Chaharbashloo et al. *Research and Practice in Technology Enhanced Learning* (2024) 19:14
https://doi.org/10.58459/rptel.2024.19014

Research and Practice in Technology Enhanced Learning

RESEARCH Free and Open Access

A systematic review of online teaching competencies in higher education context: a multilevel model for professional development

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Abstract

The explosive growth of online learning in higher education (HE) institutions has resulted in an unprecedented need to develop comprehensive professional development programs in order to support HE instructors in online settings. The purpose of this systematic review is to identify and categorize online teaching competencies in HE and to propose a conceptual model for creating professional learning opportunities within such settings. Following a rigorous systematic search in two electronic databases (Web of Science and Scopus) between the years 1993 to 2023, 77 eligible articles were chosen and analyzed through content analysis. A total of 106 competencies were identified under seven overarching dimensions. Inspired by the emerged dimensions of the identified competencies, a three-level model for establishing professional development programs for HE institutions is presented and the implications for HE instructors and institutions are discussed.

Keywords: Online teaching competencies, Higher education, Professional development, Systematic review

Introduction

In recent decades, many forces at the global level are substantially altering the landscape of higher education; they include, among other, the Fourth Industrial Revolution, information explosion, lifelong learning, artificial intelligence, a shift toward open education resources (Ally, 2019), innovations in technology and pedagogy, along "with the ubiquity of the learning management systems and social media applications" (Abdous, 2011, p. 60) as well as the recent COVID-19 pandemic (see also Daumiller et al., 2021; González-Bravo et al., 2022; Iglesias-Pradas et al., 2021). The changes are believed to be

induced by the increasing demand for and the expansion of online educational courses and the subsequent accentuation of the role of technology in the delivery of educational materials and enrichment of online learning and teaching environments (e.g., Ally, 2019; Hodges et al., 2020; Hung & Chou, 2015; Kara & Can, 2019; Martin, Budhrani et al., 2019; Mohr & Shelton, 2017). Moreover, the marked differentiations in the perception and thinking/learning styles of (mostly younger generations of) learners (strongly associated with rapidly developing technological factors such as computers, the game industry, and the internet) have rendered the application of technology in education and training environments a pivotal position (Savaş et al., 2022). In fact, while all sectors in the societies are adapting themselves to new and varied technologies (See Güler & Savaş, 2022), it is inconceivable for educational practices, which are the most important building blocks of a community, to remain indifferent to developing technologies (Savaş, 2021).

In the midst of the paradigm shift, marked by growth of online learning in higher education and the migration from traditional (face-to-face) teaching to online environments, faculty members would need a wide range of competencies and skills; such resources are argued to be beneficial for effective teaching and facilitating students' learning in online settings (Martin et al., 2019; Mohr & Shelton, 2017; Northcote et al., 2015; Wang et al., 2019). In particular, promoting competencies required for online teaching while improving its quality have emerged among the pivotal concerns of higher education planners and policy makers worldwide (Shirbagi, 2013). This trend has been exacerbated by the COVID-19 pandemic and its consequences for (distance) higher education (see among others Daumiller et al., 2021; Dogra & Kaushal, 2022; Fouche & Andrews, 2022; Iglesias-Pradas et al., 2021; Wertz, 2022; Whitelock et al., 2021).

Previous studies indicate that, to deliver quality instruction, faculty members need more training, adequate support, and further guidance to successfully utilize new technologies in the e-learning environments and to integrate them with pedagogy (e.g., Martin et al., 2019). In fact, some studies suggested that many university instructors did not know the fundamental differences between traditional learning environments, on one hand, and synchronous and asynchronous ones, on the other; moreover, the studies questioned the instructors' knowledge (and possession) of online teaching competencies and their familiarity with the requirements for teaching in a synchronous learning environment (Gillett-Swan, 2017; Phelps & Vlachopoulos, 2019), inasmuch as they assumed online teaching was merely transferring the instructional materials and resources of the (traditional) classroom to the online teaching platforms (Xiao, 2018). Such a superficial understanding has resulted in the unsatisfactorily low evaluation of the quality of online courses compared to their in-person counterparts as rated by the students, on one hand, and the faculty members' resistance to acquire online teaching competencies, on the other hand (McGee et al., 2017; Thomas & Graham, 2019).

Nonetheless, as noted above, teaching online requires competencies other than traditional teaching competencies alone (Parrish & Sadera, 2018; Thomas & Graham, 2019) and successful implementation of e-learning courses and achievement of learning goals (by the learners) are chiefly contingent on the competencies of online educators (Ally, 2019; Chang et al., 2014; Martin et al., 2019; Phelps & Vlachopoulos, 2019; Setlhako, 2014). Therefore, an updated all-inclusive understanding of online teaching competencies appears to be a prerequisite for developing comprehensive professional development programs for online educators in higher education institutions and universities (Bawane & Spector, 2009; Briggs, 2005; Thach & Murphy, 1995; Williams, 2003).

Our review of the literature on online teaching competencies (see the next section), however, reiterates that, in spite of the proposition of various overlapping and even incongruent lists and classifications (see also Thomas & Graham, 2019), there is a burgeoning need for systematic research studies which can facilitate moving toward consensus and a shared conceptual language in the area of online teaching competencies within the domain of higher education. The current systematic review study is one step toward filling this gap through aggregating the most relevant resources in the field of online teaching competencies between 1993 and 2023; additionally, the study ventures to propose a holistic model for professional development based on the ranking of online teaching competencies in terms of their importance for learning in the context of higher education.

Review of the literature

There has been much debate about the concept of competency since its emergence in the 1960s. In the literature on online teaching, the two concepts of "competency" and "competence" are not always used consistently or interchangeably. In fact, there are researchers such as Wood and Power (1987) who distinguished between the two concepts (as cited in Setlhako, 2019). Literally, competency is the important skill needed to do a job. Conceptually, it is defined as the knowledge, skill, or [ability] required to play an effective role in an organization (Richey et al., 2001, p. 26). Competence, literally, is the ability to do something well, while it is conceptually defined as "a state of being well qualified to perform an activity, task or job function" (Spector & De la Teja, 2001, p. 2). In other words, while "competency" is related to a specific skill or ability and is more individualistic, "competence" is more of a task-related capability or outcome and can be seen as a set of competencies in performance-related areas in a particular field (e.g., distance learning) (McMullan et al., 2003). It should be noted that competencies are distinct from personal traits and characteristics. Traits and characteristics describe a personality that is usually inherited or formed early in life. Examples include "initiative", "self-esteem" and "decisiveness/assertiveness" (Varvel, 2007). Therefore, in this study, the personal characteristics of online teachers were not considered.

The instruction can be characterized as online teaching when "most or all of the content (80% or more) is delivered online" (Allen & Seaman, 2013, p. 7). In the relevant literature, various explorations of and categories for online teaching competencies have been proposed (Setlhako, 2019). It should be noted that in the literature, in addition to the concept of online teaching competencies, similar concepts have been used, including *Instructor Competency* or *online facilitators (see the next paragraph)*. In general, a myriad of online teaching competencies was determined by e-learning professionals, educators and managers of online programs, educational designers, and learners. In short, following the definition of competencies, online teaching competencies can be defined as "a combination of knowledge, skills, attitudes and values" that allow the instructor "to act (appropriately) and professionally in a certain context," (here online environments) and to apply "knowledge, skills, attitudes, personal characteristics, and values … in an integrated way" (Koster & Dengerink, 2008, p. 139).

One of the first classifications of competency, inspiring online teaching competencies, is that of "Houston and Hawsam (1972), who clustered the competencies as cognitive, affective, performance, consequence or product, and explorative or expressive" (Bawane & Spector, 2009, p. 386). Considering the specific conditions of online teaching, Berge (1995) introduced the four competencies of Pedagogical (course or module knowledge), Social (communicating and interacting with students and encouraging them to participate in the class discussions), Managerial (managing the work with students and interacting with them, sending announcements and directing and leading the discussions) and Technical (the ability to use computers and related tools such as the Internet and email). Salmon (2000) clustered online teaching competencies into five categories: (a) the ability to understand online processes, (b) technical skills, (c) online communication skills, (d) content (editing) specialist, and (e) personal characteristics (see the above distinction between competencies and characteristics).

