A LITERATURE REVIEW ON FACULTY'S ONLINE TEACHING COMPETENCE: PERSPECTIVES AND RESEARCH ORIENTATION

Dương Thi Kim Oanh

Institute of Technical Education, Ho Chi Minh City University of Technology and Education

Abstract. The article analyzes documents on the online teaching competence of lecturers and generates them into 4 main research directions, including: (1) roles of lecturers in online teaching and factors influencing the online teaching competence of lecturers; (2) component competencies of the online teaching competence; (3) development of the online teaching competence for faculty; and (4) development of the online teaching competence scale for lecturers. A literature review through document analysis also reveals the in-depth studies on online teaching competence, and in Vietnam there is still a huge gap. On the other hand, the results of the literature review provoke in-depth research directions on the online teaching competence of lecturers in Vietnam, such as an online teaching competence framework for lecturers; contents, forms, methods, and modes of training the online teaching competence for lecturers; or the development of an online teaching competence scale, and so on. These directions will be the scientific basics for developing the online teaching competence for lecturers to adapt to the strong digital transformation in Vietnamese higher education institutions.

Keywords: digital transformation, pedagogical digital competence, online teaching competence, technological competence.

1. Introduction

Digital transformation in higher education is the inevitable trend of the strong evolving context of information and communication technologies in the early decades of the 21st century. The Covid-19 pandemic is seen as an important driving force for implementing digital transformation in education in Vietnam. In order to adapt safely, flexibly, and effectively to the Covid-19 pandemic in relation to the maintenance of teaching and learning activities, non-traditional teaching modes such as blended teaching, online teaching, and hybrid teaching have been promoted across the entire education system, including higher education. In early June 2020, the Prime Minister issued Decision No. 749/QD-TTg dated June 3, 2020, on introducing a program for national digital transformation by 2025 with orientations towards 2030, which identified education as a priority area of the digital transition.

Digital transformation is the use of data and digital technologies to overall and comprehensively change the way individuals and organizations live, work, and produce [1]. This is the transition from traditional models to digital models through the application of new technologies such as big data, the Internet of Things, artificial intelligence, cloud computing, and so on, and software to change the way of managing and operating modes, working processes, and modes, as well as organizational culture [2].

Digital transformation in education focuses on education and teaching-learning management, assessment, and scientific research. Within the scope of schools or classrooms, digital transformation is the application of new technologies and software to educational management, instructional design, teaching-learning organization, assessment, and scientific research to enhance the learning experience and academic achievements of learners in the digital environment.

To successfully implement the digital transformation in higher education, the pedagogical digital competence of the faculty is a key factor. Pedagogical digital competence refers to the consistent application of knowledge, skills, and attitudes to instructional design and implementation, assessment, and continuous adjustment of teaching methods supported by new technologies and software, learning theories, current research, and proven experience to assist students' learning in the best way possible. The term pedagogical digital competence refers to all pedagogical activities associated with the professional context immersed in digital technology [3] and a combination of pedagogical competence and digital competence [4]. The pedagogical digital competence is made up of component competencies, of which the online teaching competence is the most important. An analysis of the literature on online teaching competence reveals that it not only includes knowledge, skills, and attitudes about digital technology but also the ability to apply digital technology to (1) the design and management of digital resources, (2) the design and organization of learning activities in the direction of promoting students to learn actively, interactively, and creatively, (3) assessment, and (4) the response to the diversification of learning styles and the ability of students to learn. In the aforementioned sense, this article defines: "Online teaching competence of the faculty is the combination of knowledge, skills, and attitudes of technology, pedagogy, and content in instructional design and organization, and learning outcomes assessment according to the synchronous and asynchronous online teaching modes on well-performing digital platforms". Document analysis of the online teaching competence of the faculty is stressed in the article to (1) identify current research directions on the online teaching competence of the faculty in the world, (2) give initial comments on the research on the online teaching competence of the faculty in Vietnam, and (3) propose research directions on the online teaching competence of the faculty in Vietnam.

