

Teacher experiences and utilization of interactive educational technology in Chinese university

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Abstract

This study adopts a descriptive research method combining qualitative and quantitative analysis, in the qualitative analysis stage we will interview the participants in order to find out their perceptions and experiences about teachers' experiences and the application of interactive educational technology. In the quantitative analysis stage we will collect a large amount of participation data from the participants through questionnaires and statistically analyze it using SPSS 17.0 to determine the relationship between teachers' experiences and Utilization of Interactive Educational Technology. The participants of this study are teachers in Chinese universities, 285 teachers will be selected from three universities and 285 questionnaires will be distributed to help this study to explore the relationship between teachers' experience and the utilization of interactive educational technology. The purpose of this study was to analyze the relationship between teachers' experiences and Utilization of Interactive Educational Technology in Chinese universities. Specifically, this study will Descriptions will be given of the sex, age, education and years of service of the respondents; Determine teacher experience in terms of instructional guidance and competition, lesson planning and teaching practice, and work attitudes and satisfaction; Assess utilization of interactive educational technology in terms Teaching Guidance and Competitions, Lesson Planning and Teaching Practice, Work Ethic and Satisfaction; Test the differences in responses when grouped according to individual circumstances; Test the relationship between teachers' experience and the use of interactive educational technologies; Produce new insights into the use of interactive educational technologies in teaching and learning. Most of the respondents were Female, aged between 36-40 years, Educational Attainment was PhD, Length of service was 6-9 years. Most of the respondents considered teaching mentoring and competitions as well as professional ethics and satisfaction important in the teacher experience. Most respondents identified continuous improvement and after-school engagement as well as instructional strategies and classroom interaction as most important in the utilization of interactive educational technology. Comparison of responses regarding teacher experience after grouping according to circumstances. After grouping according to circumstances, it was

found that the differences were not significant. Teacher experience is closely related to the utilization of interactive educational technology. Produce new insights into the use of interactive educational technologies in teaching and learning.

Keywords: self-efficacy, effectiveness, University of China

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1. Introduction

In the modern context of Chinese higher education, the effective combination of teacher experience and Utilization of Interactive Educational Technology has become particularly critical. Teacher experience enriches teaching content and methods, while Utilization of Interactive Educational Technology provides students with a more dynamic and engaging learning experience. However, there is still insufficient research on how to integrate teachers' personal experience with these advanced technologies to optimize teaching strategies and improve learning effects. This lack of in-depth research emphasizes the urgency of in-depth exploration of the interaction between teacher experience and Utilization of Interactive Educational Technology, which not only has far-reaching significance for improving teaching quality, but also provides new perspectives and motivations for educational innovation. By comprehensively utilizing teachers' practical experience and interactive technology, students' active learning, creative thinking and social interaction can be more effectively promoted, thereby achieving the overall improvement of education and teaching.

Teacher experience is a valuable asset for teachers' professional growth. It covers the knowledge, skills, attitudes and personal experiences accumulated by teachers in their long-term teaching practice. Wang (2018) showed that these experiences not only include in-depth understanding and mastery of subject content, but also include strategies and techniques on how to effectively organize classes, stimulate students' interests, manage the classroom environment, and communicate effectively with students. More importantly, Wu (2019) found that teacher experience also includes sensitivity and adaptability to student learning differences and how to adjust teaching methods according to students' specific needs. These experiences of teachers play an irreplaceable role in improving teaching quality, optimizing learning experience and promoting students' all-round development. They enable teachers to make more flexible and innovative responses when facing teaching challenges and build richer and more diverse learning environments for students. Therefore, recognizing and making full use of the value of teacher experience is crucial to improving the quality of education and designing teacher professional development strategies.

