance level of 0.05, P < 0.001, i.e., the interaction term is significant, which again indicates that M moderates the effect of X on the quantity of Y.

CONCLUSION

This study was carried out in two phases to explore the application of a new mobile interactive teaching model in ideological and political courses in Guangxi universities and colleges. In the first research phase, a questionnaire research method was applied to survey 120 teachers. Three variables were formed in this research process, namely Teachers' attitudes and experiences with mobile interactive teaching software and devices (independent variable, abbreviated as X), Students' attitudes toward mobile learning and technological conditions from the teacher perspective (moderator variable, abbreviated as M), and Effectiveness Teaching and Students Interaction (dependent variable, abbreviated as Y). From the results of data analysis, the three variables X, M, Y are all between average and satisfactory, which implies that the level of mobile interactive teaching in ideological and political courses in Guangxi universities is not high. In addition, through moderation analysis, we can see that M moderates the effect of X on the quantity of Y.

In the second phase of the study, the mobile interactive teaching model was designed and then a comparative teaching experiment was conducted in N college using the teaching model. After that, a

questionnaire was administered to both groups of teachers. The results of data analysis showed that the experimental group performed better than the comparison group in all teaching dimensions. Thus, it can be proved that the teaching model can effectively improve the quality of teaching. In conclusion, this study provides useful references and practical cases for the teaching reform of ideological and political courses in universities in Guangxi and even in China, and it has certain theoretical and practical significance for the use of mobile technology to promote the innovation of teaching mode.

REFERENCES

Ain, Q.-u.-A., Shahid, F., Aleem, M., & et al., (2019). A review of technological tools in teaching and learning computer science. *EURASIA Journal of Mathematics*. Science and Technology Education, 15(11).

Bao, L. Y. (2021). Practical exploration of the deep integration of teaching of ideological and political theory courses in colleges and universities. *China Higher Education*, 23, 32-34.

Barker,P. (1990). Designing Interactive Learning Systems. Educational and Training Technology International, 27(2), 125-145.

Gu, M. Y., (1998). Dictionary of Education. Shanghai Educational Publishing House, Shanghai, China.

He,K. K. (1999). Constructivist instructional models, methods, and instructional designs. *Journal of Beijing Normal University（Social Sciences）*, 5,74-81.

Jonassen, D. & Land, S., (2012). Theoretical Foundations of Learning Environments. 2nd ed. Routledge, New York, USA.

Latif,M. Z., Hussain, I., Saeed, R. & et al., (2019). Use of Smart Phones and Social Media in Medical Education: Trends, Advantages, Challenges and Barriers," ACTA INFORM MED, 27(2), 133-138.

Li, L. L., (2019). Research on the Integration of 5G+VR Technology and Ideological and Political Education--Take the First VR Ideological and Political Education Training Room in Jiangsu as An Example. *Education Modernization*, 6(62), 183-185.

Liu, L. M. (2022). Reform and innovation of interactive teaching of ideological and political theory courses based on intelligent algorithm. Food Research & Development, 43(14), 241-242.

Lv, W. (2022). Study on the application of 'rain classroom' in the teaching reform of ideological and political theory courses in colleges and universities--taking the class of 'the outline of Chinese modern and contemporary history' as an example. *PR World*. 4, 53-55.

Murugan A., & Sai, G. T. B. (2017).The wonders of technology in teaching and learning English. *Indonesian EFL Journal*, 3(1), 57-68.

She, S. H. (2018). Exploration of Teaching Methods of Ideological and Political Theory Courses. China People's University Press, Beijing, China, 14-23.

Szucs,L., McNeill, E. B., & Wilson, K. (2015). Student Exploration: App (Lying) Technology for Health Education and Promotion. Human–Computer Interaction Series, 267-273.

Tuma,F. (2021). The use of educational technology for interactive teaching in lecture. Annals of Medicine and Surgery, 62, 231-235.

Wang, L. (2013). Exploration of the Integration of Ideological and Political Theory Courses and Information Technology in Colleges and Universities. Scientific and technological information, 20, 278.

Wu, H., & Wang, Z. K. (2015). Reflections on the innovation of college students' ideological and political education based on mobile phone applications. Ideological Theory Education Guide, no. 12,pp.107-110.

Zaheer,S., Butt, S. M., Gnevasheva, V. A., & et al., (2018). Do mobile technology in the classroom really improve learning outcomes?. *International Journal of Evaluation and Research in Education (IJERE)*, 7(3), 188-193.