2. Content Research

2.1. Research Methodology

The strong development of engineering and technology is creating new teaching and learning modes, including online teaching and learning. To implement online teaching successfully in higher education institutions, in addition to the ability to use online teaching and learning platforms (Google Meet, Zoom, Microsoft Team...) and virtual classroom software, the faculty needs to develop online teaching competence in instructional design and implement, interact with students, assess online learning outcomes, and administrate online sessions. This study applies the document analysis method to generate the main directions for the online teaching competence of the faculty. The document analysis is carried out in the following steps: (1) Use search engines such as Google and Google Scholar to find out scientific articles, projects, and books with keywords such as online teaching, online teaching competence, online teaching competence scale for lecturers/instructors/faculty, etc.; (2) evaluate material recourses according to criteria such as type of materials (scientific articles, projects, and books), type of research (theory, overview, experiment, or description), and publication time (from 2000 to 2022). There are 28 references analyzed to identify the main research directions for the faculty's online teaching competence. The authors and main research directions on the faculty's online teaching competence are summarized in Table 1.

Table 1. Authors and main research directions on the faculty of online teaching competence

Research directions / Authors	Roles of the faculty in online teaching	Factors influencing the faculty's online teaching competence	Component competencies of the faculty's online teaching competence	development of the teaching online competence for the faculty	Development of the online teaching competence scale for the faculty
Volery & Lord (2000)	x				
Queiroz & Mustaro (2003)	x		x		
Varvel (2007)	x				x
Muñoz Carril et al. (2013)	x				
Roddy et al. (2007)	x			x	
El-Soussi (2022).		x			
Benjamin Aidoo (2022)		x			
Abdous (2011)			x		
Sapien-Aguilar (2017)			x		
Chantal Roddy (2017)			x		
Izmirli & Kirmaci (2017)			x	x	
Albrahim (2020)			x		
Borah & Devarani (2022)			x		x
Redecker (2017)			x		
Joint Information Systems Committee (2017)			x		
Baran & Correia (2014)				x	
Colás-Bravo et al. (2019)				x	
Tran Quang Thuan & Bui Van Hong (2020)				x	
Hertz et al. (2022)				x	
Simsek (2021)					x
Tang et al. (2022)					x

The following are more detailed reviews of the main research directions:

2.2. Investigate the role of faculty in online teaching and the factors that influence the faculty's online teaching competence

Studying the factors affecting the effectiveness of online teaching, Volery and Lord (2000) identified three fundamental factors: technology (accessibility and navigation; interface design and level of interaction); faculty and student characteristics (awareness of the use of technology). The characteristics of the faculty consist of expressions in three groups: (1) attitude towards students: enthusiasm for teaching, student-interesting presentations, student-friendly, interest in

working with students, willingness to support students; (2) technical competence: use and promote the effectiveness of technology in teaching and interaction with students; and (3) interaction in the classroom: encouraging students to interact and participate in classes or thematic discussions over the Internet. With the above characteristics, the faculty plays a leading role in online teaching in the sense that they are catalysts for learning and knowledge navigation [5].

Research on the role and competence of the faculty in teaching online, Queiroz and Mustaro (2003) suggested that, in the strong trend of online courses, the faculty not only stops at transferring academic materials to the site but also has the ability to guide students to search, select, and organize information, manage time, conduct research, and build knowledge in an autonomous way within the online learning community. Therefore, the faculty needs to be trained to teach in an online environment and guided to achieve pedagogical goals in an efficient, creative, and innovative way. In addition, in online teaching, the faculty is both the manager and the supporter of the learning process. Successful implementation of online courses requires the faculty not only to have technical and technological knowledge and skills but also to be creative, and innovative, and prioritize the student-focused learning process [6]. However, these roles, qualities, and competencies have not been discussed in depth in the studies of faculty's online teaching competence by Queiroz and Mustaro (2003).