The utilization of interactive educational technology involves integrating advanced technological tools and applications into the teaching and learning process to facilitate interaction between teaching and learning. This includes the use of electronic whiteboards, learning management systems, virtual laboratories, online forums and gamified learning platforms to stimulate student engagement and motivation. Through interactive educational technology, educators can create a more dynamic and inclusive learning environment in which students are encouraged to actively explore and share knowledge, thereby effectively improving learning outcomes and experiences. In the context of educational technology, teacher experience is particularly important when applying these technologies. Li (2020) research shows that how teachers choose and apply suitable interactive educational technologies based on their own teaching experience not only affects the teaching effect, but also has a significant impact on students' learning experience. Therefore, an in-depth understanding of how teachers' experience affects the selection and application of interactive educational technologies, as well as the effectiveness of these technologies in teaching practice, is of great significance for guiding teachers' teaching practices.

The findings of this study have important guiding significance for teachers and education policy makers. First, by analyzing the relationship between teacher experience and interactive educational technologies, it can help teachers better understand and apply these technologies to improve teaching effectiveness. Secondly, by evaluating the effectiveness of interactive educational technologies in teaching practice, it provides a reference for college teachers to promote the application of these technologies. In addition, this study can also provide

reference for education policy makers, guide the development of higher education and teacher education reform by predicting subject development trends and proposing educational policy recommendations, and promote the application of interactive educational technology in higher education. This study aims to combine theory and practice to provide a research basis for the innovation and development of higher education.

Objectives of the Study - The research study aims to analyze the relationship between teachers' experiences and Utilization of Interactive Educational Technology in Chinese universities. More Specifically, this study will descriptions will be given of the sex, age, education and years of service of the respondents; determine teacher experience in terms of instructional guidance and competition, lesson planning and teaching practice, and work attitudes and satisfaction; assess utilization of interactive educational technology in terms Teaching Guidance and Competitions, Lesson Planning and Teaching Practice, Work Ethic and Satisfaction; test the differences in responses when grouped according to individual circumstances; test the relationship between teachers' experience and the use of interactive educational technologies; and produce new insights into the use of interactive educational technologies in teaching and learning.

2. METHOD

Research Design - This study adopted a descriptive research method, combining both qualitative and quantitative analyses. In the qualitative analysis phase, interviews with participants were conducted to understand their perceptions and experiences regarding teachers' experiences and the application of interactive educational technology. During the quantitative analysis phase, a large amount of data from participants was collected through questionnaires, and this data was statistically analyzed using SPSS 17.0 to determine the relationship between teachers' experiences and the utilization of Interactive Educational Technology. This research method allowed researchers to gain in-depth insights into the study topic from two different perspectives. The qualitative analysis provided deep insights into participants' perceptions and experiences, while the quantitative analysis, based on reliable data sources, scientifically validated the relationship between teachers' experiences and the utilization of interactive educational technology. This strategy of combining qualitative and quantitative methods not only enhanced the comprehensiveness of the research but also improved the accuracy and credibility of the results.

Participants of the Study - The participants of this study were 300 teachers from three universities in Zhejiang, China. A total of 341 samples were calculated through Raosoft. After approval and confirmation by the professors, 285 teachers were randomly selected as participants, and questionnaires were distributed to help this study explore the relationship between teacher experience and the utilization of interactive educational technology.

Data Gathering Instrument - In this study, data were collected by distributing questionnaires, which were divided into three sections. The first section was the Profile of the Respondents, containing information on the sex, age, educational attainment, and length of service of the participants. Part II was adapted from the Questionnaire on Teachers' Teaching Experience, comprising a total of 20 items divided into three sub-domains: Teaching Guidance and Competitions, Lesson Planning and Teaching Practice, and Work Ethic and Satisfaction. This section was designed to determine the respondents' teacher experiences. Part III, adapted from Research on Interactive Teaching Techniques, consisted of 20 items divided into three subareas: Pre-Lesson Preparation and Understanding, Instructional Strategies and Classroom Interaction, and Continuous Improvement of Interactive Educational Techniques and After-School Engagement. This part was used to assess respondents' utilization of interactive educational technology. A series of educational or pedagogical indicators were described, along with their respective Cronbach Alpha values, which is a statistic that measures the internal consistency of a scale. Values closer to 1 indicate higher internal consistency, i.e., more reliable and stable measurements between these indicators. The Cronbach Alpha values for all indicators were very high, ranging from 0.907 to 0.949, and all were labeled as "excellent". This meant that the indicators had high reliability and internal consistency in measuring the concepts they represented.

