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PROPOSE AN ONLINE TEACHING COMPETENCE SCALE FOR UNIVERSITY LECTURERS

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Abstract

The adoption of online teaching modes in higher education in Vietnam is encouraged by the rapid development of information and communication technology as well as the significant effects of the COVID-19 pandemic. Lecturers' online teaching competence is crucial for effectively deploying online teaching styles. As a result, having a scientific scale to assess the status of university lecturers' online teaching competency is critical. The aim of this study is to propose an online teaching competence scale for university lecturers (OTCSUL) in Vietnam. Based on a systematic evaluation of the literature on online teaching and lecturers' online teaching competence, the OTCSUL-1 with six component competencies and 34 items was proposed. The OTCSUL-2 is revised from the data of 66 lecturers at six public universities regarding the relevance and sufficiency of six component competencies and 34 items of the OTCSUL-1. The OTCSUL-2 consists of "Technology" (6 items), "Understanding student learning" (5 items), "Online instructional design" (5 items), "Digital content development" (4 items), "Learning facilitation" (7 items), "Online learning outcomes assessment" (6 items) and "Online session administration" (4 items). With seven component competencies and 37 items, the OTCSUL could be used to investigate university lecturers' online teaching competence, develop an online teaching competence training program for university lecturers and teacher education, and guide online teaching practice in Vietnamese universities.

Keywords: *Online teaching, Online teaching competence, Online teaching competence scale for university lecturers*

1. Introduction

Digital transformation in higher education is an inevitable trend of The rapid development of information and communication technology in the first decades of the 21st century. In Vietnam, the Covid-19 pandemic, which began at the end of January 2020, is seen as a major impetus for implementing a comprehensive digital transformation in higher education.

Since March 2020, higher education institutions have transitioned to online teaching to sustain teaching and learning activities in order to securely and flexibly adapt as well as effectively control the Covid-19 pandemic (Le et al., 2002). Online teaching modes as Blended Teaching, Online Teaching, Hybrid Teaching have been pushed in higher education institutions in connection with this trend (Vu et al., 2021). More than 50,000 disciplines had moved to online teaching rather than face-to-face teaching as of April 2020, with 4.4 million credit hours of online teaching (Le et al., 2021). This transition in training modes necessitates in-service training for university lecturers in online teaching competence.

Compared with face-to-face teaching competence, online teaching competence is a new spectrum of pedagogical competence. Online teaching competence of university lectures plays a very crucial role in the effective implementation of online teaching modes at universities. So, it is essential to have a scientific online teaching competence scale for university lecturers (OTCSUL) to explore the status of university lecturers' online teaching competence. Findings on lecturers' online teaching competence will provide a scientific basis for the development of an in-service online teaching competence training program for university lecturers. In light of the foregoing, the aim of this study is to propose an OTCSUL in Vietnam through seeking answers to the following questions:

(1) What are the component competencies and their corresponding items of an online teaching competence of university lecturers?

(2) How does this study propose an online teaching competence scale for lecturers?

2. Literature review on online teaching and online teaching competence to propose an online teaching competence scale for university lecturers

Along with in-person teaching, online teaching becomes a pivotal teaching mode in the context of the digital transformation. Online teaching is a form of distance education because it focuses on anytime and anywhere learning, and students are physically separated from teachers. Online teaching is an outstanding form of the transition from teacher-centered teaching to student-centered teaching. To achieve learning outcomes in an online course, students will be more responsible for and autonomous with their learning by selecting "what they learn, where they learn, and who they learn with" (Joksimovic et al., 2015).

Online teaching is a form of distance education in which learning and teaching activities are implemented partially or entirely at anytime and anyplace through the Internet, "either on the Web or by the way of mobile apps" (Ko & Rossen, 2017; Baran et al., 2011; Bolliger & Wasilik, 2009). The interaction of three major components of technology-assisted teaching, including content, pedagogy, and technology, is required for online teaching. Online teaching allows students to actively learn with other students (Sadiku et al., 2018) in the limitless online learning environment.