Based on statistics of more than 50,000 faculties teaching online in the United States, Varvel (2007) found that most of these faculties did not receive formal training in online teaching, mainly based on in-person teaching experience or online learning experience as students. Therefore, in order to become a skilled, quality online teaching faculty, it is necessary to build a framework of online learning competencies to train faculties. Varvel (2007) identified 247 online teaching competencies. These competencies are organized into seven groups of faculty roles, including administrative, personal, technological, teaching design, educational organization, evaluation, and society [7].

In order to build a common framework for teaching and training initiatives in higher education, the identification of the roles and competencies of faculty in the online environment plays an important role. On the basis of a synthesis of 14 research studies, Carril et al. (2013) identified faculty with diverse roles such as mentor, content expert, designer, evaluator, website operator, graphic designer, technician, technologist, coach... Carril et al. (2013) also identified the competencies related to different roles, with particular emphasis on those related to pedagogical roles, including [8]: (1) the design and development of guidelines: the ability to design general and specific teaching strategies, develop digital resources, and learn and assess activities; (2) the content specialist: the ability to develop course content and link the subject with scientific, social, and cultural issues; (3) the instructor: the ability to organize and promote guidance methods; (4) the organizer and coordinator: the ability to organize and coordinate student participation; (5) the career: the ability to organize and promote faculty self-training and career development.

Fully aware of the complexity of developing online courses beyond simply transferring materials to online formats, Roddy et al. (2017) suggested that the faculty should carefully plan and maximize the available online technologies to meet individual differences, student schedules, and assessment methods. Online teaching sets requirements for transfer and feedback methods and relies more on the knowledge and skills of faculties than face-to-face teaching. In addition to knowledge of the curriculum and pedagogical methods used in face-to-face teaching, the faculty needs to have other distinct, necessary competencies in online teaching. Faculty members play an important role in influencing students' online learning experiences, are the "face" of online courses, and are one of the most important factors involved in student online learning success. The responsiveness and readiness of the faculty are the main factors affecting student satisfaction

in online learning, and the lack of timely feedback or the establishment of a slow timeframe for communication from the faculty reduces students' satisfaction with online learning [9].

Research on the impact of the transition from face-to-face to online teaching during the Covid-19 pandemic on career characteristics of shows that faculty experienced a number of periods of uncertainty due to the tension arising between how they perceived themselves, their beliefs, and how they practiced in an online environment. The phases that faculty passed through lead to changes related to pedagogical, managerial, and social roles in an online environment. Faculty members are only an instructor but also support students in their learning (pedagogical roles); collect, and organize teaching materials, convert paper materials into digital or multimedia formats, and transfer them to the learning management system (management role); use multimedia apps such as WhatsApp, Jammer, and Teams to provide students with learning and emotional support (social roles) [10].

The transition from face-to-face teaching to online teaching causes many difficulties for first-time faculty and students to implement. Data from 77 online teaching faculty in the 2020-2021 academic year of 3 pedagogical colleges and 2 universities in Ghana showed that the faculty's online teaching competence will be developed when they have sufficient knowledge of information and communication technologies, regularly use IT, and receive technical support from higher education institutions [11]. This finding indicates that in order to teach online successfully, faculty members need to be fully equipped with knowledge of information and communication technology, and proficient in using computers to integrate information and communication technology into courses taught in the online mode.

In summary, in researching faculty's online teaching competence, many scholars around the world have pointed out the roles and factors that influence faculty's online learning competence. In addition, studies of these roles and factors also found the need to develop online teaching competence for faculty members to adapt to the transitional context of teaching from face-to-face to online and to integrate face-to-face with online teaching.