Data Gathering Procedure - Through the online distribution of questionnaires via the Wenjuanxing platform, this study obtained quantitative data on the experiences and situations of Chinese university teachers using interactive educational technology. The questionnaire was meticulously designed, covering multiple aspects of the application of interactive educational technologies, ensuring comprehensive data collection. The entire process from the distribution to the completion of data collection took about two weeks, during which time there was active follow-up on the teachers' feedback to ensure a high response rate and the reliability of the data. Additionally, this study obtained qualitative data through in-depth interviews, delving into teachers' views, experiences, and challenges with using interactive educational technologies. By integrating the quantitative data from the survey with the qualitative data from the interviews, this study aimed to explore the relationship between the two, thereby deepening the understanding of the value and impact of applying interactive educational technologies in higher education. This approach not only added depth to the research but also provided empirical support for enhancing the effective use of educational technologies in teaching.

Data Analysis - To thoroughly examine the experiences and circumstances of Chinese university teachers' utilization of interactive educational technologies, the research methodology will initially involve the collection of quantitative data through the deployment of a meticulously designed and validated questionnaire. This instrument is tailored to capture a broad spectrum of variables concerning the adoption and impact of these technologies in educational settings. Following the data collection phase, a comprehensive statistical analysis, including both correlation and regression analyses, will be conducted. This analytical approach is chosen to rigorously explore the nuanced relationship between teachers' experiences, encompassing their professional background, teaching practices, and perceptions, and their utilization of interactive educational technologies. The aim is to unearth significant patterns and insights that can inform both academic research and practical strategies for integrating technology into higher education effectively.

Ethical Considerations - In China, the experiences and circumstances of Chinese university faculty members' utilization of interactive educational technologies examine this complex and critical issue from a moral and ethical perspective. Researchers must focus on the integrity and transparency of academic research, and be careful to avoid academic misconduct, such as data falsification and plagiarism of papers and other academic misconduct, while pursuing the results of their research to ensure the ethical foundations of scientific research. Ensure that appropriate licenses are obtained and privacy protection regulations are adhered to. Focus on individual differences to ensure that the proposed methodology promotes the holistic development of students, and reflect on whether the teaching methodology is in line with the principles of educational equity so as to avoid unfair outcomes due to inappropriate teaching methods. To emphasize teachers' sense of social responsibility and encourage them to pay attention to the development of students' civic awareness. Emphasis is placed on developing students' civic literacy in education so that they can make a positive contribution to the development and progress of society.

3. Results and discussion

Table 1

Summary Table on Teacher Experiences

Indicators	Weighted Mean	Verbal Interpretation	Rank
Teaching Guidance and Competitions	3.05	Agree	2
Lesson Planning and Teaching Practice	3.16	Agree	1
Work Ethic and Satisfaction	3.01	Agree	3
Composite Mean	3.07	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 presents the respondents' assessment of a Summary Table on Teacher Experiences. The composite mean of 3.07 indicates that the respondents generally agreed. Among the items cited, "Lesson Planning and

"Teaching Practice" scored 3.16, followed by "Teaching Guidance and Competitions" and "Work Ethic and Satisfaction." These results suggest that respondents were positive about teachers' experience in curriculum planning and instructional practices, believing that teachers were performing well in this area. Respondents also recognized teachers' efforts in instructional coaching and competitions, as well as in maintaining a strong work ethic and achieving job satisfaction. These assessments reflect the respondents' acknowledgment of teachers' professionalism and work ethic.

