Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 1765 – 1779
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6490

Strategies for Developing Teachers' Digital Teaching Competency in Fujian Higher Vocational Colleges

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Abstract

This study outlines a strategy for developing digital teaching skills among faculty at Fujian's vocational colleges. It has three goals: to identify key components of digital teaching competency, to evaluate current and desired levels of competency, and to create effective strategies for improvement. The research involves 412 educators and uses interviews, questionnaires, and evaluations.The strategy includes four components with 14 indicators: Digital Awareness, Skills and Training, Institutional Construction, and Teaching Experience. Current competency is moderate, with Teaching Experience highest. Desired levels are higher, led by Digital Skills. Priorities are to establish support systems, enhance skills, foster positive attitudes, and accumulate experience.Experts rate the strategy highly for appropriateness, accuracy, and feasibility. It meets the colleges' needs, covers all aspects of management and teaching, and provides a model for other institutions to follow in promoting digital teaching and cultural heritage.

Keywords: *Climate Change, Human Psychology, Emotional Impact, Cognitive Responses, Bibliometric Analysis.*

Introduction

With the rapid development of global Internet technology, information technology represented by computer network and modern communication is infiltrating into the field of education and learning with unprecedented depth and breadth. While multimedia technologies such as mobile Internet, artificial intelligence, big data, etc. bring unlimited development potential to education and teaching, they also put forward higher requirements and challenges. With the development of digital education and the improvement of teaching quality, teachers play an important role in undertaking this task, and their teaching competence is a key factor affecting whether they can shoulder this responsibility. Therefore, how to enhance teachers' teaching competence and promote their maximum professional development has become an important proposition for improving teaching quality and promoting the connotative development of higher education (Anderson, J. 2022).

The notice of the Ministry of Education and other five departments on the issuance of the Action Plan for the Revitalization of Teacher Education (2018-2022) proposed to implement the innovative action of "Internet plus+teacher education", make full use of cloud computing, big data, virtual reality, artificial intelligence and other new technologies, promote the construction and application of teacher education information based learning service platform, and promote the reform of teaching methods characterized by autonomy, cooperation and inquiry (Zhang, W. 2021). The Department of Science, Technology and Information Technology of the Ministry of Education also proposed "guiding and promoting the development of" Internet plus education ", using information technology to update education concepts and change education models" in the key points of work in 2021. The opinions of the Central Committee of the Communist Party of China and the State Council on comprehensively deepening the reform of the teaching staff in the new era propose to "comprehensively improve the quality of teachers in higher education institutions, build a high-quality and innovative teaching team, focus on improving teachers' professional abilities, build a school level teacher development platform, organize training activities, carry out teaching research and guidance, promote teaching reform and innovation, strengthen the construction of learning communities such as departmental teaching and research offices, establish and improve the mentoring mechanism, and comprehensively carry out training to enhance the teaching competence of higher education teachers" (Evans, G. 2023). In addition, the "Several Opinions on Comprehensively Improving the Quality of Higher Education" issued by the Ministry of Education once again proposes to "improve the professional level and teaching competence of teachers." We will promote the establishment

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of teacher teaching development centers in universities, focus on supporting the construction of a number of national level teacher teaching demonstration centers, and systematically carry out teacher training, teaching consulting, etc. to enhance the professional level and teaching competence of teachers. We will reform the evaluation methods of teacher teaching competence, encourage personnel mobility between schools and enterprises, encourage teachers to obtain work or research experience outside of school, and encourage universities to hire professional and technical personnel with practical experience as teachers (Rodriguez, L. 2023). The improvement of teaching competence of local undergraduate university teachers should become the core customer of teacher development. "From the above documents, it can be seen that under the requirements of higher education shifting from quantitative development to connotative development, The, Effectively enhancing teachers' learning ability in universities is an important task that is urgently needed. Therefore, improving teachers' digital teaching competence in the information age has significant theoretical value and practical significance (Brown, A. 2023).

Research Problems

What are the components and indicators that affect the development of digital teachers?

What are the problems and the demands in enhancing the digital teaching competency of teachers in Fujian higher vocational colleges?

How to develop effective strategies to enhance the digital teaching competency of teachers in higher vocational colleges?

Research Objectives

To study the components and indicators of digital teachers in higher vocational colleges in Fujian Province.

To explore the current state , the defined state and the priority needs of digital teaching competency of teachers in higher vocational college teachers in Fujian Province.

To design and evaluate strategies for developing teachers' digital teaching competency in higher vocational colleges Fujian Province.

Literature Review

By referring to relevant literature at home and abroad, experts and scholars have carried out a wealth of research on the development strategies of teachers' Digital Teaching Competency. Combined with the research content of this paper, the main representative views are shown as table1.