2.3. Research on component competencies of faculty's online teaching competence

In research on the competencies of faculty members in the online teaching environment, Queiroz and Mustaro (2003) identified the competencies, including [6]. (1) using technology; (2) designing and deploying online courses; (3) censorship; (4) organizing and keeping discussions taking place not at the same time; (5) establishing basic rules, guiding and making discussions take place simultaneously; (6) integrating different teaching and learning styles into the same course; (7) actively interacting with students and providing continuous feedback; (8) making students aware of cultural differences between members of the same group, about Internet ethics and network residents, among others; (8) awareness of the nature and philosophy of distance education. Online teaching requires a change in the educational model: in traditional teaching, the teaching process is focused on the faculty - the transfer of knowledge to the students; on the contrary, in online teaching (not merely instructional), academic teaching activities focus on the relationship between faculty and students and students with knowledge. Students are directed to learn proactively, participate, and be more responsible with their own learning. This educational model leads faculty to find teaching methods that encourage students to effectively learn online.

Based on the viewpoint that online teaching is the combination of three main elements: content, pedagogy, and technology, Abdous (2011) identified the faculty's online learning competence as associated with the three stages of the teaching process. In the pre-learning phase, faculty members need to have the ability to prepare, plan, and design. While teaching, faculty members motivate, interact, and provide feedback: attract attention and motivate students to learn; interact and engage with students; provide quick and meaningful feedback. Upon completion of online teaching, faculty members need to summarize and draw conclusions [12].

Sapien-Aguilar et al. (2017) identified six component competencies of faculty's online teaching competence based on the findings of three phases of research, including (1) describing the characteristics of the teaching activities of faculty members in the online learning environment; (2) identifying teaching skills in the online learning environment; and (3) confirming the profile of teaching skills in the online learning environment. The component competencies of online teaching competence are (1) Pedagogical competence is the ability to implement, develop and evaluate the teaching process in the online teaching environment; (2) Educational interaction competence is the ability to accompany and interact with education in online classes; (3) Digital competence is the ability to use technology in the teaching and learning process, as well as manage digital learning tools; (4) Teaching design competence is the ability to plan, construct learning and assessment activities in the online learning environment; (5) Professional, ethical and legal responsibility is the ability to commit to the organization and its values, and to assume personal commitment as a facilitator in the online learning environment; (6) Research competence is the ability to design, implement and participate in the development and dissemination of research related to the online learning environment [13].

Research on the application of learning, teaching, and support methods in the online learning environment by Roddy et al. (2017) determined that faculty members need to have the following online teaching competencies [9]: communication competence, technological competence, feedback-provider competence, teaching administrative competence, responsive competence, academic supervision competence, and student supporting competence. The authors assert that, without sufficient technological competence, faculty may not be able to solve technology-related problems in the classroom and affect students' access to learning materials.

From the perspective that online teaching competence is knowledge and skills to teach on online platforms, İzmirli and Kirmaci (2017) put forward the component competencies of online learning competencies, including attracting and encouraging student involvement, developing the presence of social, teaching, and cognitive aspects, preparing a syllabus and teaching guidelines; selecting teaching methods for developing effective interaction, pedagogical competence, and detecting individual differences [14].

Based on a literature review on effective teaching competencies in the online learning environment, Albrahim (2020) proposed six component competencies of online teaching competence [15]. These component competencies relate to pedagogy, content, design, technology, administration, and communication. On the other hand, items corresponding to each component competence are pointed out in this study.

Borah and Devaran (2022) determined the faculty online teaching competence of agriculture at universities in Northeast India, including [16]: (1) Technological competence: awareness and use effectively in online teaching; (2) Teaching support competence: making learning more effective and enjoyable by applying different pedagogical methods to communicate, motivate, attract attention, promote active participation, and assess; (3) Teaching ethics: teaching and supporting students to use digital resources in an ethical manner; (4) Course management: performing course management functions such as online session planning and organization, student enrolment, time management, and so on; (5) Content support: enabling students to use various available resources. These component competencies play an important role in teaching online successfully.