For the successful implementation of online learning modes at universities, lecturers need to be in-service trained in online teaching competence. Online teaching competence is a type of pedagogical digital competence that refers to the ability to design instructions, organize interactive learning activities, assess online learning outcomes, and administer online sessions using the interplay of three main components of technology-assisted teaching. Online teaching competence is not just a single competence, but also a blended competence comprised of component competencies and corresponding items. Although "technology" is one of the major components of teaching online, lecturers do not have to be experts or advanced computer users (Ko & Rossen, 2017). The authors believed that the best online lecturers are "people-oriented" people who have the aptitude and motivation to become the very best online lecturers.

Spector and De La Teja (2001) focused on the ability to monitor and facilitate online discussions and chat sessions of lectures when referring to multiple abilities of online teaching competency. Lecturers can organize, keep discussions alive, and provide feedback to students (in online asynchronous discussions); establish ground rules for discussion; and actively interact with students (in online synchronous discussions).

According to Abdous (2010), online teaching competence consists of multiple competencies organized around three non-linear teaching phases: before (preparation, planning, and design), during (facilitation, interaction, and feedback provision), and after (reflection and lesson consideration). Before beginning online teaching, lecturers must be able to completely comprehend the foundations and pedagogy

of online teaching, identify the course structure and required resources and/or learning activities, and set up a well-organized course site with clear directions, guidelines, and assessment criteria. Lecturers are able to draw students' attention and motivate them to learn, as well as actively connect and engage with them and offer them with timely and meaningful responses. After completing online teaching, lecturers are also able to synthesize and generalize lessons.

Bigatel et al. (2012) recommended seven competencies for successful online teaching: active learning, administration leadership, active teaching responsiveness, multimedia technology, classroom etiquette, technological competence, and policy enforcement. Bigatel et al. (2012) also addressed the necessity of recognizing and training the seven competencies above for lecturers to be successful in teaching online.

Alma et al. (2017) proposed teaching competencies adjusted to virtual learning environments based on three stages of research: generalizing traits of virtual instructions, defining virtual teaching skills, and validating a virtual teaching profile. Six virtual teaching competencies were pointed out: pedagogy, educational interaction, digital, instructional design, professional, ethical and legal responsibility, and research. The importance and levels of six competencies were also analyzed, of which pedagogical competence was the best evaluated in both aspects.

Roddy et al. (2017) synthesized the competencies required for effective online teaching while investigating best practice principles for online lecturers. Communication, technology, informative feedback provision, administration, responsiveness, learning monitoring, and student assistance provision were identified as the most critical online teaching competencies. According to Roddy et al. (2017), if lecturers lack technological competence, they will be unable to cope with technology-related problems in online classes. As a result, students may have difficulty gaining access to learning materials.

Based on the concept that online teaching competences are knowledge and skills to teach on online platforms, Izmirli and Kirmaci (2017) proposed the component competencies of online learning competencies. Developing the presence of social, teaching, and cognitive aspects; preparing the syllabus and instructional guidelines; selecting appropriate methods for active interaction; pedagogical competencies; and discovering individual differences are all components of online teaching competencies.

Following a literature review on effective teaching competencies in online learning environments, Albrahim (2020) identified the six component competencies of online learning competencies and their corresponding items, including pedagogy, content, design, technology, management and administration, and communication and society. The component competencies and their items are the basis for the development of an online teaching competence scale and training program for lecturers.