Table 1. Main Viewpoints of the Research on the Development Strategies of Teachers' Digital Teaching Competency

Authors	Viewpoints
Miguel Ángel García Delgado , Sonia Rodríguez Cano , Vanesa Delgado Benito , Cristina Di Giusto Valle (2023)	Teachers at different stages of education should possess Digital Teaching Competency, including digital awareness and attitude, digital knowledge and skills, digital training, development and utilization of digital teaching resources, construction of digital teaching environment, digital teaching evaluation and feedback, and other Competency .
Vlad Mykhnenko(2016)	An important aspect of university teachers related to digital technology involves their adaptation and integration with digital technology, which is not an easy task in itself, as it requires them to possess digital literacy and all of these requirements, among other things .

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Jesús Sánchez Prieto , Juan Manuel Trujillo Torres,Melchor Gómez García , Gerardo Gómez García (2020)	Puts forward the influence of gender on Digital Teaching Competency in vocational education and training, and finds that female teachers' Digital Teaching Competency is relatively weak .
Istiningsih E. , Suyatno , Widodo (2020)	The impact of information and communication technology (ICT) integration on the development of TPACK (skills, knowledge, Competency, and learning) in vocational high school teachers .
SánchezPrieto Jesús , TrujilloTorres Juan Manuel , GómezGarcía Melchor , GómezGarcía Gerardo (2021)	The development of Digital Teaching Competency among teachers is influenced by various factors, including their digital literacy, teaching experience, and digital teaching training. In addition, the study also found that the age of teachers has a certain impact on the development of Digital Teaching Competency.
Esteve Mon Francesc M. , Llopis Nebot Maria Angeles , Adell Segura Jordi (2020)	The development of teachers' Digital Teaching Competency is influenced by various factors, including their digital literacy, teaching experience, and digital teaching training .
Bojukrapan Sutthikarn , Laoha Rukthin , Jantakoon Thada(2023)	There are certain obstacles in the process of developing teachers' Digital Teaching Competency, and their use ultimately promotes and changes traditional teaching methods. Incorporating digital technology into the educational process indicate that the role of technology and tools is primarily valued .
Ottenbreit Leftwich Anne , Liao Janet Yin Chan , Sadik Olgun , Ertmer Peggy(2018)	If university teachers have strong ICT related knowledge, they will be able to overcome obstacles and successfully integrate technology into teaching practice .
Wang Minshan(2023)	The evaluation of teachers' Digital Teaching Competency under TPACK that it is necessary to establish tools to evaluate teachers' Digital Teaching Competency, in order to integrate digital education and teaching professional elements. The study also explored the overall evaluation method of teachers' Digital Teaching Competency and the differences in Digital Teaching Competency among teachers at different teaching stages .
Hou Yi, Chu Hui , Huang Yanhong (2021)	The influencing factors and improvement paths of Digital Teaching Competency of teachers in high schools include digital awareness and attitude, digital knowledge and skills, digital training Teachers' experience in digital teaching, their self-efficacy in digital teaching, their competency to design and implement digital teaching, their age, teaching experience, subject background, teaching tasks, and other factors can all affect the improvement of their Digital Teaching Competency .
Yuan Fang (2021)	Influencing factors of Digital Teaching Competency of university teachers and proposed strategies for improving their Digital Teaching Competency, including policy guidance, improving mechanisms, enriching experience, arranging teaching tasks reasonably, and transforming training methods .
Long Ping, Chen Liping , Chen Hongtu (2022)	The improvement path should include digital awareness and attitude, digital knowledge and skills, digital training, digital teaching experience of teachers, self-efficacy of teachers in digital teaching Factors such as the design and implementation competency of teachers in digital teaching, age, teaching experience, subject background, and teaching tasks of teachers in digital teaching .

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Liu Sisi (2020)	Factors affecting the improvement of teachers' Digital Teaching Competency include digital awareness and attitude, digital knowledge and skills, digital training, teachers' digital teaching experience, teachers' digital teaching self-efficacy, teachers' digital teaching design and implementation competency, teachers' age, subject background, teaching tasks and other digital teaching experience .
Li Juan, Zhang Jiaming (2011)	Schools must establish a diversified teaching management evaluation system, create an information-based teaching environment, provide effective teaching and research services for teachers, and provide continuous and diverse training content. Teachers must improve their competency to reflect on information-based teaching and gain a deep understanding of the connections between various elements in the process of information-based teaching .
Zhang Yichun, Wang Yuxi (2015)	At the school level, it is necessary to strengthen the construction of educational information infrastructure, strengthen the construction of training systems, carry out training work at different levels, and cultivate the "core population" of information technology teaching; At the teacher level, teachers need to update their information technology teaching philosophy, learn information technology skills independently, communicate and share difficulties encountered in teaching, and achieve the goal of deep integration of information technology and curriculum

Source: Chen Mao,(2024).