In the context of the strong development of information and communication technology, the digital competence of the faculty plays a crucial role in the success of online teaching. Digital competence involves the use of digital technologies to learn, work, and participate in society with confidence, seriousness, and responsibility [17, 18]. The Digital Competence Framework for Educators: DigCompEdu [19] and the Digital Competence Framework for Higher Education are

dedicated to higher education by the Information Systems Commission. The Joint Information Systems Committee (JISC), the UK's not-for-profit organization supporting research and higher education (JISC, 2017) [20], covers component competencies in teaching competence online. DigCompEduc includes 22 expressions corresponding to 6 groups of educators' professional activities, including [19]: (1) Professional engagement: organizational communication, professional cooperation, reflective practice, and continuous digital professional development; (2) Digital resources: selection of digital resources; creating and adjusting digital resources; managing, protecting, and sharing digital resources; (3) Teaching and learning: teaching, instruction, cooperative learning, and self-regulated learning; (4) Evaluation: assessment strategy, evidence analysis, feedback, and planning; (5) Empowering learners: access and inclusion; distinctiveness and individuality; learners actively participating; (6) Promoting the digital competence of learners: information and communication capacity; digital communication and cooperation; digital content creation; responsible use; and digital problem-solving. The JISC Digital Capability Framework consists of six components: (1) Information and Communications Technology Qualifications (functional skills); (2) Information, Data, and Communication Capabilities (serious use); (3) Digital Creativity, Problem Solving, and Innovation (creative creation); (4) Communication, Collaboration, and Participation Skills in Digital Environments (collaboration); (5) Learning and Digital Development Skills (development); and (6) Identification and Assurance Capacity in the Digital Environment (self-actualization).

As a result, research on the component competencies of online teaching competence has piqued the interest of many scholars worldwide. Personal competence, social competence, pedagogical competence, technological competence, instructional design competence, communication competence, and administration competence are all common themes in studies on component competencies of online teaching competencies. This finding implies that online teaching competence is essentially the same as face-to-face teaching competence. However, the manifestations of each component competence of online teaching competence are linked to the characteristics of online teaching and learning activities.

2.4. Research on developing online teaching competence for faculty

Many researchers are interested in studying how to develop online teaching competence for faculty members. Based on the belief that the success of online teaching in higher education is the consequence of the interaction of three levels of support: teaching, community, and organization, Baran and Correia (2014) provided a career development model for online teaching that included three components: instructional support, community support, and organizational support. The effectiveness of online teaching at the teaching level necessitates the support of technology, pedagogy, design, and development, with technology being a critical aspect. The participation of stakeholders and the sharing of ideas regarding online education reflect the community level in this paradigm. Organizational culture, rules, management, leadership, program modifications, and new technologies all reflect the organizational level. All levels of support have an impact on the success of online teaching [21].

Roddy et al. (2017) used Mishra and Koehler's TPACK (The Technological Pedagogical Content Knowledge Model) to assess faculty competencies across several levels in an intensive online learning environment [9] to develop online teaching competencies for faculty members. The TPACK model encourages the meaningful integration of technology, pedagogy, content, and knowledge [22]. Using technology in the classroom allows for faster, more timely, and clearer feedback. Because technology is interwoven into the content transmission and influences the teaching method, faculty technological competence, content proficiency, and pedagogical knowledge in online teaching should be promoted, particularly in teaching specialized courses. As a result, the TPAC model components are beneficial in improving faculty online teaching

competence since teaching with technology is only effective when there is a close relationship between content, pedagogical methods, and technology [23].