In another study, Reid (2002), after reviewing the classifications offered by previous researchers, listed more than 500 online teaching competencies and grouped them under technical knowledge, subject matter, facilitation (of discussion), evaluation, and course management. Williams' (2003) research highlighted communication competencies as the most important competency from the perspective of experts. Within their matrix of competencies required to support different roles of e-tutors, Denis et al. (2004) describe the different types of competencies expected of an online educator in the form of (a) pedagogical competence, (b) communicational, (c) discipline expertise [in (editing) Content] and (d) technological. On the other hand, Alvarez et al. (2009, p. 332) analyzed previous research on the roles and competencies of university lecturers to teach in virtual environments and concluded that "teaching in online environments demands transversal competencies from the teacher, profiles or domains which are the common denominator in

the other university teachers' roles" (p. 332). The roles and domains they proposed included: designer / planning roles, social role, and cognitive role as well as technological domain and managerial domain (Alvarez et al., 2009). Bower (2011) categorized facilitator competencies for successful teaching in a synchronous learning environment into four competencies: operational, interactive, managerial, and design. Focusing merely on teaching behaviors (processes), Bigatel et al. (2012) compiled a list of online teaching competencies which, from their perspective, included: (1) Active Learning, (2) Administration / Leadership, (3) Active Teaching / Responsiveness, (4) Technological Competence, (5) Multimedia Technology, (6) Classroom Decorum, and (7) Policy Enforcement. Finally, investigating the readiness of faculty to teach online, Martin et al. (2019) examined the faculty's attitude and ability with regard to the four pivotal competencies of (virtual) course design, course communication, time management, and technical.

All in all, since the 1990s, much research has been done on online teaching and learning in general and online teaching competencies for higher education in particular (Alvarez et al., 2009; Aydin, 2005; Bailie, 2011; Bigatel et al., 2012; Goodyear et al., 2001; Grabowski et al., 2016; Ouyang & Scharber, 2017; Ragan, 2009; Shattuck, 2013; Smith, 2005; Varvel, 2007; Williams, 2003); however, the abundance of research itself might be argued to be a source of confusion (e.g., Abdous, 2011; Thomas & Graham, 2019) as there is a paucity of comprehensive systematic studies, covering a wide range of resources, on online teaching competencies in higher education settings. It should, nevertheless, be acknowledged that in the existing literature, there are some systematic reviews on the competencies of instructors in general education (e.g., Martin et al., 2021; Sharin, 2021), medical and nursing education (Button et al., 2014; Koch, 2014; van Rensburg, 2018; Sahapong et al., 2006; Thomas & Graham, 2019), teacher education (Carrillo & Flores, 2020) and professional development for online teaching (Leary et al., 2020), effectiveness of distance learning (Kusmaryono et al., & 2021) as well as on e-teaching and e-learning (Guasch et al., 2010; Martin et al., 2020).

Martin et al. (2020) being an exception, examination of online instructor characteristics has been among the comparatively under-researched topics. There are few systematic research studies of the (role) and competencies of online teachers in the context of higher education (Alvareza et al., 2009; Baran et al., 2011). These studies, however, generally use bibliographic review to theoretically and critically analyze selected sources with the aim of clarifying the role and competencies of instructors; some of them aim also to provide critiques of standards and competency-based approaches to online education from varied perspectives (e.g., transformational learning theory) in the context of higher education. In a similar study, Khodabandelou et al. (2022) intended to systematically review the roles and competencies of higher education instructors, yet its major aim was to analyze the

trends and monitor the changes in the roles (not focused on in the current study) and the core competencies (not their specifics and details) of university instructors over a decade (in contrast to three decades explored here).

Still, as noted above, a comprehensive understanding of online teaching competencies is a prerequisite for efficient professional development programs for online educators in higher education institutions and universities (Bawane & Spector, 2009; Briggs, 2005; Thach & Murphy, 1995; Williams, 2003). Consequently, the current study attempts to systematically consolidate, review, and summarize the pertinent knowledge on online teaching competencies in higher education in the last three decades in order to propose a comprehensive, holistic and practical model for professional development and support programs for faculty members working at higher education institutions.

Methodology

Research design and inclusion criteria

The guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) are followed in the current study. The systematic review in this study was delimited to peer-reviewed articles published in English-language journals over the past three decades between 1993 to March 2023. The reason for including peer-reviewed research articles is that the review process ensures their going through at least one level of quality control. As to our focus on the chosen publication time span, it is owing to the observation that the role of online educators, their competencies, and the competencies' significance in online learning environments have been increasingly the subject of varied, concentrated research studies (see also Gómez-Rey et al., 2017). It should be mentioned that some of the most-cited articles on online teaching competencies (e.g., Cyrs,1997; Darabi et al., 2006; Thach & Murphy, 1995; Williams, 2003;) were also purposefully included in the final corpus.

Search strategy

To collect the review sources, two of the researchers independently adopted a systematic strategy searching the title, abstract, and keywords of the papers within the two prestigious electronic databases of Scopus and Web of Science for any of the relevant keywords / concepts: (e-learning, online learning, distance learning, or e-learning among others); (online competency, qualification, skills, or related terms); (lecturer, university teacher, university instructor, faculty, facilitator, e-tutor, or similar terms) as well as (higher education, university, or their equivalents). The reference lists of the initially identified articles were then used to spot other related articles. Inclusion and exclusion criteria for selecting eligible resources based on seven criteria (study focus, educational level, subject

Table 1 Review sample inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Educational Level	Higher Education	General (K-12)/Medical Education
Subject Area	Social Sciences; Psychology, Art and Humanities	Medicine; Health; Nursing
Focus of Study	Roles, Online Teaching Competencies	Outcomes, and Responsibilities of the online Instructors and In-Person Teaching Competencies
Research Design/Method	Quantitative; Qualitative; Mixed	----
Time Span	1993-2023	Before 1993 and after March 2023
Study Type	Primary (Empirical) Research Journal Papers	Conference Papers; Books and Book Reviews; Theses and Dissertations
Language	English	Non-English papers

area, time period, research design, type of study, and language) are listed in Table 1.

As a result of searching the electronic databases of Web of Science and Scopus followed by examining the references of their articles, a total of 2630 records in the period between 1993-2023 were found. Details of the search and screening processes are given in the PRISMA flow diagram (Figure 1). It should be noted that the screening process was performed in two stages by two researchers separately. Disagreements were discussed until consensus was reached.

The data related to the selected papers (77) were initially examined by one of the researchers—according to the agreement among the co-authors and the purpose of the research; the examined data included the names of the authors, year of publication, purpose of the study, research approach / method, and the main findings. The extracted data were presented in the form of a table. Another researcher then reviewed the data obtained from the selected articles to assess the consistency of the data extraction.

Data extraction and analysis methods

To analyze the papers, content analysis was used by two of the researchers. Accordingly, first an operational definition of the research findings was presented; the operational definition determined which part(s) of the findings, discussion, and conclusion sections of the selected sources should be examined and analyzed. Subsequently, the published papers' interpretation, analysis, and account of interview, observation, documents and questionnaire data which were collected during the research process (by the authors of the papers) were considered as suitable analysis material for the current study. Based on this operational definition, the findings / results, discussion, and conclusions sections of the 77 research articles were studied several times and each article's sentences which were related

Fig. 1 Search strategy, screening and choosing the selected studies based on the PRISMA flow diagram

to competency were chosen for coding. Then, in the second stage, the sentences related to online teaching competencies were edited separately (i.e., they were organized and shortened in order to make sense out of their context) for each article. In the third stage, by comparing two articles at a time, the sentences related to the overlapping competencies were grouped and, eventually, arranged in the form of one competency. In the fourth stage, through constant comparison analysis based on the similarities and differences with model articles (Smith, 2005 and Varvel, 2007 among others) as well as multiple references to the selected research studies, the list of competencies from the selected sources were organized and named at a more abstract level in terms of dimensions (themes). Finally, the references of each category along with its pertinent competencies were arranged in chronological

order. As a result of this iterative process, seven dimensions (or core competencies) for online teaching were identified. In order to confirm the reliability of findings, a peer review method was adopted. A qualitative research specialist together with the first author of the research re-examined the extracted themes and the accuracy of the coding process. Disagreements were discussed until consensus was reached.

Findings

Out of the 77 selected articles, 61 research articles were either qualitative (27) or quantitative (34), while 16 studies had adopted a mixed methodology. The findings of the systematic review of the 77 selected sources lead to the identification and categorization of 106 competencies in terms of seven comprising dimensions. In line with the views of several experts in the field (as noted above), there was a great deal of overlap among the competencies in the proposed classifications. In general, two approaches were mentioned in the literature for identifying competences. In the next sub-sections, we will report the emerging dimensions, the competencies under each dimension, and the resources from which the competencies were extracted:

First dimension: knowledge of the field of distance learning and technological competencies

Out of the 77 selected articles, 55 articles referred to this dimension (theme) and out of the 106 competencies identified, 18 competencies belong to this theme. The competencies of this theme are presented in Table 2.

Second dimension: competencies of planning, designing and organizing electronic courses

Out of the 77 selected articles, 53 articles referred to this dimension (theme). From among the 106 emerging competencies, 20 competencies belong to this theme. The competencies comprising this dimension (along with the pertinent papers) are presented in Table 3.