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Research Framework

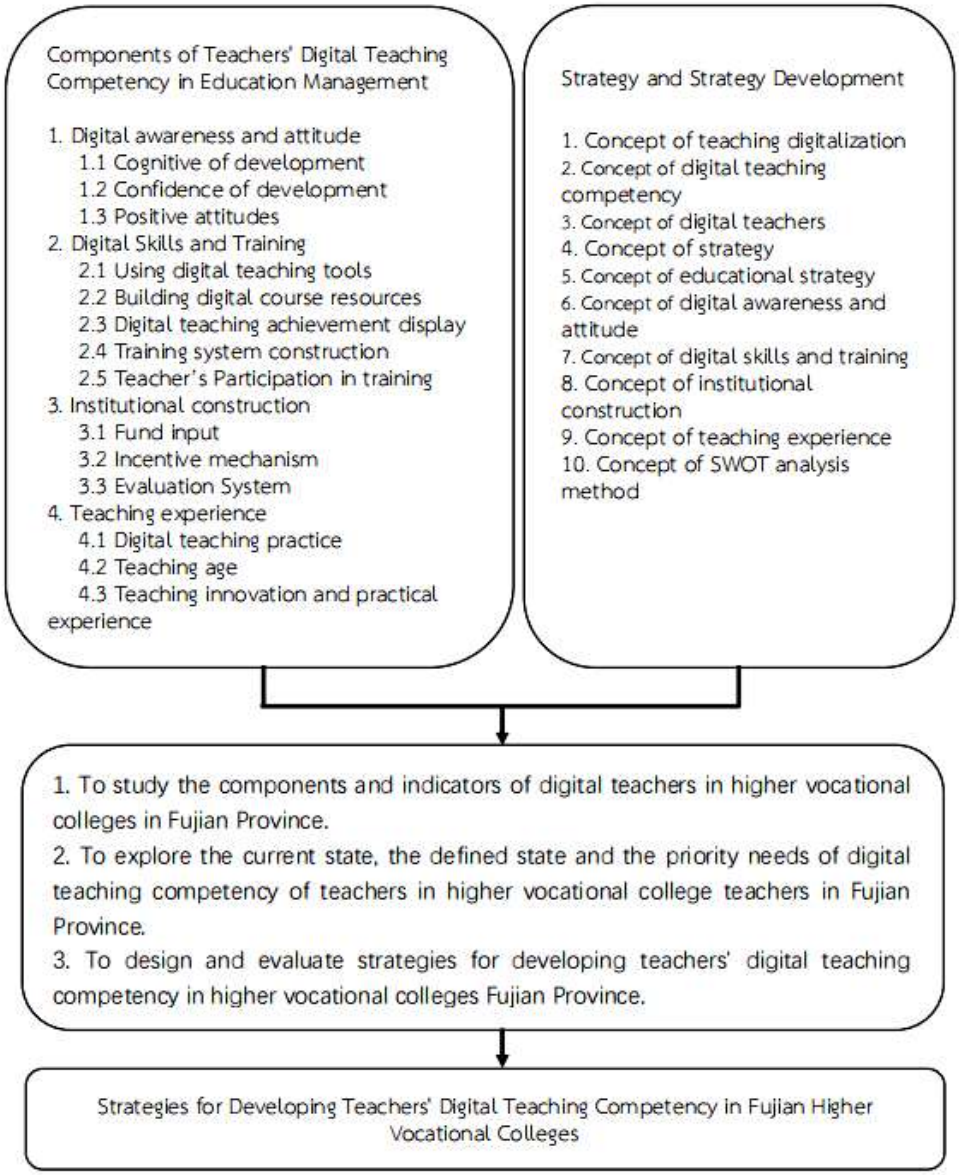

Figure 1. Theoretical Framework Research

Source: Chen Mao,(2024).

Research Theories

Education Management Theory

To advance national cultural inheritance, education strategies must focus on coordination and fully engage people's initiative and creativity to ensure effective cultural transmission and personal growth. For universities, this means developing systems with a management perspective that prioritizes human elements, as highlighted by the "cultural man hypothesis" (Johnson, M., 2021).The core of these strategies is the human factor, with individuals playing key roles as decision-makers and executors in cultural inheritance. Chinese educator Ye LAN emphasizes "people" as central to educational management. This paper addresses challenges in ethnic cultural inheritance within Yunnan's universities, aiming to highlight the

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importance of "people" in building cultural inheritance mechanisms and to develop strategies accordingly (Hernandez, T. 2022).

System Science Theory

System science is a methodological approach that examines systems' structures, principles, and laws, integrating system science, information theory, and control science. It's crucial for understanding and transforming the world in the information age, with applications across various sectors (Chen, H., 2022). System science significantly influences modern educational technology, becoming a core theory within it. The information system method applies system science to address complex information system issues (Yang J., 2015).