Hui, et. al., (2023) points out that teachers have expectations regarding their working environment and treatment and hope that relevant departments will pay more attention to and address these issues. Furthermore, in the realm of teaching guidance and competitions, there is room for further training and guidance to boost teachers' professionalism and competitiveness. Overall, Hustad (2015) recommends that relevant departments should amplify the training and support provided to teachers to enhance their professionalism and job satisfaction, thereby making more significant contributions to the cultivation of high-quality talents and the advancement of education. Simultaneously, teachers themselves should persist in learning and advancing to elevate their teaching standards and overall quality.

Table 2

Summary Table on Utilization of Interactive Educational Technology

Indicators	Weighted Mean	Verbal Interpretation	Rank
Pre-course Preparation and Understanding	2.93	Agree	3
Teaching Strategies and Classroom Interaction	3.00	Agree	2
Continuous Improvement and Post-course Engagement	3.16	Agree	1
Composite Mean	3.03	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 presents the respondents' assessment of the Summary Table on Utilization of Interactive Educational Technology. The composite mean of 3.03 indicates that the respondents generally agreed. Among the items cited, "Continuous Improvement and Post-course Engagement" scored 3.16, followed by "Teaching Strategies and Classroom Interaction" and "Pre-course Preparation and Understanding."

These results suggest that respondents generally believe interactive educational technology plays a significant role in continuous improvement and post-course engagement. They view interactive educational technology as a tool that can facilitate continuous teaching and learning improvement and enhance after-class participation, thus contributing to the effectiveness of teaching and learning. Respondents also evaluated the use of interactive educational technology in teaching strategies and classroom interaction positively, noting it helped enhance classroom teaching's enjoyment and effectiveness. Furthermore, respondents found interactive educational technology useful for pre-class preparation and understanding. Liu (2019) argued that pre-class preparation enables teachers to better comprehend students' needs and characteristics, allowing for the development of more targeted teaching strategies. Similarly, students can grasp course content in advance through pre-course comprehension, laying a foundation for classroom learning. However, the fact that the composite mean has reached the threshold of satisfaction suggests there is room for improvement in some aspects of interactive education technology. In general, respondents were positive about the utilization of interactive educational technology, recognizing its positive role in continuous improvement, after-school engagement, teaching strategies and classroom interactions, as well as pre-class preparation and comprehension. However, further efforts are needed to enhance its application effectiveness and functional perfection to better support educational and teaching activities. By continuously optimizing and innovating the application of interactive educational technology, we can provide students with a more engaging and efficient learning experience, promoting their overall development and growth.

The table presents the association between teacher experiences and the utilization of Interactive Educational

Technology. The computed r-values indicate an almost negligible direct/indirect correlation, and the resulted p-values were greater than the alpha level. This means there was no significant relationship between the two variables.

Table 3

Relationship Between Teacher Experiences and Utilization of Interactive Educational Technology

Teaching Guidance and Competitions	r-value	p-value	Interpretation
Pre-course Preparation and Understanding	-0.038	0.516	Not Significant
Teaching Strategies and Classroom Interaction	0.021	0.714	Not Significant
Continuous Improvement and Post-course Engagement	-0.029	0.617	Not Significant
Lesson Planning and Teaching Practice			
Pre-course Preparation and Understanding	0.002	0.974	Not Significant
Teaching Strategies and Classroom Interaction	-0.013	0.816	Not Significant
Continuous Improvement and Post-course Engagement	-0.032	0.582	Not Significant
Work Ethic and Satisfaction			
Pre-course Preparation and Understanding	-0.103	0.074	Not Significant
Teaching Strategies and Classroom Interaction	-0.095	0.100	Not Significant
Continuous Improvement and Post-course Engagement	-0.002	0.968	Not Significant