Simsek et al. (2021) developed a valid and reliable online teaching competence scale for university lecturers based on data from 392 lecturers at Istanbul Cerrahpasa University (Turkey). The scale includes four component competencies and 15 items: pedagogy (5 Items), support (3 Items), technology (3 Items), and course management (4 Items). Pedagogical competence is determined by the following items: clearly stating learning outcomes, preparing lesson plans, being enthusiastic when teaching, and using active teaching methods. Facilitation competence refers to the ability assist students construct and maintain learning communities, develop good attitudes about online learning, and establish relationships with lecturers and classmates. Technological competence is defined as the ability to use hard and soft tools in online teaching effectively, solve problems arising when using online teaching tools. Course management competence refers to the ability to organize courses in a modular framework using Learning Management Systems (LMSs), to effectively employ LMS functions, and to conduct interactive LMS activities (Simsek et al., 2021).

While conducting research on the online teaching competence of Agriculture lecturers at universities in Northeast India, Borah and Devaran (2022) created six component competencies and 23 corresponding items. Technology, instructional support, teaching ethics, course administration, and content support were the specified five component competences. Successful online teaching is largely dependent on the component competencies of online teaching competence (Borah & Devarani, 2022).

In sum, the systematic literature review on online teaching and online teaching competence of lecturers reveals that online teaching competence of university lecturers is ability to apply a set of knowledge, skills and attitude of technology, (specialized) content and pedagogy to design instructions and learning materials, implement partially or entirely active and interactive learning activities, assess learning outcomes and administer online sessions through the Internet. Online teaching competence includes component competencies and its corresponding items. Common component competencies are addressed including technology, pedagogy, content, assessment, administration and so on. This study sketches an online teaching competence scale for university lecturers (Version 1) (OTCSUL-1) based on the concept and component competencies of online teaching competence for university lecturers. The OTCSUL-1 was sketched with six component competencies and 34 items: 1) Technology (7 items); 2) Understanding of students (5 items); 3) Lesson design (6 items); 4) Learning facilitation (8 items); 5) Assessment (4 items); 6) Session administration (4 items). The six component competencies and 34 items of OTCSUL-1 are organized in order in Table 1.

Table 1: Online teaching competence scale for university lecturers (OTCSUL - 1)

Component competence	No	Items
Technology	1	Have basic knowledge and skills of MS Office, search engines, email, and online teaching platforms.
	2	Effectively use the hardware tools (desktop, personal computers, tablets, cameras...) and software as required by online teaching.
	3	Use multimedia (images, graphics, video, audio, text) to enhance your own teaching and match student learning activities.
	4	Use a combination of social media applications and sites (e.g., Facebook, YouTube, Zalo, etc.) in online teaching.
	5	Solve problems that arise when using online teaching platforms or unexpected situations (e.g., disconnection from the network).
	6	Solve problems that arise when using online teaching platforms or unexpected situations (e.g., disconnection from the network).
	7	Use technology to interact with students and promote their academic progress.
Understanding of Students	1	Identify psychological characteristics of students.
	2	Identify current cognitive levels of students.
	3	Identify the knowledge and skills that students often struggle with.
	4	Respect differences in the learning preferences of students.
	5	Apply teaching strategies that match the cognitive levels of students.
Lesson Design	1	Design the learning outcomes of the lesson using SMART principles (specific, measurable, achievable, realistic, and timely).
	2	Develop academic content that is consistent with learning outcomes.
	3	Select teaching strategies that are consistent with learning outcomes and academic content.
	4	Design assessment tasks and criteria that are consistent with learning outcomes and academic content.
	5	Select online teaching tools that are consistent with academic content, teaching strategies, and online learning conditions.
	6	Develop digital learning materials to motivate students to study further.
Learning Facilitation	1	State clearly the learning outcomes.
	2	Apply active teaching methods to enhance students to interact in each online session.