Third dimension: Competency in facilitation (of discussion)

Of the 77 selected articles, 49 referred to this dimension. The fact that, out of 106 competencies, 21 competencies belong to this theme highlights the importance of this dimension of online teaching. The comprising competencies of this dimension are presented in Table 4.

Table 2 Competencies comprising the first dimension of online teaching in higher education (and the source studies)

Dimension 1: Knowledge of the field of distance learning and technological competencies		
Number	Competency	Study/Source
1	Adequate understanding of the foundation of online teaching and learning	Abdous, 2011; Martin, Budhrani & Wang, 2019; Ouyang & Scharber, 2018; Parrish & Sadera, 2018; Schalk et al., 2022; Setlhako, 2014; Thumiki & Magd, 2022; Wang et al., 2019; Wang et al., 2021
2	Knowledge of the capabilities and limitations of different teaching and learning technologies / app / software / tool is suitable for what kind of subjects	Abdous, 2011; Adi Badiozaman et al., 2022; Adnan et al., 2017; Akram et al., 2021; Ally, 2019; Badiozaman, 2021; Cook et al., 2023; Darabi et al., 2006; Goodyear et al., 2001; Khtere & Yousef, 2021; Lin, 2022; Lin et al., 2023; Ouyang & Scharber, 2018; Paudel, 2021; Roberts & Bezuidenhout, 2017; Thumiki & Magd, 2022
3	Knowledge about the virtual learning environment	Egan & Akdere, 2005; Lin, 2022; Lin et al., 2023; McGee et al., 2017; Ouyang & Scharber, 2018; Parrish & Sadera, 2018; Paudel, 2021; Reader et al., 2020; Roberts & Bezuidenhout, 2017; Thumiki & Magd, 2022; Varvel, 2007
4	Adequate knowledge and awareness of copyright, ethical application of technology, privacy and intellectual property issues	Abdous, 2011; Alarcón et al., 2020; Ally, 2019; Cyrs, 1997; Farmer & Ramsdale, 2016; Martin, Budhrani & Wang, 2019; Martin, Budhrani et al., 2019; Muñoz Carril et al., 2013; Wang et al., 2021
5	Knowledge of the features and applications of major operating systems, virtual resources and tools	Adnan et al., 2017; Almazova et al., 2020; Jung et al., 2021; Lin et al., 2023; Martin, Budhrani & Wang, 2019; Paudel, 2021; Phelps & Vlachopoulos, 2019
6	Ability to use email to communicate with students and the university	Abdous, 2011; Amhag et al., 2019; Berge, 1995; Blayone et al., 2018; Lin, 2022; Martin, Budhrani & Wang, 2019; Murphy et al., 2011; Simsek et al., 2021; Väljataga et al., 2020
7	Ability to use course management systems, Learning Management System (LMS), Adobe Connect, browsers and video conferencing applications	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Akram et al., 2021; Almazova et al., 2020; Alvarez et al., 2009; Farmer & Ramsdale, 2016; González et al., 2023; Jung et al., 2021; Kara & Can, 2019; Lin, 2022; Martin, Budhrani et al., 2019; Mehrotra et al., 2022; Paudel, 2021; Simsek et al., 2021; Thumiki & Magd, 2022; Väljataga et al., 2020
8	Ability to use tools and technologies including Microsoft Word, PowerPoint, audio, video and multimedia devices, forums which are useful for enhancing learning	Akram et al., 2021; Ally, 2019; Almazova et al., 2020; Amhag et al., 2019; Aydin, 2005; Blayone et al., 2018; Egan & Akdere, 2005; Hung& Chou, 2015; Jung et al., 2021; Lin, 2022; Mehrotra et al., 2022; Muñoz Carril et al., 2013; Northcote et al., 2015; Ouyang & Scharber, 2018; Simsek et al., 2021; Thumiki & Magd, 2022; Väljataga et al., 2020; Varvel, 2007; Zhang & Chen, 2017
9	Ability to use online marking, polling, proctoring tools	Setlhako, 2014; Simsek et al., 2021; Thumiki & Magd, 2022
10	Continuous learning of emerging software, developing hardware and computer network skills as well as technology repair / operation skills	Adi Badiozaman et al., 2022; Adi Badiozaman et al., 2022; Alarcón et al., 2020; Aslami et al., 2016; Badiozaman, 2021; Paliwal & Singh, 2021; Simsek et al., 2021; Väljataga et al., 2020
11	Ability to provide technical support to students when they face problems (e.g., they get disconnected from the system)	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Aslami et al., 2016; Aydin, 2005; Badiozaman, 2021; Farmer & Ramsdale, 2016; Goodyear et al., 2001; Hung & Chou, 2015; Martin, Budhrani et al., 2019; Martin et al., 2021; Parrish & Sadera, 2018; Simsek et al., 2021; Thumiki & Magd, 2022

12	Text design skills	Aydin, 2005; Egan & Akdere, 2005; Phelps & Vlachopoulos, 2019; Thach & Murphy, 1995; Thumiki & Magd, 2022; Williams, 2003
13	Graphic design skills	Aydin, 2005; Blayone et al., 2018; Egan & Akdere, 2005; Kara & Can, 2019; Thach & Murphy, 1995
14	Knowledge of procedures required to manage both synchronous and asynchronous communication tools	Aydin, 2005; Farmer & Ramsdale, 2016; Jung et al., 2021; Kara & Can, 2019; Lin, 2022; Paliwal & Singh, 2021; Reader et al., 2020; Varvel, 2007; Wang et al., 2021
15	Familiarity with appropriate technologies / apps to enhance student learning and enrich education	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Akram et al., 2021; Badiozaman, 2021; Cook et al., 2023; Jung et al., 2021; Lin et al., 2023; Paudel, 2021; Roberts & Bezuidenhout, 2017
16	Ability to use technology (e.g., Google Drive and Dropbox) to communicate with students in an online learning environment	Amhag et al., 2019; Goodyear et al., 2001; Kara & Can, 2019; Paliwal & Singh, 2021; Wang et al., 2021
17	Familiarity with methods to design online educational courses and evaluating what tools are effective in achieving the desired learning outcomes	Abdous, 2011; Akram et al., 2021; Chang et al., 2014; Cyrs, 1997; Farmer & Ramsdale, 2016; Thach & Murphy, 1995; Wang et al., 2021; Williams, 2003
18	Knowledge of technological procedures for producing multimedia content and their adaptation to e-learning environments and the intended learning outcomes	Akram et al., 2021; Almazova et al., 2020; Aydin, 2005; Chang et al., 2014; Egan & Akdere, 2005; Farmer & Ramsdale, 2016; Thumiki & Magd, 2022; Väljataga et al., 2020; Wang et al., 2019

Table 3 Competencies comprising the second dimension of online teaching in higher education (and the source studies)