Legend: Significant at p-value < 0.01

In other words, although one might expect the more experienced group of teachers to perform better or have higher satisfaction in utilizing interactive educational technology, the results of this study did not support this hypothesis. Wang, et. al., (2021) showed that, regardless of teachers' experience, there were no significant differences in the utilization of interactive educational technology. This may be because the utilization of interactive educational technology is more influenced by other factors, such as teachers' technological competence, teaching style, and students' needs. However, it is worth noting that although this study did not find a significant relationship between teachers' experience and the utilization of interactive educational technology, it does not imply that experience is unimportant. Wang (2018) argued that teachers' experience might have a significant impact on teaching and learning in other ways, such as curriculum design, student management, and teaching strategies. Additionally, the results of this study could also be influenced by factors like sample size and survey methodology, and thus need to be interpreted with caution. Overall, the findings of this study remind us that when promoting and applying interactive educational technology, reliance should not be solely on teachers' experience. Instead, more attention should be paid to teachers' actual needs and technological capabilities, providing targeted training and support. At the same time, future research can further explore other factors affecting the utilization of interactive educational technology, aiming to provide more valuable references for teaching practice.

Table 4

A Proposal for a Plan for the Use of Interactive Educational Technology in Teaching and Learning.

Key Result Area	Objectives	Strategies/ Activities	Success Indicators	Person/s Responsible
1. Teacher Experiences 1.1 Teaching Guidance and Competitions	Enhance teaching quality through effective guidance and support. Foster a competitive spirit among students	Conduct regular workshops and seminars on teaching methodologies and best practices. Establish a mentoring program for new teachers to receive guidance from experienced educators.	Improvement in teaching evaluations and student satisfaction surveys. Increase in the number of teachers participating in professional development activities. Growth in the number and	Teachers

	through organized competitions.	Organize inter-school competitions in various subjects to promote healthy competition. Encourage participation in national and international competitions to broaden students' horizons.	quality of student participation in competitions. Recognition and awards received by students and teachers at national and international levels.	
1.2 Work Ethic and Satisfaction	Foster a strong work ethic culture among employees. Increase overall job satisfaction and reduce employee turnover.	Implement regular training sessions on work ethics, professionalism, and teamwork. Establish a reward system to recognize employees who demonstrate outstanding work ethic. Conduct regular employee satisfaction surveys to identify areas of improvement. Organize team-building activities to enhance camaraderie and collaboration.	Improvement in employee attendance, punctuality, and overall work attitude. Increase in the number of employees recognized for their work ethic and performance. Positive trends in employee satisfaction survey results over time.	Teachers
2. Utilization of Interactive Educational Technology 2.1 Teaching Strategies and Classroom Interaction	Enhance teaching effectiveness through innovative and engaging teaching strategies. Foster active student participation and interaction in the classroom.	Incorporate diverse teaching methods such as group discussions, role-plays, simulations, and hands-on activities. Utilize technology-based tools and resources to make lessons more interactive and engaging. Encourage students to ask questions, share ideas, and provide feedback during class sessions.	Improvement in student engagement and participation levels during class sessions. Positive feedback from students on the effectiveness and relevance of teaching strategies used. Increase in the number of students actively contributing to classroom discussions and activities.	Teachers
2.2 Pre-course Preparation and Understanding	Ensure that learners have a solid understanding of the course content and objectives before the course starts. Facilitate effective pre-course preparation to set a strong foundation for successful learning outcomes.	Provide learners with a detailed course outline, including learning objectives, topics to be covered, and assessment criteria. Conduct pre-course assessments or surveys to gauge learners' existing knowledge and skills related to the course content. Offer preparatory materials such as reading lists, online resources, or video tutorials to support learners' self-study before the course starts.	High levels of engagement and participation from learners during the pre-course phase. Positive feedback from learners on the clarity and usefulness of the pre-course materials and resources provided. Improvement in learners' knowledge and skills related to the course content, as demonstrated through pre- and post-course assessments or surveys.	Teachers