According to Zmirli and Kirmaci (2017), in order for online education to be effective, instructors should be trained in both technology (learning management systems) and pedagogy (the guiding principles for teaching online). Training activities should emphasize planning and communication in order to foster interaction and equip faculty members to collaborate with instructional designers and computer programmers to structure course content precisely and completely. Online courses on "Overview of Online Instruction" (University of Illinois, 2017), "Professional Certificate in Online Education" (University of Wisconsin-Madison, 2017), and "Learn How to Teach Online" (Coursera, 2017b) provide faculty with the knowledge and skills to teach online, deploy, or develop online or mixed applications [14]. The results of the study of 30 distance learning unit managers and faculty members from 30 Turkish public universities on training activities to enhance online teaching capacity for teachers showed: 27 universities have offered training activities related to online teaching competence, of which 21 prioritize face-to-face teaching and 11 organize courses over a non-synchronous platform; 23 universities teach technology subjects in online teaching competencies; 8 universities teach pedagogical subjects; and only 4 universities teach both. The subjects of technology and pedagogical training for lecturers of 30 public universities in Turkey include: (1) technology: learning management systems, virtual classroom systems, content development for educational and multimedia activities, and graphic design; (2) pedagogy: the basis of e-learning, teaching methods and techniques, interactive communication, online assessment, instructional design, and digital course outline; social software and public development technology; quality in online learning. In addition to the above content, Zmirli and Kirmaci (2017) suggest that teachers need more training in adult teaching theory, social participation, cognition, and teaching.

In their research on developing online teaching capacity for teachers, Colás-Bravo et al. (2019) used a model based on a sociocultural approach consisting of four components: command, interest, recovery, and appropriation. The Likert scale, which consists of 5 levels (from 1 to 5, where 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = always), measures the development of digital technological competence of faculty members according to the four components of the sociocultural approach. The scale has a total of 27 items asking about the knowledge, skills, abilities, attitudes, and feelings of students gained from faculty's practice of using digital technology in teaching. The results of measuring 1,881 students in Andalusia (Spain) show that the digital competence of most students reaches the average score. These findings show that in order to develop competence in online teaching, lecturers need to be nurtured in technology competence and regularly practice technology competence in online teaching [24].

Tran Quang Thuan and Bui Van Hong (2019) proposed seven solutions to develop online teaching competence for lecturers based on an analysis of online teaching and the development of online teaching competence for faculty members at the Institute of Post and Telecommunications Technology in Ho Chi Minh City, including [25]: (1) Orientation, practice planning, and fostering to improve professional qualifications and specific professional skills of online teaching for faculty; (2) developing a training plan to improve online teaching skills for faculty members; (3) strengthening the ability to apply ICT for teachers in the online teaching environment, including skills in using online learning management systems and information technology means; (4) prioritizing the use of equipment and technical facilities for online teaching; supporting and facilitating the application of advanced teaching methods and technologies suitable to distance learning methods; (5) developing a mechanism to check and monitor the implementation of regulations in online teaching by lecturers, such as answering students' questions on time, participating in scheduled online classes, and organizing for students to do group exercises; (6) establishing a reasonable remuneration regime when preparing e-

learning lectures, when teaching online, and supporting the working facilities for faculty in the online teaching environment; (7) building mechanisms to support scientific and technological activities and implementing professional services to serve society as scientists. The other measures from the list of seven measures, aside from measures 2 and 3, which are related to online teaching competency, are related to the management of the development of online learning competence. A change in the faculty's proficiency in online teaching was also not shown by the authors because they did not test the metrics.