Dimension 2: Competencies of planning, designing and organizing electronic courses		
Number	Competency	Study/Source
1	Ability to develop learner-centered and flexible syllabi	Abdous, 2011; Albrahim, 2020; González et al., 2023; McGee et al., 2017; Ouyang & Scharber, 2018; Simamora et al., 2020; Wolcott, 1993; Zhang & Chen, 2017
2	Ability to evaluate the existing content and resources to identify their shortcomings	Abdous, 2011; Arinto, 2013; Aydin, 2005; Cleveland-Innes & Campbell, 2012; Paliwal & Singh, 2021; Varvel, 2007
3	Ability to select and adapt learning resources and experiences with regard to learners' learning needs as well as the curriculum and teaching principles	Akram et al., 2021; Al-Adwan & Alkhalifah, 2021; Alarcón et al., 2020; Arinto, 2013; Bawane & Spector, 2009; Bezuidenhout, 2017; Glukhov & Gromova, 2016; Hodges & Cowan, 2012; Jung et al., 2021; Muñoz Carril et al., 2013; Ponce et al., 2018; Varvel, 2007; Simamora et al., 2020; Smits & Voogt, 2017; Thomas & Graham, 2019; Thumiki & Magd, 2022; Zhang & Chen, 2017
4	Ability to design educational tasks / activities based on students' needs and to specify grading systems	Alvarez et al., 2009; Arinto, 2013; Jung et al., 2021; Mohr & Shelton, 2017; Simamora et al., 2020; Thumiki & Magd, 2022; Zhang& Chen, 2017
5	Adequate knowledge of adult learning styles / theories	Abdous, 2011; Albrahim, 2020; Aslami et al., 2016; Chang et al., 2014; Cyrs, 1997; Glukhov & Gromova, 2016; Martin, Budhrani et al., 2019; Martin et al., 2021; Roberts & Bezuidenhout, 2017; Wang et al., 2019; Williams, 2003; Zhang & Chen, 2017
6	Updating course content using online resources; Selecting web resources in a variety of media	Ally, 2019; Arinto, 2013; Muñoz Carril et al., 2013; Zhang & Chen, 2017
7	Using specific, structured content and schedule to impart course requirements to students	Hung & Chou, 2015; Jung et al., 2021; Zhang & Chen, 2017
8	Designing online content in / for learning management system (LMS)	Adnan et al., 2017; Alarcón et al., 2020; Arinto, 2013; Aslami et al., 2016; Aydin, 2005; Bawane & Spector, 2009; González et al., 2023; Hodges & Cowan, 2012; Martin, Budhrani & Wang, 2019; Martin et al., 2021; Muñoz Carril et al., 2013; Ouyang & Scharber, 2018; Phelps & Vlachopoulos, 2019; Thach & Murphy, 1995; Thumiki & Magd, 2022; Trammell & LaForge, 2017; Wolcott, 1993; Zhang & Chen, 2017
9	Choosing the right digital technology appropriate for the intended content and learning outcomes	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Adnan et al., 2017; Albrahim, 2020; Ally, 2019; Arinto, 2013; Goodyear et al., 2001; Martin et al., 2021; Metz & Bezuidenhout, 2018; Muñoz Carril et al., 2013; Northcote et al., 2015; Reader et al., 2020; Schalk et al., 2022; Varvel, 2007; Wang et al., 2021; Zhang & Chen, 2017
10	Ability to design learning materials that meet the specific needs of students	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Albrahim, 2020; Ally, 2019; Arinto, 2013; Jung et al., 2021; Khtere & Yousef, 2021; Metz & Bezuidenhout, 2018; Thomas & Graham, 2019; Thumiki & Magd, 2022; Wang et al., 2019; Wolcott, 1993
11	Application of tools and technologies that are easy for students to use	Ally, 2019; Hung & Chou, 2015; Wang et al., 2019
12	Facilitating access to online resources	Alarcón et al., 2020; Arinto, 2013; Aydin, 2005; Goodyear et al., 2001; Martin, Budhrani et al., 2019; Phelps & Vlachopoulos, 2019

13	Ability to set up a fully organized course with complementary tips, instructions, and criteria	Abdous, 2011; Hung & Chou, 2015; Jung et al., 2021; Khtere & Yousef, 2021; Martin et al., 2021; Mohr & Shelton, 2017; Paliwal & Singh, 2021; Ponce et al., 2018; Richardson et al., 2015; Wang et al., 2021
14	Ability to design engaging and diverse learning activities, to create opportunities for interaction and collaboration in the online learning environment	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Albrahim, 2020; Ally, 2019; Almazova et al., 2020; Badiozaman, 2021; Cleveland-Innes & Campbell, 2012; Hung & Chou, 2015; Jung et al., 2021; Khtere & Yousef, 2021; McGee et al., 2017; Paliwal & Singh, 2021; Smits & Voogt, 2017; Wolcott, 1993
15	Designing learning activities aimed at generating online shared knowledge	Goodyear et al., 2001; Varvel, 2007
16	Ability to effectively coordinate learning objectives, course assignments, assessment strategies, and learning activities in online courses	Hung & Chou, 2015; Jung et al., 2021; Martin, Budhrani et al., 2019; Northcote et al., 2015; Reader et al., 2020
17	Ability to design and develop learning activities that use technology – such as Kahoot – in order to establish communication and enhance interaction	Abdous, 2011; Arinto, 2013; Aslami et al.,2016; Martin, Budhrani & Wang, 2019; Martin, Budhrani et al., 2019; Trammell & LaForge, 2017
18	Ability to design learning activities that allow students to create explanations / solutions consistent with learning outcomes	Albrahim, 2020; Glukhov & Gromova, 2016; Goodyear et al., 2001; Jung et al., 2021; McGee et al., 2017; Paliwal & Singh, 2021
19	Ability to develop online study guides, techniques, and tools to optimize learning and organization	Aydin, 2005; Glukhov & Gromova, 2016; Hodges & Cowan, 2012; Metz & Bezuidenhout, 2018; Phelps & Vlachopoulos, 2019; Trammell & LaForge, 2017
20	Ability to design educational materials that include elements of reading and/or verbal comprehension (font type, size) and visual elements (color, order)	Aydin, 2005; Cyrs, 1997; Goodyear et al., 2001; Khtere & Yousef, 2021; Muñoz Carril et al., 2013; Ponce et al., 2018; Thach & Murphy, 1995; Trammell & LaForge, 2017; Williams, 2003

Table 4 Competencies comprising the third dimension of online teaching in higher education (and the source studies)

Dimension 3: Competency in facilitation (of discussion)		
Number	Competency	Study/Source
1	Ability to create a learning community in an online learning environment	Abdous, 2011; Alarcón et al., 2020; Ally, 2019; Berge, 1995; Bigatel et al., 2012; Cleveland-Innes & Campbell, 2012; Egan & Akdere, 2005; Farmer & Ramsdale, 2016; Martin, Budhrani & Wang, 2019; Murphy et al., 2011; Northcote et al., 2015; Setlhako, 2014; Simsek et al., 2021; Thach & Murphy, 1995; Thomas & Graham, 2019
2	Ability to help learners take responsibility for their own learning	Abdous, 2011; Albrahim, 2020; Bigatel et al., 2012; Farmer & Ramsdale, 2016; Glukhov & Gromova, 2016; Goodyear et al., 2001; Muñoz Carril et al., 2013; Murphy et al., 2011; Wang et al., 2021
3	Ability to utilize active learning techniques facilitated by appropriate software	Alarcón et al., 2020; Ally, 2019; Glukhov & Gromova, 2016; Parrish & Sadera, 2018; Setlhako, 2014
4	Facilitating students' self-directed learning and listening to their expectations	Alarcón et al., 2020; Albrahim, 2020; Ally, 2019; Farmer & Ramsdale, 2016; Martin et al., 2021; Mehrotra et al., 2022; Muñoz Carril et al., 2013; Parrish & Sadera, 2018; Thumiki & Magd, 2022
5	Ability to design (test) items / questions at different cognitive levels appropriate for different educational goals	Albrahim, 2020; Ally, 2019; Darabi et al., 2006; Zhang & Chen, 2017
6	Knowing the cognitive processes associated with different types of learning, how these processes are stimulated, and how students' physical, social, emotional, moral, and cognitive development affects learning	Alarcón et al., 2020; Almazova et al., 2020; Baran et al., 2011; Muñoz Carril et al., 2013; Roberts & Bezuidenhout, 2017; Simamora et al., 2020; Thumiki & Magd, 2022; Varvel, 2007
7	Offering educational guidance throughout the course, focusing on (educational) topics, and assisting learners in learning	Abdous, 2011; Akdere, 2005; Berge, 1995; Chang et al., 2014; Cyrs, 1997; Egan & Akder, 2005; Farmer & Ramsdale, 2016; Kara & Can, 2019; Lin, 2022; Murphy et al., 2011; Ponce et al., 2018; Richardson et al., 2015; Simsek et al., 2021; Zhang & Chen, 2017
8	Ensuring the general readiness of learners through directing them to various university resources including counseling, technical requirements, and library resources	Abdous, 2011; Hodges & Cowan, 2012; Lin, 2022; Murphy et al., 2011
9	Giving students the chance to reflect on their own learning and progress, and encouraging self- and peer-assessment	Albrahim, 2020; Ally, 2019; Farmer & Ramsdale, 2016; Martin et al., 2021
10	Ability to facilitate communication with learners, to provide feedback on the learners' ideas, and to share their own ideas with students	Abdous, 2011; Alarcón et al., 2020; Egan & Akdere, 2005; Lin, 2022; Martin et al., 2021; McGee et al., 2017; Murphy et al., 2011; Simsek et al., 2021; Zhang & Chen, 2017