	3	Encourage students to interact with each other and with lecturers through the implementation of academic tasks and learning projects in the form of groups.
	4	Provide students with opportunities to study through practicing and doing simple experiments at home.
	5	Encourage students to discuss and propose solutions to deal with practical issues.
	6	Encourage students to discuss though open forum on learning management system or online teaching platforms (Zoom, Google Meet, Microsoft Team).
	7	Provide promptly feedback on students' performances during the learning process.
	8	Interact and communicate with students both inside and outside of the online course with respect, passion, and dedication.
Assessment	1	Design assessment tasks that match learning outcomes and academic content.
	2	Use effectively online assessment tools.
	3	Monitor and guide students to improve their performance and learning outcomes.
	4	Analyze students' learning outcomes to adjust teaching strategies in a timely and appropriate manner.
Session	1	Use effectively components of learning management systems.
Administration	2	Organize lessons according to module structure on learning management systems.
	3	Use and manage components of online teaching platforms effectively.
	4	Organize effectively learning activities (open forum, quiz, questionnaire, assignment.) on learning management systems.

3. Research method

3.1. Sample

66 lecturers were the respondents in this study. They come from six public universities in Vietnam: Ho Chi Minh City University of Technology and Education, Hung Yen University of Technology and Education, Nam Dinh University of Technology and Education, Hanoi University of Science and Technology, University of Social Sciences and Humanities, Vietnam National University Ho Chi Minh City, and Industrial University of Ho Chi Minh City. They participated in survey via https://forms.gle/m3nEVx9U2zx6sNFd6 in the school year 2022 - 2023.

3.2. Data collection

A questionnaire with three open-ended and three closed-ended questions was created in order to collect information on the sufficiency and relevance of the six component competencies and 34 items of the OTCSUL-1.

Specific criteria are used to determine the relevance and sufficiency of the six component competencies and their items. The six component competencies will be relevant and sufficient if they: (1) describe the three key elements of technology-assisted teaching over the Internet, namely technology, pedagogy, and content; and (2) express teaching actions that lecturers perform in the online environment. Items of each component competence are considered as relevant and sufficient if they: (1) conform to the component competence's name; and (2) convey the content of each component competence engaged with the aspects of online teaching activities.

4. Findings and discussion

In terms of the relevance of the six OTCSUL-1 component comptencies, there was a large majority of agreement (93.9%), with only 6.1% disagreeing (see Fig. 1). According to an anonymous lecturer, "the online teaching competence scale for lecturers should be divided into three main component competencies

in terms of knowledge, skills, and attitudes relating to technology, pedagogy, and content". The OTCSUL-1, which consists of six component competencies and 34 items, refers to activities that are closely related to the features of online teaching and learning in addition to the three main elements of online teaching competence: technology, pedagogy, and content.

According to another lecturer, "Artificial intelligence (AI) technology, specifically ChatGPT, is a significant challenge for education. Lecturers must refresh and upgrade their qualifications as well as have technological competence to limit student cheating. As a result, the ability to use AI and ChatGPT should be included in the online teaching competence scale for university lecturers".

Another lecturer suggested that, "*Artificial intelligence (AI) technology, specifically ChatGPT, is a significant challenge for education. Lecturers must refresh and upgrade their qualifications, as well as have technologies in place to limit cheating. As a result, combining AI and ChatGPT, an online teaching competence scale for university lecturers should be added*". Although there are certain disadvantages to using ChatGPT, such as erroneous or fraudulent knowledge generation and plagiarism (Lo, 2023; Khan et al., 2023; King & ChatGPT, 2023), numerous recent studies have emphasized the advantages of ChatGPT or other open AI for education. Students' creative and critical thinking skills, as well as their ability to solve problems in the real world, are all improved by using AI tools or engaging in learning activities connected to AI (Zhai, 2022). According to Zawakki-Richter et al. (2019), AI is used in four other aspects of higher education, including adaptive and personalized systems, assessment and evaluation, profiling and prediction, and intelligent tutoring systems. OpenAI invented ChatGPT, an artificial intelligence chatbot (Lo, 2023; Taecharungroj, 2023). ChatGPT can serve not only as a lecturer assistant by developing course materials, giving suggestions, and providing feedback (Lo, 2023; Anders, 2023), but also as a virtual tutor for students by answering questions or facilitating collaboration (Lo, 2023). Chat GPT can help lecturers (01) develop teaching materials by creating quizzes to assess learning outcomes, (2) improve academic success by giving lecturers and students a foundational understanding of various topics; and (3) offer a comprehensive understanding of various topics in an understandable

language (Tlili et al., 2023).