The systematic method involves observing research subjects as complex systems, analyzing them based on their inherent laws. It emphasizes holistic analysis of complex systems, examining the interrelations and functions of their constituent elements to derive general procedures for solving complex system issues. System theory facilitates comprehensive thinking about education and teaching processes, allowing for systematic problem-solving in these areas (White, C., 2022).

Teacher Professional Development Theory

Teaching is an ancient profession, with France pioneering its education and professionalization. UNESCO and others in the '60s and '70s stressed the need for college teachers' ongoing training to sustain expertise. Three main theories on teacher professional development (TPD) exist: Hoyle's "process theory" sees TPD as crucial for teacher growth but overlooks development details; Little's "action theory" emphasizes growth's role in TPD but lacks focus on knowledge and skill improvement; Wyedean combines these views, suggesting TPD is a mix of development states and dynamic factors for a comprehensive process (Martinez, J., 2020).

Sun Tzu's Art of War: "Know yourself and the enemy, and you will not be in danger of a hundred battles"

Ancient wisdom, encapsulated in the phrase "know yourself and your enemy, and you will not be in danger in a hundred battles," from Sun Tzu's Art of War, offers valuable insights for educational strategy. It suggests the importance of understanding individual student needs and capabilities, much like understanding the enemy in warfare, to tailor effective educational plans. This principle of "knowing oneself and the other" is crucial in education for personalizing instruction and ensuring adaptability to changing circumstances (Zhan Y F., 2017). Education strategies should also be flexible, evolving with student feedback and educational advancements, akin to adjusting tactics in response to an enemy's moves. While education shares some strategic parallels with military strategy, its goals are fundamentally different, focusing on peaceful talent development and knowledge dissemination. Education should be guided by principles of peace, justice, and holistic development, aiming to enhance both student and teacher competencies. Integrating the concept of "knowing oneself and the other" into educational strategies is essential for the study's objective and for enhancing digital teaching skills in Fujian's vocational colleges (Li, H., 2019).

Research Method

The main research objective of this paper is to explore the development of Digital Teaching Competency of teachers in higher vocational colleges in Fujian Province based on the current situation of the development of Digital Teaching Competency of teachers in the education management of Fujian higher vocational colleges. This paper discusses the current situation, ideal situation and priority needs of the education strategies to develop teachers' digital competency, and works out a reasonable education letter strategies system to make the Digital Teaching Competency promotion mechanism in education management of Fujian higher vocational colleges work better (Thompson, D., 2022).

The research in this paper is divided into three phases:

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The first phase: Referring to relevant literatures at home and abroad, combined with research questions, this paper summarizes the components and indicators of Digital Teaching Competency enhancement strategies for teachers in higher vocational colleges in Fujian.

The second phase: Through questionnaire survey and personal interview, the author preliminarily understands the current work on the promotion strategies of Digital Teaching Competency of teachers in higher vocational colleges in Fujian Province, and analyzes the existing problems in the development of Digital Teaching Competency of teachers.

The third phase: formulate an effective educational strategies system to develop the Digital Teaching Competency of teachers in Fujian higher vocational colleges.

The education strategies proposed in the end of this paper is based on the current situation and existing problems. (Miller, P.,2021). Therefore, the research focuses on the current situation of the development of teaching Competency of teachers in higher vocational colleges in Fujian Province, and according to the research results, the current situation of the development of teaching Competency of teachers in higher vocational colleges in Fujian Province is analyzed, the existing problems are found, and the causes of the problems are analyzed. On this basis, according to the law of love and management, put forward the corresponding education strategies. Taking these three universities as research institutions can be regarded as the representative of higher vocational colleges in Fujian Province, and the research conclusions are universal and typical (Thompson, D., 2022).