11	Ability to effectively ask questions and to encourage students to construct and discover new concepts (out) of the course	Abdous, 2011; Ally, 2019; Murphy et al., 2011; Thach & Murphy, 1995; Varvel, 2007
12	Identifying shy or isolated students, and facilitating and encouraging their participation in the discussion	Berge, 1995; González et al., 2023; Hung & Chou, 2015; Khtere & Yousef, 2021; Lin, 2022; Wang et al., 2021
13	Ability to use electronic tools (conducive to student learning) to motivate students in virtual classrooms	Abdous, 2011; Alarcón et al., 2020; Ally, 2019; González et al., 2023; Muñoz Carril et al., 2013; Murphy et al., 2011; Simsek et al., 2021; Thach & Murphy, 1995; Varvel, 2007; Wang et al., 2021; Williams, 2003
14	Ability to manage and monitor discussions in order to stimulate new discussions and critical thinking or to steer conversations in the right direction	Abdous, 2011; Ally, 2019; Farmer & Ramsdale, 2016; Mehrotra et al., 2022; Murphy et al., 2011; Paliwal & Singh, 2021; Thumiki & Magd, 2022
15	Ability to use appropriate technologies and reflective journal to help monitor and tracking the students' learning process	Abdous, 2011; Ally, 2019; Bigatel et al., 2012; Egan & Akdere, 2005; Farmer & Ramsdale, 2016; Goodyear et al., 2001; Northcote et al., 2015; Ponce et al., 2018; Thumiki & Magd, 2022; Väljataga et al., 2020; Wang et al., 2019
16	Responding quickly to students' questions and using questions that promote discussion among learners	Abdous, 2011; Berge, 1995; Bigatel et al., 2012; Martin, Budhrani & Wang, 2019; Mehrotra et al., 2022; Murphy et al., 2011; Thach & Murphy, 1995
17	Encouraging, approving, or reinforcing student discussion and participation through praising and modeling effective behavior	Abdous, 2011; Ally, 2019; Berge, 1995; Farmer & Ramsdale, 2016; Martin et al., 2021
18	Ability to determine the students' level of ability and to understand how students create knowledge and develop skills	McGee et al., 2017; Murphy et al., 2011
19	Ability to facilitate the teaching process (in a way) that helps students acquire and internalize knowledge	Abdous, 2011; Murphy et al., 2011; Thumiki & Magd, 2022; Wang et al., 2021
20	The instructor encourages students to consider alternative explanations for their experiences	Bigatel et al., 2012
21	Ability to use learning technologies including multimedia, simulation, etc. to help students achieve the course objectives	Abdous ,2011; Alarcón et al., 2020; Ally, 2019; Bigatel et al., 2012; Farmer & Ramsdale, 2016; Kara & Can, 2019; Khtere & Yousef, 2021; Muñoz Carril et al., 2013; Murphy et al., 2011; Ponce et al., 2018; Roberts & Bezuidenhout, 2017; Setlhako, 2014; Thumiki & Magd, 2022; Varvel, 2007; Wang et al., 2019; Williams, 2003

Fourth dimension: Social interaction (presence) and communication

Out of the 77 selected articles, 50 papers referred to this dimension. Plus, out of 106 identified competencies, 16 competencies belong to this theme. The comprising competencies of this dimension are as shown in Table 5.

Fifth dimension: Managerial and administrative competencies

Out of the 77 selected articles, 38 referred to this dimension (theme). Additionally, out of 106 competencies, 12 competencies were identified to belong to this theme. The following competencies are included under this dimension (see Table 6).

Sixth dimension: Assessing the learners' learning and evaluating the course

Out of the 77 selected articles, 37 articles referred to this theme. 11 competencies, out of the 106 identified competencies, comprise this theme. The competencies of this dimension are as shown in Table 7.

Seventh dimension: The ability to reflect and teach reflectively

Out of the 77 selected articles, 9 articles referred to this topic, which might indicate an inadequate attention to the competencies of this dimension of online teaching. Out of the 106 online teaching competencies, only 8 competencies belong to this theme. The competencies of this theme are shown in Table 8.

A brief chronological report

Before proposing a conceptual framework, more light can be cast on the significance of each dimension (and the comprising competencies) with regard to the chronological distribution of the dimensions across various time frames.

While Table 9 reports the number of competencies under each dimension as extracted from the pertinent studies, Figure 2 summarizes the table in terms of the frequency of papers published each year based on the extracted dimensions (i.e., not competencies).

According to Table 9 and Figure 3, there were comparatively few research studies in the field of online teaching competencies (12 studies or around 15 per cent of the studies) before 2010, but in the decade from 2010 to 2019, 38 articles (around 50 per cent of the analyzed studies) were published in this field, which indicates that more attention has been paid to this field in this decade, especially since 2016 onwards. Just in the three years spanning 2020 to 2023, about 27 articles (around 35 per cent) were published in this field, which indicates the growth of the articles in the short time span after COVID-19 pandemic and probably a paradigm shift from the traditional teaching approaches to virtual teaching (compare also with Khodabandelou et al., 2022).

Table 5 Competencies comprising the fourth dimension of online teaching in higher education (and the source studies)

Dimension 4: Social interaction (presence) and communication		
Number	Competency	Study/Source
1	Skill in developing guidelines and clearly stating expectations for student participation in the course	Bigatel et al., 2012; Cyrs, 1997; Farmer & Ramsdale, 2016; Hodges & Cowan, 2012; Hung & Chou, 2015; Lin et al., 2023; Martin et al., 2021; Metz & Bezuidenhout, 2018; Ouyang & Scharber, 2018; Pala & Erdem, 2020; Wang et al., 2021
2	Ability to direct and encourage students to actively engage and participate in discussions with the instructor	Abdous, 2011; Adi Badiozaman et al., 2022; Alarcón et al., 2020; Almazova et al., 2020; Badiozaman, 2021; Goodyear et al., 2001; Lin, 2022; Martin et al., 2021; Mehrotra et al., 2022; Ouyang & Scharber, 2018; Phelps & Vlachopoulos, 2019; Reader et al., 2020; Schalk et al., 2022; Segar, 2022; Simsek et al., 2021; Wang et al., 2021
3	Ability to design group assignments in forums to start and continue discussions, to share, to listen to, to answer questions, and to show enthusiasm (towards students)	Abdous, 2011; Ally, 2019; Aydin, 2005; Goodyear et al., 2001; Kara & Can, 2019; Phelps & Vlachopoulos, 2019; Thumiki & Magd, 2022
4	Ability to create groups on (different) platforms in order to answer students' questions in a timely manner	Darabi et al., 2006; Egan & Akdere, 2005; Hodges & Cowan, 2012; Hung & Chou, 2015; Mehrotra et al., 2022; Metz & Bezuidenhout, 2018; Reader et al., 2020; Väljataga et al., 2020; Wang et al., 2021
5	The ability to express his/her empathy with students, to show a passion for teaching, and (to express) a strong desire to help students succeed in learning	Abdous, 2011; González et al., 2023; Lin, 2022; Orcutt & Dringus, 2017; Reader et al., 2020; Wang et al., 2021; Yau et al., 2022
6	The ability to establish a positive social environment that would engage students through boosting their motivation(s), intellectual commitment, and personal growth	Ally, 2019; Goodyear et al., 2001; Khtere & Yousef, 2021; Northcote et al., 2015; Reader et al., 2020; Spector & De la Teja, 2001; Wang et al., 2021
7	Creating and maintaining a friendly learning environment	Adi Badiozaman & Segar, 2022; Adi Badiozaman et al., 2022; Badiozaman, 2021; Bawane & Spector, 2009; Berge, 1995; Darabi et al., 2006; González et al., 2023; Mehrotra et al., 2022; Metz & Bezuidenhout, 2018; Muñoz Carril et al., 2013; Murphy et al., 2011; Reader et al., 2020; Richardson et al., 2015; Wang et al., 2021; Yau et al., 2022
8	Ability to manage the course communication through presenting a good model of expected conduct for all	Ponce et al., 2018; Thach & Murphy, 1995
9	Assisting students to resolve conflict through communication skills (for instance, feedback, tone/voice in text)	Bawane & Spector, 2009; Bigatel et al., 2012; Cleveland-Innes & Campbell, 2012; Farmer & Ramsdale, 2016; Muñoz Carril et al., 2013; Thumiki & Magd, 2022
10	Ability to understand (the impact of) a variety of media (from text to audio visual) on the quality of communication	Blayone et al., 2018; González et al., 2023; Thach & Murphy, 1995

11	Ability to convey compassion, humanity, patience, and (his/her other) feelings to students from a long distance	Cleveland-Innes & Campbell, 2012; Farmer & Ramsdale, 2016; González et al., 2023; Lin, 2022; Lin et al., 2023; Varvel, 2007; Wang et al., 2021; Yau et al., 2022
12	Ability to show positive attention to all students	Glukhov & Gromova, 2016; Kara & Can, 2019; Wang et al., 2021
13	Creating an effective learning environment in the virtual class	Abdous, 2011; Kara & Can, 2019; Muñoz Carril et al., 2013
14	Creating a learning community in which equality and individual differences are respected	Cleveland-Innes & Campbell, 2012; Farmer & Ramsdale, 2016; Simamora et al., 2020
15	Ability to promote interaction by tools (chats, wikis, forums, Zoom or blogs) among the students and between the students and himself / herself	Ally, 2019; Almazova et al., 2020; Aslami et al., 2016; Aydin, 2005; Badiozaman, 2021; Baran et al., 2011; Bawane & Spector, 2009; Bigatel et al., 2012; Egan & Akdere, 2005; Hodges & Cowan, 2012; Northcote et al., 2015; Orcutt & Dringus, 2017; Setlhako, 2014; Vlachopoulos & Makri, 2021
16	Collaboration with larger academic and social communities to boost students' learning and personal growth	Glukhov & Gromova, 2016