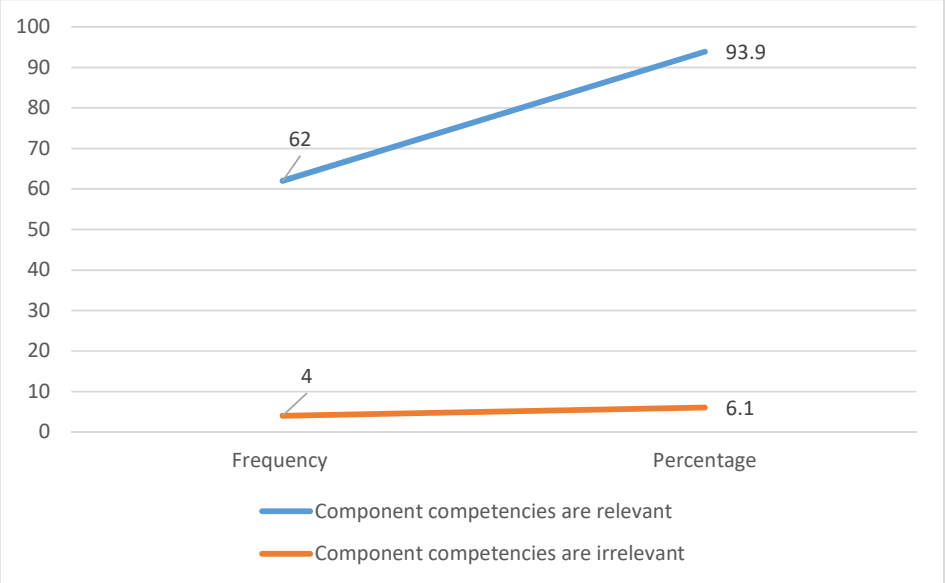

Fig 1. Relevance and irrelevance of 6 component competencies of the OTCSUL-1

As shown in Fig. 2, the majority of questioned lecturers (84.8%) believed the OTCSUL-1 component competences were adequate; only 15.2% disagreed.

In response to the insufficiency of the six component competences, a lecturer noted, *"In online teaching, lecturers should have knowledge and skills in terms of technology, content, and pedagogy. Therefore, instructional design and digital content development should be separated from lesson design. While instructional design belongs to pedagogy, digital content development falls under content"*.

Another lecturer suggested expanding the OTCSUL-1 to include the following two component competencies: "ability to interact in an online teaching environment" and "ability to advise, guide, and support students". The necessity of digital content or interaction between the lecturer, students, and the learning environment, in developing an online course was also discussed in Phan's work (Phan, 2021). Therefore, suggestions that include "digital content development" and "interaction" as component competencies of lecturers' online teaching competence are noteworthy for the OTCSUL