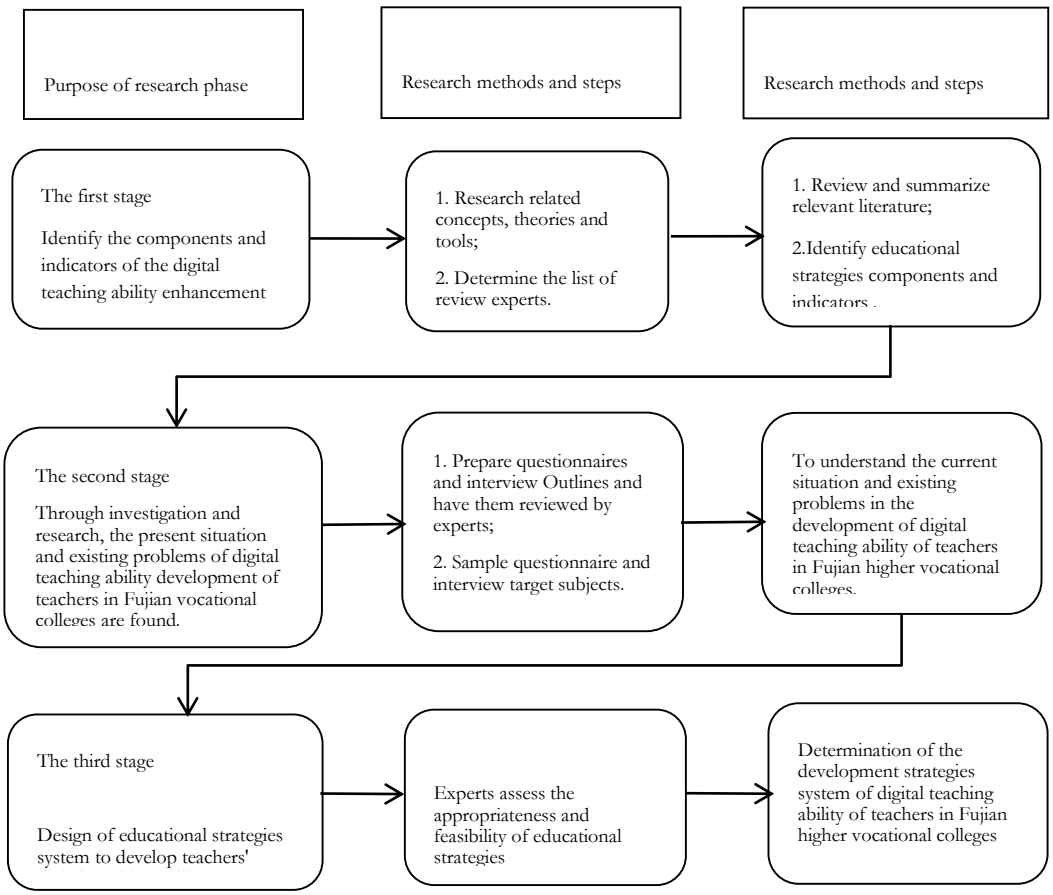

Figure 2. Study Phase Diagram

Source: Chen Mao,(2024).

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At each research phase, experts are invited to evaluate the research tools. Some of these experts come from China, while others come from countries outside of China. For evaluation experts, they are required to hold associate professor or above titles, master's degree or above, and have been engaged in educational work for no less than 10 years.

Research Result

Conclusion

The composition and indicator results of the digital teaching competency development mechanism

In the research process, researchers make full use of literature review and research, summarize expert opinions, develop components and indicators, use personal interview research tools, continuously improve the indicator system, and invite experts for evaluation. According to expert ratings, both the likelihood level and appropriateness level meet high standards, which proves that the expert assessment has been recognized. The digital teaching competency of teachers consists of four parts: digital awareness and attitude, digital skills and training, institutional construction, and teaching experience. Digital awareness and attitude include three indicators. Digital Skills and Training includes 5 indicators. Institutional construction includes four indicators. Teaching experience includes three indicators.

Analysis results of current status, ideal status and priority needs of the digital teaching competency development

According to the results of the questionnaire data, the current state of the digital teaching competency development mechanism of FuJian high vocationl colleges is medium, and the expectation state is high, indicating that further optimization work is needed. After modifying the priority demand of indicators (PNImodified), SWOT analysis is carried out on the indicators according to the PNImodified data, and the Strengths (S), Weakness (W), Opportunities (O) and Threats (T) of the indicators are determined. Then the indicators are put into the TOWS matrix table to match each other according to internal and external conditions. Identify appropriate policies and specify a draft policy.

Formulating and evaluating the results of the development strategy

The draft development strategy formulated was revised under the advice of experts, and the strategy for developing teacher's digital teaching competency in FuJian high vocationl colleges was finally determined to include 4 goals and 4 strategies. Strategy 1 consists of 5 measures; Strategy 2 consists of 5 measures; Strategy 3 consists of 5 measures; Strategy 4 consists of 6 measures.

Finally, the strategic plan is sent to experts for evaluation, and the appropriateness, accuracy and feasibility are at a high level. It shows that the strategy scheme is feasible .

Table 2. Strategy Program Expert Evaluation Results

No.	Strategy Program	Level of Appropriately	Level	Level of Accuracy	Level	Level of Feasibility	Level
Goal1: Establish a comprehensive incentive, training, and evaluation system;		4.86	Very Suitable	5	Very Suitable	4.87	Very Suitable
Goal2: Build a sustained, effective, and comprehensive teaching capacity training and practical environment;		4.89	Very Suitable	5	Very Suitable	4.87	Very Suitable
Goal3: Continuously enhance		5	Very	4.91	Very	5	Very