4. Conclusions and recommendations

Most of the respondents were Female, aged between 36-40 years, Educational Attainment was PhD, Length of service was 6-9 years. Most of the respondents considered teaching mentoring and competitions as well as professional ethics and satisfaction important in the teacher experience. Most respondents identified continuous improvement and after-school engagement as well as instructional strategies and classroom interaction as most important in the utilization of interactive educational technology. Comparison of responses regarding teacher experience after grouping according to circumstances. After grouping according to circumstances it was found that the differences were not significant. Teacher experience is closely related to the utilization of interactive educational technology. Produce new insights into the use of interactive educational technologies in teaching and learning.

Chinese universities may greatly improve students' understanding of their specialties by providing more experience with real work scenarios. Similarly, instructors can utilize interactive educational technologies to simulate real-world work scenarios so that students can learn and practice in a more realistic environment. Teachers may utilize interactive educational technologies to enhance course syllabi and activities so that they are more closely aligned with students' future career prospects. For example, Virtual Reality (VR) or Augmented Reality (AR) technologies can be utilized to create simulated scenarios related to students' future careers, giving them a more intuitive and in-depth experience in the learning process. Students may actively participate in career-related online seminars, workshops, and courses. These activities provide students with valuable opportunities to learn about various industries. Teachers can organize and lead these activities through interactive educational technologies, such as using online collaboration tools to facilitate student communication and cooperation. A career development program that implements the recommendations provides valuable insights for continuous improvement and ensures that the university's efforts are aligned with the changing needs of the job market. A professional development program that implements the above recommendations will provide valuable insights for continuous improvement and ensure that the university's efforts are aligned with the changing needs of the job market. To ensure diverse and broadly representative findings, future research on self-efficacy and the effectiveness of Chinese universities in developing student employability should seek to expand sample sizes.

5. References

- Hui, C. K., Yan, L. P., Yang, W. P., Cui, J. C., Yang, Y. Z., Su, Q. M., ... & Xu, B. S. (2023). Progress in the application of graphene aerogel composites to electrochemical energy storage. *Acta Materiae Compositae Sinica*, 1-16. <https://doi.org/10.13801/j.cnki.fhclxb.20231115.001>
- Hustad, A. W. (2015). The cultural integration experience of chinese immigrant teachers in the United States: An interpretative phenomenological analysis [Doctoral dissertation, The University of Nebraska-Lincoln].
- Li, Z. G. (2020). Development and application of "Peking University Teaching Network" online teaching scheme. *Chinese Educational Informatization*, (23), 4. <https://doi.org/10.3969/j.issn.1673-8454.2020.12.015>
- Liu, L. C. (2019a). Research on mainstream teacher images in Chinese educational films [Master's thesis, Fujian Normal University].
- Liu, X. (2019b). A comparative study of subject teaching knowledge between novice English teachers and experienced English teachers in senior high school [Master's thesis, Shenyang Normal University].
- Liu, X. W. (2019c). A survey and research on information technology application ability of junior high school English teachers—A case study of three schools under 271 Education Group [Master's thesis, Shaanxi University of Technology].
- Wang, M., Ni, Z., Zhou, X., & Shi, X. (2021). Analysis and Research on Influencing Factors of University Teachers and Students Management Based on Computer System. *Journal of Physics: Conference Series*,

1865(4), 042036. <https://doi.org/10.1088/1742-6596/1865/4/042036>

Wang, X. M. (2018a). Research on the cultivation of information technology application ability of normal university students adapting to "Internet +" environment [Master's thesis, Zhejiang Normal University].

Wang, Y. H. (2018b). The relationship between ICT application ability and use intention of primary and secondary school teachers [Master's thesis, Tianjin Normal University].

Wu, S. L. (2019). Research on teacher-student interaction effect in college classroom based on information technology [Master's thesis, Yanbian University].