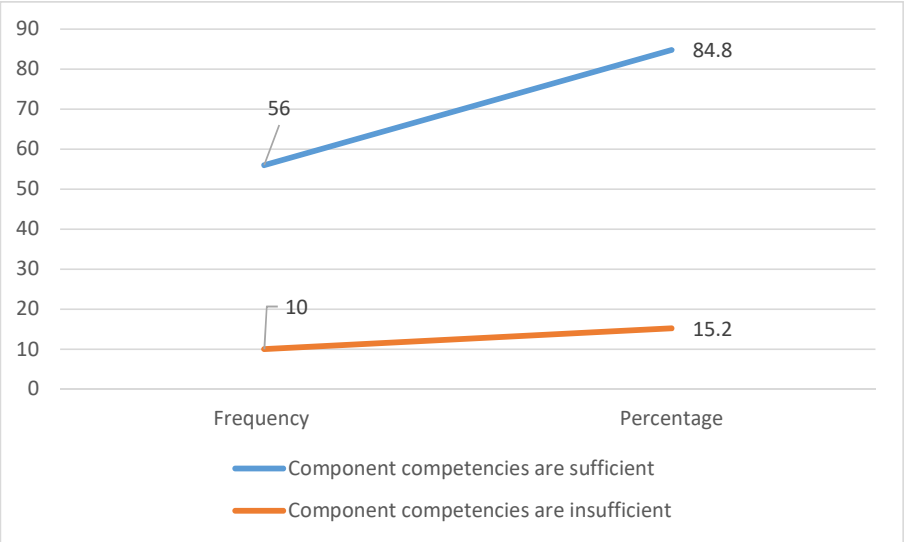

Fig 2. Sufficiency and insufficiency of 6 component competencies of the OTCSUL-1.

As regards the sufficiency and relevance of 34 items, 78.8 % of lecturers agreed, compared with 21.2% of them disagreeing (see Fig. 3). A common point of agreement in the answers to the open-ended question on the insufficiency and irrelevance of items in the OTCFUL-1 was that items need to be engaged with the characteristics of the teaching and learning activities in an online environment. Below are some noteworthy comments on the insufficiency of items given by lecturers:

In terms of the sufficiency and relevance of 34 items, 78.8% of lecturers agreed, while 21.2% disagreed (see Fig. 3). A prominent point of agreement in response to the open-ended question about the insufficiency and irrelevance of 34 items was that items needed to be engaged with the characteristics of online teaching and learning activities. The following are some important comments on the insufficiency and irrelevance of 34 items provided by lecturers:

A lecturer explained the insufficiency and irrelevance of items: *"Items of Understanding of students of lecturers' online teaching competence are not different from items of Understanding of students in face-to-face class. So, understanding of students in an online class should include the ability to use technology to identify students"*.

Another lecturer suggested adding an item about using e-portfolios to give feedback on students' learning outcomes in online teaching.

The addition of an item on using e-portfolios to provide feedback on students' learning outcomes in online teaching was recommended by another lecturers.

In terms of "Learning Facilitation", a lecturer proposed adding two items including "Lecturers have knowledge of pedagogical principles in online teaching" and "Lecturers have an ability to design, comply with and flexibly handle online teaching scenarios".

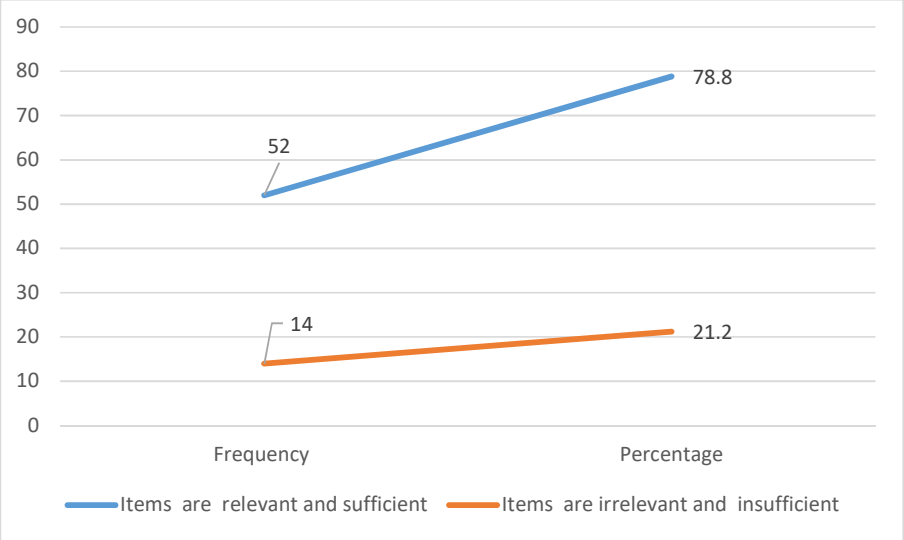

Fig 3. Sufficiency and insufficiency of 34 items of the OTCSUL-1.