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teachers' awareness and confidence in digital teaching;		Suitable		Suitable		Suitable
Goal4: Teachers' digital teaching competency and experience have been enhanced.	4.87	Very Suitable	4.79	Very Suitable	4.67	Very Suitable
Strategy 1 : Develop and implement comprehensive incentive, training, and evaluation mechanisms to bolster the advancement of digital teaching capabilities among teachers.	4.87	Very Suitable	4.56	Very Suitable	4.91	Very Suitable
Measure 1.1 : Formulate incentive policies that directly correlate with the achievements in digital teaching to motivate excellence.	5	Very Suitable	5	Very Suitable	5	Very Suitable
Measure 1.2 : Host the annual "Digital Teaching Excellence Award" ceremony to honor and celebrate the contributions of distinguished teachers in the field.	4.78	Very Suitable	4.58	Very Suitable	4.78	Very Suitable
Measure 1.3 : Create an incentive system designed to reward and spur innovation in digital teaching methodologies.	4.67	Very Suitable	4.78	Very Suitable	4.89	Very Suitable
Measure 1.4 : Craft a transparent set of criteria aimed at assessing the success and impact of digital teaching initiatives.	4.67	Very Suitable	4.78	Very Suitable	4.67	Very Suitable
Measure 1.5 : Deploy a comprehensive feedback mechanism to iteratively refine and	4.56	Very Suitable	4.78	Very Suitable	4.78	Very Suitable
Strategy 2 : Enhance educators' proficiency in digital tools and methodologies through ongoing training and hands-on experience.	4.89	Very Suitable	5	Very Suitable	4.89	Very Suitable
Measure 2.1 : Initiate the 'Digital Teaching Skills Enhancement Plan', encompassing a spectrum of online courses and interactive workshops.	4.78	Very Suitable	4.89	Very Suitable	4.78	Very Suitable
Measure 2.2 : Offer sustained technical support to facilitate teachers' adoption	5	Very Suitable	4.89	Very Suitable	5	Very Suitable

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and mastery of digital teaching tools.						
Measure 2.3 : Initiate the 'Digital Teaching Practice Project', integrating theoretical skills into real-world teaching contexts.	4.89	Very Suitable	4.89	Very Suitable	4.89	Very Suitable
Measure 2.4 : Curate a repository of digital teaching case studies for reference and to foster a community of practice among teachers.	4.56	Very Suitable	4.78	Very Suitable	5	Very Suitable
Measure 2.5 : Stimulate interdisciplinary collaboration to collectively drive forward digital teaching initiatives.	4.89	Very Suitable	4.78	Very Suitable	4.78	Very Suitable
Strategy 3 : Foster a positive perception and proactive stance towards digital teaching among faculty to encourage innovative integration in educational practices.	4.67	Very Suitable	4.89	Very Suitable	4.78	Very Suitable
Measure 3.1 : Organize a series of lectures on digital teaching concepts and invite experts and pioneers to share their experiences.	4.89	Very Suitable	4.78	Very Suitable	4.87	Very Suitable
Measure 3.2 : As part of the professional development of teachers, provide courses to enhance digital teaching awareness.	5	Very Suitable	4.91	Very Suitable	5.89	Very Suitable
Measure 3.3 : Regularly hold meetings to share successful cases and practical achievements to enhance teachers' confidence in digital development.	4.87	Very Suitable	5	Very Suitable	4.67	Very Suitable
Measure 3.4 : Develop a community platform for teachers to discuss and share digital teaching concepts.	4.87	Very Suitable	5	Very Suitable	4.91	Very Suitable
Measure 3.5 : Integrate digital teaching strategies into the overall educational goals and policies of the school to enhance teachers' digital awareness and confidence.	5	Very Suitable	4.79	Very Suitable	5	Very Suitable
Strategy 4 : Facilitate the accumulation of digital teaching experience for teachers through active engagement and collaborative	4.78	Very Suitable	4.58	Very Suitable	4.78	Very Suitable

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exchange.						
Measure 4.1 : Found a community of digital teaching practitioners to collaboratively share resources, experiences, and best practices.	4.67	Very Suitable	4.89	Very Suitable	4.89	Very Suitable
Measure 4.2 : Forge partnerships with educational technology firms to offer teachers comprehensive tool training and practical engagement opportunities.	4.67	Very Suitable	4.78	Very Suitable	4.67	Very Suitable
Measure 4.3 : Roll out the 'Digital Teaching Mentor Program', pairing seasoned teachers with newcomers to facilitate knowledge transfer and skill development.	4.89	Very Suitable	4.78	Very Suitable	5	Very Suitable
Measure 4.4 : Set up a state-of-the-art digital teaching lab where teachers can experiment with and refine novel teaching approaches.	4.56	Very Suitable	4.78	Very Suitable	4.67	Very Suitable
Measure 4.5 : Mobilize teachers to engage in conferences and networking events to expand their exposure to emerging trends in digital teaching.	4.78	Very Suitable	4.89	Very Suitable	4.78	Very Suitable
Measure 4.6 : Establish a centralized system for documenting and disseminating the findings from digital teaching practice and pilot programs.	4.89	Very Suitable	5	Very Suitable	4.87	Very Suitable
Total	**4.82**	**Very Suitable**	**4.84**	**Very Suitable**	**4.88**	**Very Suitable**

Source: Chen Mao, (2024)

Discussion

The research results of the teacher's digital teaching competency development mechanism can be discussed as follows :

Research results on the components of the development mechanism of teachers' digital teaching competency in the education management of higher vocational colleges in Fujian Province.