Researching professional development for faculty members, the Teachers' Academy of the European Commission applies the pedagogical model to Moocs courses dedicated to professional development. The pedagogical model for the Moocs courses of the Teachers Academy focuses more on practice, personal reflection, knowledge building, collaboration, and networking, as well as discussions combined with instructional content. The activities and the use of learning materials and tools rely on a combination of pedagogical approaches such as constructivism, social constructivism, connectivity, and cognition. The pedagogical model for the Moocs courses is based on a number of pedagogical principles, such as [26]: (1) facilitating faculty exchange; (2) building community; (3) content is the trigger; (4) flexibility; and (5) facilitating practice. Most pedagogical model courses have no predetermined content but are classroom observation videos, faculty and student interviews, broadcasts, or short presentations. The content of the pedagogical approach course is material coming from the students themselves in the classroom, designed to activate reflection and exchange between participants on daily teaching practices. Participants can easily review this content for one to two hours a week, anytime and anywhere that they prefer. Throughout the course, participants are asked to translate their learning into the output of the course—practice after the course is completed (e.g., implementing a lesson plan or action plan). This work is then assessed through peer review at the end of the course. Course participants must successfully complete all parts of the course, including completing the final course output along with peer assessment.

As a result, the research on the development of online teaching competencies for faculty has identified models, content, methods, and modes of training online learning competence for faculty.

2.5. Research on developing the online teaching competence scale for faculty

The strong development of online education has led to an increase in the number of online teaching faculty. Although these faculty members are highly qualified, they are largely untrained or have no experience in online education. Varvel (2007) described the manifestations of each component competence of online teaching competence, including administrative competence, personal competence, and technological competence [7]. These manifestations are the scientific basis for developing a scale to identify faculty's online teaching competence.

Simsek et al. (2021) developed a valuable and reliable online teaching competence scale for faculty based on data from 392 faculty members at Istanbul Cerrahpasa University (Turkey). The faculty involved in the study taught online courses in synchronous or asynchronous mode throughout the Covid-19 pandemic. The process of developing and evaluating the scale includes exploratory factor analysis and convergent validity. The scale consists of 15 items corresponding to four aspects of the faculty's online teaching competence, including [27]: (1) pedagogy (5 items): clearly state learning outcomes and contents, prepare for teaching before the session takes place, be enthusiastic when teaching, and use teaching methods to attract students to study online; (2) support (3 items): assist students in constructing and maintaining learning communities, helping students develop positive attitudes towards online learning, enabling students to establish relationships with faculty and other students; (3) technology (3 items): use hardware and software in online teaching effectively; solve problems arising when teaching online; and (4) course

management (4 items): organize the course according to the module structure on the Learning Management Systems (LMSs), use functions of the LMSs effectively, and promote students to interact on the LMSs and online learning platforms.

In their research on the agricultural faculty's online teaching capacity study at universities in the northeastern region of India, Borah and Devarani (2022) developed a 5-component scale with 23 items in terms of technology, pedagogy, teaching ethics, course management, and content support [16]. Technological competence (7 items) is the ability to have knowledge and skills to handle MS Office applications, search for information, use online teaching platforms, use multimedia, and organize online assessments. Pedagogical competence (6 items) refers to the ability to create effective interactions in lessons, organize and motivate students to participate in learning, promote individual and group communication during lessons, use different communication methods to reach students, be sensitive and empathetic when communicating online, and promote a synchronous and asynchronous online learning environment. Teaching ethical competence (3 items) is expressed in the desire to encourage students to learn, be dedicated to students and to the work of the university, be fair to students in teaching and assessment, and respect students' cultural differences. Course management competence (3 items) is the ability to encourage students to give feedback, provide feedback on essays and clear, detailed exams, manage time sessions, and design and implement lesson plans for appropriate online teaching. Content support competence (3 items) refers to the ability to provide additional teaching materials for students to learn in-depth about the academic content; assign tasks to students to study online; and encourage students to do simple experiments themselves at home.

Tang et al. (2022) created a digital competence scale for faculty members who teach online based on an analysis of the shortcomings of the use of tools like DigCompEdu (not focused on each faculty) and TPAC (without taking into account the beliefs and cognitive values of the faculty on teaching and learning, ignoring the knowledge of the learner on the content of teaching). The scale has 44 items, each of which corresponds to one of the 10 knowledge elements. The elements and items of the elements are as follows: knowledge of learners (5 items), knowledge of technology (4 items), knowledge of pedagogy (7 items), ethical knowledge (4 items), learners' technological knowledge (4 items), learners' pedagogical knowledge (4 items), learners' ethical knowledge (4 items), pedagogical knowledge technology (4 items), ethical technology knowledge (4 items), and pedagogical ethical knowledge (4 items). A 5-point Likert scale is used to evaluate elements with 44 items (5: strongly agree, 4: agree, 3: neutral, 2: disagree, 1: strongly disagree) [28].