In sum, 66 lecturers' qualitative and quantitative data on the relevance and sufficiency of six component competencies and 34 items of the OTCSUL-1 revealed that (1) names of the six component competencies should be expressed more clearly and precisely; (2) "lesson design" should be divided into two component competencies: instructional design and digital content development; and (3) items of the six component competencies should be engaged with characteristics of teaching and learning activities in an online environment.

The data and discussion presented above were utilized to rename the component competencies and add characteristics of online teaching and learning activities to the items. The OTCSUL-1 was replaced by the OTCSUL-2, which includes 37 items organized into seven component competencies: 1) Technology (6 items); 2) Understanding student learning (5 items); 3) Online instructional design (5 items); 4) Digital content development (4 items); 5) Learning facilitation (7 items); 6) Online learning outcomes assessment (6 items); and 7) Online session administration (4 items). Table 2 presents the OTCSUL-2 with seven component competencies and 37 corresponding items. The OTCSUL - 2 is the finding of proposing the Online Teaching Competence Scale for University Lecturers (OTCSUL) in Vietnam through the systematic literature review and the survey in this study.

Table 2: Online teaching competence scale for university lecturers (OTCSUL - 2)

Component competence	No	Items
Technology	1	Have basic knowledge and skills of MS Office, search engines, email, and online teaching platforms (Google Meet, Zoom, Microsoft Team, etc.).
	2	Utilize effectively the software and hardware tools (such as desktop computers, laptops, tablets, cameras, etc.) in online teaching.
	3	Use multimedia (pictures, graphics, video, audio, and text) effectively in online instructional design, digital content development, and learning facilitation.
	4	Use digital teaching platforms (Google Meet, YouTube, MS Team, Zoom) in combination with webtools (Quizlet, Padlet, EdPuzzle, etc.) and ChatGPT (Chat Generate Pre-training Transformer) effectively.

	5	Use online teaching tools to effectively interact with and engage students in online learning activities.
	6	Solve problems that arise when using online teaching platforms or unexpected situations (e.g., disconnection from the network).
Understanding Student Learning	1	Identify psychological changes in students when learning online through their facial expressions, behaviors, gestures, and language.
	2	Determine the cognitive levels of students based on their written or oral answers and interactive learning activities with lecturers and classmates.
	3	Identify the knowledge and skills that students can find difficult when learning online.
	4	Identify the preferred learning styles of students (visual, aural, read/write, and kinesthetic) when learning online.
	5	Use teaching methods and forms that are compatible with students' preferred learning styles and online learning conditions.
Online Instructional Design	1	Design the learning outcomes of the subject and lessons using SMART principles (specific, measurable, achievable, realistic, and timely).
	2	Design academic content ensures scientific, modern, pedagogical logic, and consistency in students' cognitive levels as well as online learning conditions.
	3	Select teaching forms and methods that match learning outcomes and academic content.
	4	Design learning activities, tasks and assessment criteria.
	5	Select online teaching tools that match academic content, teaching methods, and students' online learning conditions.
Digital content development	1	Design multimedia presentation lectures (audio, images, video, graphics, etc.) that run on a computer or network environment and can be widely shared.
	2	Create audio files (lessons or documents) or text (textbooks, textbooks, reference materials, tests, etc.) that can be run on a computer or network environment and can be shared widely.
	3	Design images, videos, or provide online reference links to assist students in understanding academic content more fully.
	4	Design learning tasks and learning sheets for online discussion activities.
Learning facilitation	1	State clear learning outcomes and content in each online lesson.
	2	Encourage students to learn together through discussions, simulations, case studies, solving real-life situations, etc.
	3	Encourage students to learn through practice, do simple experiments at home, and apply their learned knowledge to solve real-life situations.
	4	Encourage students to study, discuss, explore, present, prove, and propose solutions for solving real-life situations in small groups.
	5	Encourage students to participate in online learning forums and share their knowledge and skills with their classmates.
	6	Provide students with clear and positive feedback on their learning task performance so that they can make timely adjustments to their learning.
	7	Interact and communicate with students both inside and outside of the online course with respect, passion, and dedication.
Online Learning Outcomes Assessment	1	Design assessment tasks that are consistent with learning outcomes and academic content.
	2	Use online assessment tools (Azota, Eduso, Quizizz, Mentimeter, Poll Everywhere, Edmodo, etc.) that are diverse and suitable for assessment tasks.
	3	Design assessment tools (checklists, rubrics, scales, etc.) that are valuable and reliable.
	4	Provide positive feedback on student performance and learning outcomes based on assessment criteria that are consistent with the tasks.
	5	Monitor and guide students to adjust learning activities based on feedback on performance and learning outcomes throughout the learning process.
	6	Analyze students' learning outcomes to adjust teaching strategies in a timely and appropriate manner.
Online Session Administration	1	Organize online lessons and sessions in a modular structure on learning management systems (Moodle, Blackboard, Canvas, Edmodo, etc.) and