The development mechanism of digital teaching competency has 4 components:

Institutional Construction consists of 3 indicators: 1) Fund Input, which refers to the financial resources allocated by universities to support the development and implementation of digital teaching strategies; 2)

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Incentive Mechanism, which involves the systems designed to motivate faculty and staff to engage with and enhance their digital teaching capabilities; 3) Evaluation System, which encompasses the assessment frameworks used to measure the effectiveness of digital teaching initiatives and the professional development of teachers in this area.Fund Input is crucial for the advancement of digital teaching as it enables the procurement of necessary technological infrastructure and the development of digital teaching materials (Nguyen, H., 2021). The Incentive Mechanism is pivotal in encouraging a culture of continuous improvement and innovation in digital teaching practices among the faculty, as it rewards and recognizes efforts to integrate technology into teaching. Lastly, the Evaluation System is essential for the ongoing assessment and refinement of digital teaching strategies, ensuring that they remain effective and aligned with educational goals . Institutional construction, through adequate funding, incentive mechanisms, and evaluation systems, provides essential support for enhancing digital teaching competency among higher vocational college teachers, aligning with the study's objective of establishing an effective teaching management system (Smith, J., 2022).

Digital Skills and Training consists 5 indicators that are pivotal in enhancing the digital teaching competency of teachers in Fujian higher vocational colleges. These indicators include: 1) Using digital teaching tools, which pertains to the proficiency of teachers in employing various technological instruments to facilitate learning; 2) Building digital course resources, focusing on the development and utilization of digital materials to enrich the curriculum; 3) Digital teaching achievement display, which highlights the presentation and assessment of teaching outcomes in a digital format; 4) Training system construction, addressing the establishment of structured programs to develop digital competencies among educators; and 5) Teacher's Participation in training, emphasizing the engagement of teachers in professional development activities to enhance their digital skills.The proficiency in using digital teaching tools is essential for educators to effectively integrate technology into their teaching practices, as it allows for more interactive and dynamic learning experiences . The construction of digital course resources is a critical component in modern education, providing teachers with access to a wealth of information and promoting self-directed learning (Davis, E., 2022). The display of digital teaching achievements not only motivates teachers but also provides a platform for assessing and reflecting on learning outcomes in an innovative manner. A well-constructed training system is indispensable for equipping teachers with the necessary digital skills to meet the demands of contemporary education. Lastly, the active participation of teachers in training programs is a reflection of their commitment to continuous professional development and their willingness to embrace new teaching methodologies. Digital skills and training are crucial for teacher development. Strengthening the use of digital tools, resource building, and teacher participation effectively enhances digital teaching competency, consistent with the study's goal of improving teachers' digital teaching competency (Kim, J., 2021).

Digital awareness and attitude is a pivotal component in shaping the digital teaching competency of teachers in higher vocational colleges. It consists 3 indicators: 1) Cognitive of development, which reflects teachers' understanding of the evolution and importance of digital technologies in education; 2) Confidence of development, indicating teachers' self-assurance in their ability to adopt and integrate digital tools into their teaching practices; and 3) Positive attitudes, which denote the teachers' overall positive disposition towards the use of digital technologies for enhancing teaching and learning experiences.Teachers with a heightened cognitive awareness of development are more likely to recognize the transformative potential of digital technologies in pedagogy, leading to innovative teaching strategies that can significantly improve educational outcomes. Confidence in their ability to develop and use digital tools empowers teachers to experiment with new teaching methods, thereby fostering a more dynamic and engaging learning environment. Moreover, maintaining positive attitudes towards digital integration is essential for sustaining the momentum of educational technology adoption and for overcoming the challenges that may arise during the transition to digital teaching practices. Enhancing digital awareness and attitude among teachers is essential for fostering a culture of innovation in higher vocational education, aligning with the research objective of empowering educators to embrace digital transformations in teaching (Li, H., 2019).

Teaching experience is a critical factor in the development of digital teaching competencies among educators in higher vocational institutions. It consists 3 key indicators: 1) Digital teaching practice, which

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DOI: https://doi.org/10.62754/joe.v4i1.6490

refers to the hands-on application of digital tools and methodologies in classroom settings; 2) Teaching age, indicating the number of years an educator has been in the profession, which can influence their comfort level and adeptness with digital technologies; and 3) Teaching innovation and practical experience, highlighting the importance of educators' ability to devise and implement novel teaching strategies that leverage digital advancements. Educators with extensive digital teaching practice are better positioned to navigate the complexities of technology-integrated classrooms, creating more interactive and effective learning experiences for students . Teaching age provides a foundation of experience from which educators can draw upon to confidently adopt new digital teaching approaches . Furthermore, teaching innovation and practical experience are vital for educators to stay current with educational trends and to adapt their teaching styles to meet the evolving needs of digital-era learners (Clark, I., 2022). Teaching experience, particularly in the realms of digital practice, tenure, and innovative approaches, is instrumental in shaping the digital teaching competencies of vocational college educators.