Table 6 Competencies comprising the fifth dimension of online teaching in higher education (and the source studies)

Dimension 5: Managerial and administrative competencies		
Number	Competency	Study/Source
1	Awareness of the administrative context of the university or college in which the online educational course is going to be held	Albrahim, 2020; Bigatel et al., 2012; Cyrs, 1997; Martin et al., 2021; Väljataga et al., 2020; Varvel, 2007
2	Ability to identify potential conflicts in the online educational course	Aslami et al., 2016; Martin et al., 2021
3	Ability to supervise students regarding plagiarism policies	Albrahim, 2020; Bigatel et al., 2012; Cyrs, 1997; Williams, 2003
4	Time management ability to preparation/complete assignments and the course/lessons	Adi Badiozaman & Segar, 2022; Badiozaman, 2021; Goodyear et al., 2001; Khtere & Yousef, 2021; Lin et al., 2023; Martin, Budhrani & Wang, 2019; McGee et al., 2017; Paliwal & Singh, 2021; Parrish & Sadera, 2018; Paudel, 2021; Phelps & Vlachopoulos, 2019; Ponce et al., 2018; Reader et al., 2020; Simsek et al., 2021; Varvel, 2007
5	Familiarity with managerial and administrative procedures (e.g., requesting creation of online classes, enrollment management, online enrollment of the students, etc.)	Albrahim, 2020; Chang et al., 2014; Goodyear et al., 2001; Muñoz Carril et al., 2013
6	Ability to adjust his/her expectations with the students and the administrative rules of university	Alvarez et al., 2009; Goodyear et al., 2001; Khtere & Yousef, 2021; Lin et al., 2023; Martin, Budhrani & Wang, 2019; Martin et al., 2021; Mehrotra et al., 2022; Varvel, 2007; Wang et al., 2021
7	Ability to effectively interact with the students and to simultaneously post the announcements to all class groups	Alarcón et al, 2020; Darabi et al., 2006; Mohr & Shelton, 2017; Setlhako, 2014; Simsek et al., 2021; Thomas & Graham, 2019; Thumiki & Magd, 2022; Williams, 2003; Zhang & Chen, 2017
8	Managing teaching in a way that everyone finds a chance to speak and ask questions	Albrahim, 2020; Almazova et al., 2020; Berge, 1995; Cyrs, 1997; Mohr & Shelton, 2017; Reader et al., 2020; Simsek et al., 2021
9	Ability to establish constructive communication with the educational and administrative team members (technical support and educational designer)	Adnan et al., 2017; Alarcón et al., 2020; Aydin, 2005; Ponce et al., 2018; Thach & Murphy, 1995; Wang et al., 2019; Williams, 2003
10	Effective utilization of LMS (Learning Management System)	Albrahim, 2020; Aydin, 2005; McGee et al., 2017; Mohr & Shelton, 2017; Muñoz Carril et al., 2013; Parrish & Sadera, 2018; Simsek et al., 2021; Smits & Voogt, 2017; Thach & Murphy, 1995; Trammell & LaForge, 2017
11	Helping students in resolving conflicts which arise during team work and group assignments	Bawane & Spector, 2009; Bigatel et al., 2012; Martin et al., 2021; Varvel, 2007; Zhang & Chen, 2017
12	Familiarity with methods of resolving student conflict in an online forum	Simsek et al., 2021; Thumiki & Magd, 2022; Trammell & LaForge, 2017; Varvel, 2007

Table 7 Competencies comprising the sixth dimension of online teaching in higher education (and the source studies)

Dimension 6: Assessing the learners' learning and evaluating the course		
Number	Competency	Study/Source
1	Ability to provide timely, regular, and meaningful feedback to the students to identify their strengths and weaknesses	Abdous, 2011; Adnan et al., 2017; Ally, 2019; Bigatel et al., 2012; Cleveland-Innes & Campbell, 2012; Egan & Akdere, 2005; Goodyear et al., 2001; Hodges & Cowan, 2012; Hung & Chou, 2015; Lin et al., 2023; Martin, Budhrani et al., 2019; Martin et al., 2021; Metz & Bezuidenhout, 2018; Murphy et al., 2011; Paliwal & Singh, 2021; Ponce et al., 2018; Schalk et al., 2022; Setlhako, 2014; Smits & Voogt, 2017; Thach & Murphy, 1995; Varvel, 2007; Wang et al., 2019; Wang et al., 2021; Williams, 2003; Yau et al., 2022
2	Using formative assessment and various forms of assessment (role-play, e portfolio, interactive games, etc.) on assignments and postings	Alarcón et al., 2020; Albrahim, 2020; Arinto, 2013; Paliwal & Singh, 2021; Ponce et al., 2018; Richardson et al., 2015; Thach & Murphy, 1995; Thumiki & Magd, 2022; Wang et al., 2021
3	Ability to use alternative assessment including self-assessment, peer-feedback, and technology-supported feedback	Arinto, 2013; Baran et al., 2011; Martin et al., 2021; Murphy et al., 2011; Parrish & Sadera, 2018; Ponce et al., 2018; Schalk et al., 2022; Väljataga et al., 2020; Varvel, 2007; Wang et al., 2019; Wang et al., 2021
4	Ability to monitor students' individual and group progress	Albrahim, 2020; Ally, 2019; Goodyear et al., 2001; Hodges & Cowan, 2012; Martin, Budhrani et al., 2019; Martin et al., 2021; Metz & Bezuidenhout, 2018; Parrish & Sadera, 2018; Thach & Murphy, 1995; Thumiki & Magd, 2022; Väljataga et al., 2020; Wang et al., 2019
5	Ability to associate assignment assessment with students' learning progress	Martin et al., 2021; Muñoz Carril et al., 2013; Väljataga et al., 2020
6	Up-to-date knowledge of assessment of / for learning	Muñoz Carril et al., 2013; Thach & Murphy, 1995; Williams, 2003
7	Designing exam questions that facilitate higher level thinking skills (analysis and synthesis)	Egan & Akdere, 2005; Hung & Chou, 2015; Schalk et al., 2022; Wang et al., 2021
8	Ability to evaluate the course and to plan to implement changes and modifications in order to improve the entire online course	Ally, 2019; Arinto, 2013; Aslami et al., 2016; Egan & Akdere, 2005; Martin, Budhrani et al., 2019; Ponce et al., 2018; Thach & Murphy, 1995; Varvel, 2007; Wang et al., 2019; Zhang & Chen, 2017
9	Ability to assess the learners' achievement of the course objectives	Ally, 2019; Aslami et al., 2016; Chang et al., 2014; Goodyear et al., 2001; Hung & Chou, 2015; Martin, Budhrani et al., 2019; Martin et al., 2021; Ponce et al., 2018; Setlhako, 2014; Thumiki & Magd, 2022; Varvel, 2007; Wang et al., 2019; Zhang & Chen, 2017
10	Ability to use appropriate scoring approaches and to allocate sufficient time for the students to respond to the questions and complete educational activities to be assessed accordingly	Albrahim, 2020; Hodges & Cowan, 2012; Varvel, 2007; Wang et al., 2021
11	Using appropriate (Web 2.0 and EvalComix) technologies to conduct and interpret the assessments/evaluations	Hung & Chou, 2015

Table 8 Competencies comprising the seventh dimension of online teaching in higher education (and the source studies)

Dimension 7: The ability to reflect and teach reflectively		
Number	Competency	Study/Source
1	Ability to analyze and reflect on their own educational experiences and backgrounds as an online instructor to monitor and improve their own performance	Abdous, 2011; Adi Badiozaman & Segar, 2022; Badiozaman, 2021; Cook et al., 2023; Goodyear et al., 2001; Jung et al., 2021; Muñoz Carril et al., 2013; Phelps & Vlachopoulos, 2019
2	Ability to conduct teaching/action research on their own online teaching	Goodyear et al., 2001; Martin et al., 2021
3	Awareness of their own strengths and weaknesses in designing online courses	Abdous, 2011; Jung et al., 2021
4	Possessing personal theories about online teaching and learning and the ability to develop them	Abdous, 2011; Goodyear et al., 2001; Jung et al., 2021; Parrish & Sadera, 2018
5	Ability to write reflectively about teaching and to share it with the colleagues	Abdous, 2011; Alarcón et al., 2020; Parrish & Sadera, 2018
6	Supporting reflection on and critical thinking about activities and learning outcomes	Phelps & Vlachopoulos, 2019
7	Encouraging and assisting colleagues to analyze and reflect on their online teaching experiences	Abdous, 2011; Alarcón et al., 2020; Martin et al., 2021; Muñoz Carril et al., 2013; Parrish & Sadera, 2018
8	Ability to modify the course based on the lessons learned through reflection on teaching practice and student feedback	Abdous, 2011; Adi Badiozaman & Segar, 2022; Badiozaman, 2021; Muñoz Carril et al., 2013; Wang et al., 2021