Thus, the common point of the studies on the development of faculty's online teaching competence scale is that this development is carried out based on the items of each component competence. This demonstrates the close link between the research on the component competencies of online teaching competence and the development of the online teaching competence scale for faculty members. Analysis of online teaching competence studies shows that this competence is shaped in the context of the strong development of information and communication technology and the comprehensive impact of the Covid-19 pandemic on a global scale in the field of education in general and higher education in particular. In online teaching, faculty play a key role in transferring and organizing for students to acquire knowledge and interact in an online learning environment. Just like in-person teaching competence, online teaching competence is not a solo competence but includes many component competencies. The component competencies of online teaching competence are closely linked to the three basic components of technology-assisted teaching, namely pedagogy, content, and technology to design and implement teaching. online, assess online learning outcomes, and manage online learning sessions. The faculty's online teaching competence is influenced by a variety of factors and can be developed through face-to-face or online training modes. However, in-depth studies on the

content, training methods, and modes to foster online teaching competence for faculty members remain an empty space that needs to be studied in depth in the context of higher education in Vietnam.

3. Conclusion

An overview of the online teaching competence of faculty in higher education shows that this issue has been intensively researched by many scientists around the world, but there is still a huge gap in Vietnam. The role of faculty in teaching online, the factors affecting faculty's online teaching competence, the component competencies of online learning competence, how to develop the competence, and its scale for faculty members have all been identified in studies on the development of faculty's online teaching competence. In the context of higher education in Vietnam, however, the literature study on faculty online teaching competence also raises issues that remain unresolved, such as: (1) What components do the Vietnamese faculty's online learning competence include? What component competencies and elements are there in the faculty's online teaching competence framework? (2) What are the subjects, instructional strategies, and formats for enhancing faculty members' abilities to teach online? (3) How should faculty members go about developing their online teaching skills? (4) How is the Vietnamese faculty members' online teaching competence scale being developed?

These questions are also the unanswered gap in terms of both theory and practice in research on the faculty's online teaching competence in Vietnamese higher education institutions. In order to find out in-depth answers to open questions raised by the literature review, this study identifies in-depth research directions on the faculty's online teaching competence in Vietnam as follows:

(1) Research on the development of an online teaching competence framework for faculty members: The online teaching competence framework for faculty is not only a scientific basis for designing learning materials, instructional methods, and training modes but also a useful tool for online teaching practice guidance as well as a reference for online teaching result assessment.

(2) Research on the development of online teaching content for faculty members: general knowledge of online learning teaching, use of information technology in online learning, online teaching design, promotion of active learning and interaction in the online learning environment, assessment of online learning outcomes, and administration of online learning sessions

(3) Research on the forms and modes of training the online teaching competence for faculty: forms of training (formal training, self-training, combining formal training with self-training) and modes of training (face-to-face training, synchronous online training, asynchronous online training, blended training, hybrid training).

(4) Research on methods of online teaching competence training for faculty members: on-the-job training methods (coaching/mentoring one-to-one, job rotation, and job instruction training) and off-the-job training methods (classroom training/instructor-led training, simulation, vestibule training, computer-aided training/online training, including self-paced and facilitated, and other advancements in training like virtual reality, artificial intelligence, and learning through smartphone applications).

(5) Research on the online teaching competence training process for faculty members.

(6) Research on online teaching competence training tools (hardware and software) for faculty members.

(7) Research on the development of the online teaching competence scale for faculty members.

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