The research results of the current states and desired states of the teachers' digital teaching competency development mechanism

The current states of the digital teaching competency components in higher vocational colleges in Fujian are at a medium level, with Teaching Experience being the highest ranked, followed by Digital Skills and Training, Digital Awareness and Attitude, and Institutional Construction. This medium status underscores the imperative for institutions to bolster the digital teaching practices of their faculty. Smith posits that enhancing teaching experience through digital means is crucial for the modern educational landscape. The emphasis on teaching experience aligns with the broader goal of integrating technology in ways that truly benefit pedagogy (Lee, D., 2020).

The desired states of the digital teaching competency components are at a high level, with Institutional Construction leading the ranking, followed by Digital Skills and Training, Digital Awareness and Attitude, and Teaching Experience. This high level of expectation reflects the urgent need for comprehensive systems that support teacher development in digital realms. Johnson and Lee (2021) emphasize the importance of institutional frameworks that facilitate teacher training and resource allocation, which is essential for enhancing digital teaching competencies.

The results of the development strategy of the teachers' digital teaching competency

After analysis and research, 4 strategies and 21 measures are obtained, which are as follows:

Strategy 1. Develop and implement comprehensive incentive, training, and evaluation mechanisms to bolster the advancement of digital teaching capabilities among teachers. There are 5 measures: 1) Formulate incentive policies that directly correlate with the achievements in digital teaching to motivate excellence. 2) Host the annual "Digital Teaching Excellence Award" ceremony to honor and celebrate the contributions of distinguished teachers in the field. 3) Create an incentive system designed to reward and spur innovation in digital teaching methodologies. 4) Craft a transparent set of criteria aimed at assessing the success and impact of digital teaching initiatives. 5) Deploy a comprehensive feedback mechanism to iteratively refine and optimize digital teaching strategies.

Strategy 2. Enhance educators' proficiency in digital tools and methodologies through ongoing training and hands-on experience. There are 5 measures: 1) Initiate the 'Digital Teaching Skills Enhancement Plan', encompassing a spectrum of online courses and interactive workshops. 2) Offer sustained technical support to facilitate teachers' adoption and mastery of digital teaching tools. 3) Initiate the 'Digital Teaching Practice Project', integrating theoretical skills into real-world teaching contexts. 4) Curate a repository of digital teaching case studies for reference and to foster a community of practice among teachers. 5) Stimulate interdisciplinary collaboration to collectively drive forward digital teaching initiatives.

Strategy 3: Foster a positive perception and proactive stance towards digital teaching among faculty to encourage innovative integration in educational practices. There are 5 measures: 1) Organize a series of lectures on digital teaching concepts and invite experts and pioneers to share their experiences. 2) As part

Journal of Ecohumanism
2025
Volume: 4, No: 1, pp. 1765 – 1779
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v4i1.6490

of the professional development of teachers, provide courses to enhance digital teaching awareness. 3) Regularly hold meetings to share successful cases and practical achievements to enhance teachers' confidence in digital development. 4) Develop a community platform for teachers to discuss and share digital teaching concepts. 5) Integrate digital teaching strategies into the overall educational goals and policies of the school to enhance teachers' digital awareness and confidence .

Strategy 4: Facilitate the accumulation of digital teaching experience for teachers through active engagement and collaborative exchange. There are 6 measures: 1) Found a community of digital teaching practitioners to collaboratively share resources, experiences, and best practices. 2) Forge partnerships with educational technology firms to offer teachers comprehensive tool training and practical engagement opportunities. 3) Roll out the 'Digital Teaching Mentor Program', pairing seasoned teachers with newcomers to facilitate knowledge transfer and skill development. 4) Set up a state-of-the-art digital teaching lab where teachers can experiment with and refine novel teaching approaches. 5) Mobilize teachers to engage in conferences and networking events to expand their exposure to emerging trends in digital teaching. 6) Establish a centralized system for documenting and disseminating the findings from digital teaching practice and pilot programs.

Acknowledgments

The author thanks all the teachers, staff, and students who provided important materials and assistance for this research. The valuable support of participants, governments, mentors, and friends has played an important role in improving research quality and achieving scientific goals. Thank you to the reviewers and editors for their role in the manuscript acceptance process.

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DOI: https://doi.org/10.62754/joe.v4i1.6490

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