Table 9 Frequency of competencies under each dimension based on the year of publication

Author(s)	Year	Dimension 1 Knowledge of the field of distance learning and technological competencies	Dimension 2 Competencies of planning, designing and organizing electronic courses	Dimension 3 Competency in facilitation (of discussion)	Dimension 4 Social interaction (presence) and communication	Dimension 5 Managerial and administrative competencies	Dimension 6 Assessing the learners' learning and evaluating the course	Dimension 7 The ability to reflect and teach reflectively
Wolcott	1993		4					
Berge	1995	1		5	1	1		
Thach & Murphy	1995	3	2	4	2		5	
Cyrs	1997	2	2	1	1	3		
Goodyear et al.	2001	3	5	2	3	3	3	
Williams	2003	2	2	2		3	2	
Egan & Akdere	2005	5		4	2		3	
Aydin	2005	6	5		2	2		
Darabi et al.	2006	1	1	2	1			
Varvel	2007	3	4		1	5	5	
Alvarez et al.	2009	2	2	1	2	2		
Bawane & Spector	2009		2		3			
Number of papers referring to each dimension - Years 1993-2009		*10*	*10*	*8*	*10*	*7*	*5*	*0*
Abdous	2011	5	5	12	4		1	6
Baran et al.	2011			1	1		1	
Murphy et al.	2011	1		12	1		2	
Bigatel et al.	2012			6	3	3	1	
Cleveland-Innes & Campbell	2012		2	1	3		1	
Hodges & Cowan	2012		3	1	3		3	
Arinto	2013		9				3	
Muñoz Carril et al.	2013	2	5	5	3	2	2	3
Chang et al.	2014	2	1	1		1	1	
Setlhako	2014	2		3	1	1	2	
Hung & Chou	2015	2	5	1	2		4	
Northcote et al.	2015	1	2	2	2			
Richardson et al.	2015		1	1	1	1		
Aslami et al.	2016	2	3		1	1	2	
Farmer & Ramsdale	2016	6		8	4			
Glukhov & Gromova	2016		4	2	2			
Adnan et al.	2017	2	2			1	1	
McGee et al.	2017	1	3	2		1		
Mohr & Shelton	2017		2			3		

Orcutt & Dringus	2017				2			
Roberts & Bezuidenhout	2017	3	2	2				
Smits & Voogt	2017		2			1	1	
Trammell & LaForge	2017		4			2		
Zhang & Chen	2017	1	8	3		2	2	
Ouyang & Scharber	2018	4	2		2			
Parrish & Sadera	2018	3		2		2		3
Blayone et al.	2018	3			1			
Metz & Bezuidenhout	2018		3		3		2	
Ponce et al.	2018		3	3	1	2	5	
Thomas & Graham	2019		2	1	1	1		
Ally	2019	3	5	10	3		3	
Amhag et al.	2019	3						
Kara & Can	2019	4		2	3			
Martin, Budhrani & Wang	2019	4	2	2		2		
Martin, Budhrani et al.	2019	3	4				4	
Phelps & Vlachopoulos	2019	2	3	2		1		2
Wang et al.	2019	2	2	2		1	4	
Number of papers referring to each dimension - Years 2010-2019		***23***	***27***	***25***	***22***	***18***	***20***	***4***
Alarcón et al.	2020	2	3	7	1	2	1	2
Albrahim	2020		7	4		5	3	
Almazova et al.	2020	3						
Pala & Erdem	2020				1			
Reader et al.	2020	2	2		5	2		
Simamora et al.	2020		3	1	1			
Väljataga et al.	2020	5		1	1	1	3	
Akram et al.	2021	6	1					
Badiozaman	2021	3	1	3	1		2	
Jung et al.	2021	5	8					3
Khtere & Yousef	2021	1	4	2	1	2		
Martin et al.	2021	1	4	4	2	4	5	2
Paliwal & Singh	2021	3	4	1		1	2	
Paudel	2021	5				1		
Simsek et al.	2021	6		4	1	5		
Vlachopoulos & Makri	2021				1			
Wang et al.	2021	5	2	4	8	1	5	1
Adi Badiozaman et al.	2022	5	3	2				
Adi Badiozaman & Segar	2022	3	3	2	1		2	

Lin	2022	6			4	3		
Mehrotra et al.	2022	2		3	3	1		
Schalk et al.	2022	1	1		1		3	
Thumiki & Magd	2022	9	4	6	2	2	3	
Yau et al.	2022				3		1	
Cook et al.	2023	2						1
González et al.	2023	1	2	2	5			
Lin et al.	2023	4			2	2	1	
Number of papers referring to each dimension - Years 2020-2023		***22***	***16***	***15***	***19***	***14***	***12***	***5***

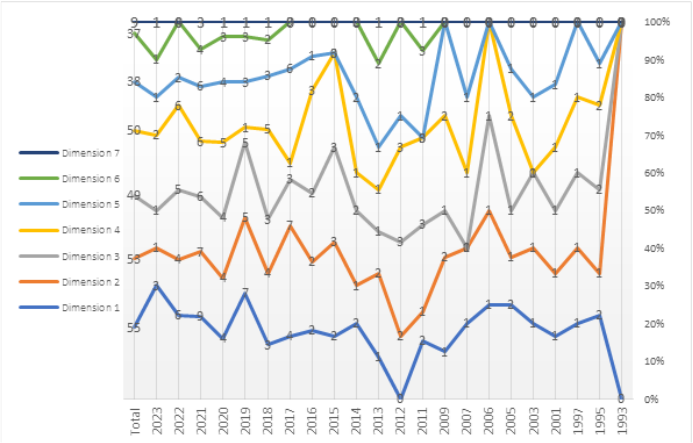
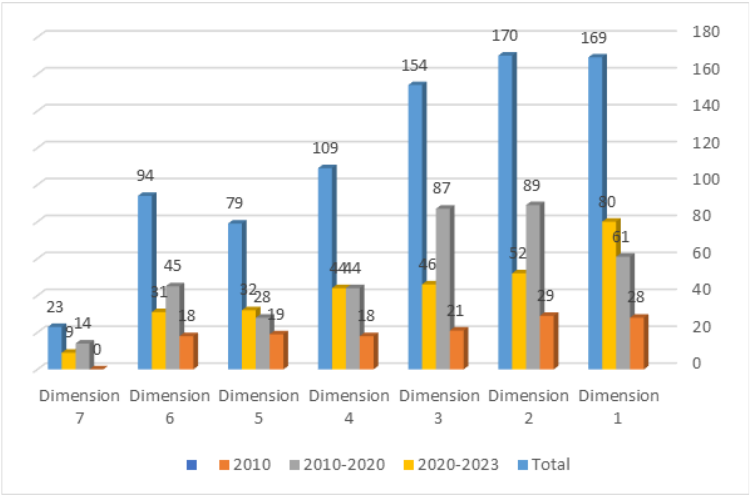


Fig. 2 Frequency of papers published each year based on the extracted dimensions



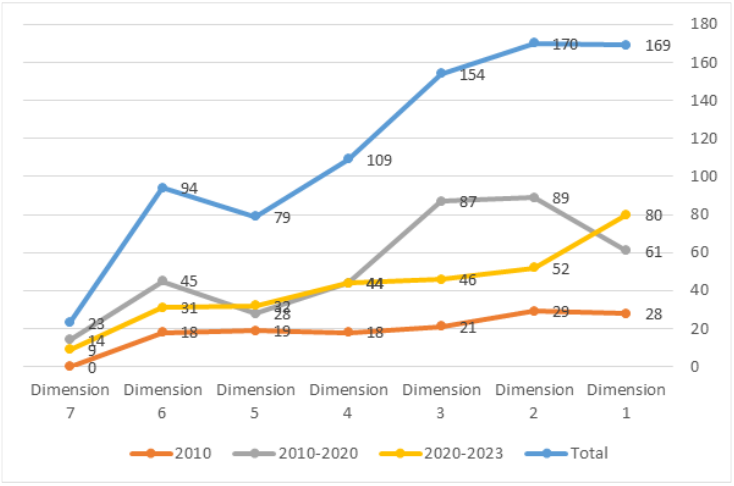


Fig. 3 The time trend of the frequency of online teaching competencies of each dimension between 1993 and 2023 (both charts)

Another noteworthy finding of this research is the high attention paid to two technical and design competencies between 1993-2023, which indicates that these two competencies are among the basic competencies of teaching in the online teaching environment in the higher education. Also, based on the amount of attention given to design knowledge, especially technical knowledge after COVID, it has the highest significance from the point of view of teachers, which is due to the paradigm shift of teaching in the (early) days of the pandemic, partly due to the teachers not being familiar with teaching in the online environments and the lack of facilities provided by institutions and universities (Jung et al., 2021). In fact, the whole concern of the professional development programs was that the lecturers possess the design and technical knowledge of electronic courses (For more details and discussions see our explanation of the proposed framework below as well as the sections on Discussion and Conclusion; see also Khodabandelou et al., 2022).