proficiently use online teaching platforms (Google Meet, Zoom, Microsoft Teams, etc.).

2 Effectively use components of learning management systems (assignment, forum, survey, questionnaire, feedback, etc.) and online teaching platforms (breakout room, screen, record meetings, polls, whiteboard, etc.) in the organization of learning activities and learning outcomes assessment.

3 Identify time for learning activities appropriately and manage time to organize learning activities on learning management systems and online teaching platforms effectively.

4 Track or monitor student participation and interaction in synchronous and asynchronous online learning activities.

5. Conclusion, limitations and practical recommendations

The online teaching competence of university lecturers is critical for properly implementing online teaching modes in higher education institutions. University lecturers' online teaching competence has been demonstrated to be a mixed competence comprised of several component competences and their respective items. Component competencies and corresponding items are identified as solid fundamentals for proposing the online teaching competence scale for university lecturers in Vietnam with six components and 34 items based on a systematic literature review on online teaching and the online teaching competence of lecturers. This study, on the other hand, received responses from 66 lecturers on the relevance and sufficiency of six component competencies and 34 items. The data was meticulously evaluated and used to refine the proposed online teaching competency scale for university lecturers into the official online teaching competence scale for university lecturers. This study creates the Online Teaching Competence Scale for University Lecturers, which includes seven component competencies and 37 items, as previously indicated.

This study has certain drawbacks, which include:

Component competencies and corresponding items of the online teaching competence of lecturers were only systematically reviewed in general and are not linked to lecturers' online teaching competence in specific majors.

The survey only gathered the responses of 66 lecturers on the relevance and sufficiency of component competencies and corresponding items of the proposed online teaching competence scale for lecturers at six public universities. The research sample is still small, and the survey was conducted at one type of university. As a result, these data do not include instructors from all types of universities in the Vietnamese higher education institution system, including public, private, and international institutions.

Despite the well-designed questionnaire and careful data processing, the seven component competencies and 34 items of the online teaching competence scale for university lecturers identified were not validated with a large sample representative of all types of universities using Exploratory Factor Analysis and Cronbach's Alpha coefficient to investigate the scale's validity and reliability.

The following recommendations are considers:

Develop an online teaching competence scale for specialized lecturers.

Develop an online teaching competence training program course or curriculum for lecturers in general and specialized lecturers.

Investigate the status of the online teaching competence of university lecturers in Vietnam.

Comparative research on the online competence of university lecturers in Vietnam compared with other nations in the world.

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