This brief chronological trend review also reveals that the competency frameworks presented in the research literature were not in line with the theoretical developments in this field. In particular, the significance of the feedback and reflection is less noticed in the reviewed studies and appears to be overshadowed by overemphasis on technical and pedagogical competencies (For more details and discussions on the significance of reflection as well as management and communication competencies see our explanation of the proposed framework below as well as the sections on Discussion and Conclusion; see also Khodabandelou et al., 2022).

A proposed multilevel conceptual model of professional development for online teaching in higher education

After reporting the emergent seven major dimensions and their constituent competencies for online teaching in higher education derived from our systematic review of three decades of research, we venture to consolidate the findings in terms of a suggested conceptual framework. Not only can proposing a conceptual model deepen our understanding of the dimensions and competencies of teaching in the online learning environment (of the higher education), but it can also immensely help policymakers, planners and managers of higher education institutions in developing professional learning opportunities. Hence, a comprehensive conceptual model for advancing professional development programs for faculty members to teach in an online learning environment is presented in Figure 4 through examining different models and classifications of online teaching competencies (e.g., Abdous, 2011; Martin et al., 2019; Reid, 2002); the model hinges on an evaluation of the importance of and difficulty in acquiring competencies in light of the findings of the selected papers. To propose a more practical model of online teaching competencies attempts were made to avoid the weaknesses of similar online education models (e.g., too much focus on expertise in technology and pedagogy while overlooking the factors beyond

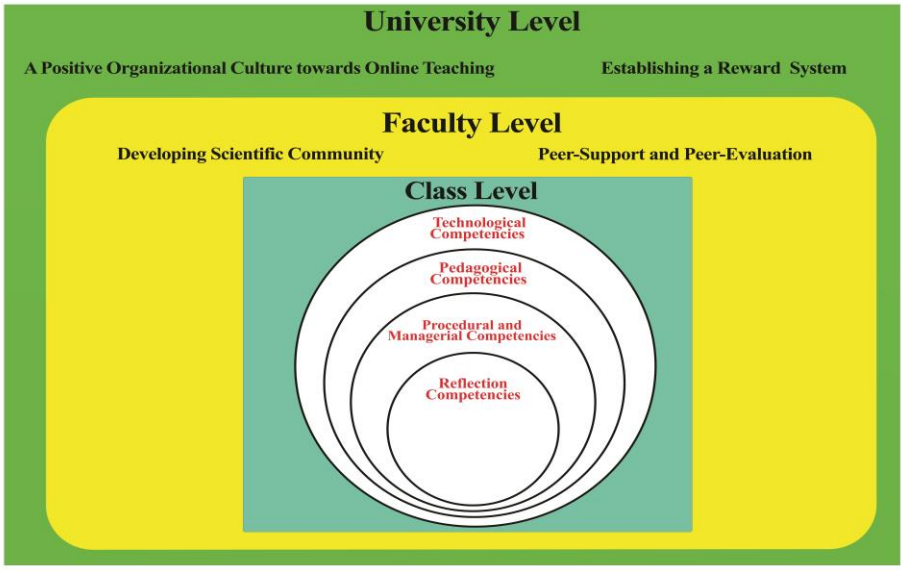


Fig. 4 A comprehensive model of professional development for online teaching in higher education based on the importance of and access to the competencies

the classroom) (Smith et al., 2017); an ecological perspective (Baran & Correia, 2014) at two levels of developing professional community (faculty) and organizational community (university) was drawn upon in designing the current model.

The most important implication of the above model is that successful online teaching in higher education, apart from gaining a wide range of identified competencies, is the result of interaction and support at both the faculty and university levels. In the proposed three-level model, the first level addresses online teaching competencies, which are ordered, based on their level of importance and difficulty of acquisition, in terms of four major dimensions: reflection competencies (before, during and after); competencies of procedural and managerial dimensions (facilitation, social presence, and communication); competencies of pedagogical dimensions (planning, designing and evaluation of the course); and finally competencies of technological dimensions of online teaching. The second level pertains to the creation of professional community and collaborative learning groups among the faculty instructors/professors in order to exchange ideas, to consult (with colleagues), and share knowledge about online teaching. The third (highest) level of the model is related to the organizational culture of the university with respect to online teaching. Once faculty members ensure that the organizational culture of the university respects and rewards (effective) online teaching and has made access to it more universal and flexible, their motivation for and commitment to teaching online increases.

In the research literature before, during, and after COVID-19 pandemic in which several competency frameworks for teaching in the online environment have been presented

(Howard & Tondeur, 2023), there are studies which highlight the significance of technical competencies (Egan & Akdere, 2005; Väljataga et al.,2020), while some others accentuate the integration of technical and pedagogic competencies (Howard & Tondeur, 2023), and still others underline competencies of social presence and interaction and communication (González et al., 2023; Williams, 2003).

Normally, in the Great Online Transition during and after the pandemic, because many higher education institutions and universities did not provide the necessary infrastructure and the instructors were not familiar with the online teaching environment and the design of online courses (i.e., technical and pedagogical knowledge), it is natural that these competencies were assumed to be more important from the point of view of the instructors and experts in this field (see also our brief chronological trend report above). But the message of our proposed model goes beyond the frameworks provided for teaching competence in the online environment. In fact, the order of competencies is based on theoretical developments (e.g., transformative learning theory, pedagogy and practical knowledge) in the field of online teaching, the element of time to acquire and learn competencies (Al-Naabi et al., 2021; Philipsen et al., 2019), the complexity and learning process of teachers (Kiss, 2012), the emergence of new roles for teachers (Bawane & Spector, 2009) and the numerous challenges that teachers faced before (Kebritchi et al., 2017) and after and especially during the COVID pandemic (González et al., 2023); in fact, the combination of all these factors contributed to the introduction of an approach called empowering teachers (Badiozaman, 2021; Baran, 2011; Khodabandelou et al., 2022) or professionalization in the online environment (Philipsen et al., 2019) at the heart of which is critical reflection. Today in the teaching literature in general (Chaharbashloo et al., 2020; Schön, 1983) and teaching in the virtual environments in particular (Baran, 2011), reflection is the beating heart of the professional growth models in higher education institutions as complex learning ecosystems. It is due to the complexity of teaching in the online environments (situations of uncertainty, instability, uniqueness, and value conflict); in fact, various researchers have confirmed the claim that teachers face many challenges and problems, while many of the solutions carried over from face-to-face and traditional teaching and standard-based competency frameworks are not suitable for the online environment and such solutions can result in varying levels of anxiety, burnout, worry and confusion among teachers (Badiozaman, 2021).

Consequently, reflection as a driving engine should be included in competency and professional development frameworks. In other words, improving the teacher's reflection can improve the teaching skills and the teacher's teaching practice, and consequently it can bring about the satisfaction of the students and their learning. Acquiring this competence can make teachers become independent thinkers and empowered online teachers who will finally reflect on the experiences they gain and create new and personal knowledge in the

field of online teaching. They can eventually integrate technical knowledge with pedagogic knowledge, according to their teaching environment (Akram et al., 2021) and acquire the necessary skills to overcome technical, pedagogical, procedural, managerial, and communication problems in the online environment even in dire conditions (Khodabandelou et al., 2022).

As mentioned above, although all competencies are considered as important in the presented model, the significance of and learning time for the competencies are different from each other. Therefore, at the next levels of the proposed model are the competencies of social presence, interaction and communication (i.e., those entitled Procedural and Managerial Competencies in our models), which have been among the most common problems of online instructors (González et al., 2023). According to Levinsen (2007), the strengthening of these competencies is tied to the teacher's personality, so it is natural that learning and acquiring these competencies will take longer than technical competency and online course design (i.e., the outer levels in our model), and, normally, training workshops and seminars alone are not sufficient to develop interaction and communication (and management all included under Procedural and Managerial in our model) competencies. The outer levels in our model are hypothesized to be pedagogical and technical competencies (which are elaborated on in detail in the Discussion sub-sections) that are believed to take comparatively shorter time to develop (see also Levinson, 2007); in particular, acquiring the skills to manage technology for teaching purposes are reported to be less challenging for the teaching staff (Väljataga et al., 2020).

Discussion

The growth and development of technology through the creation of rich learning environments have changed the landscape of higher education. Teaching in a technology-rich environment can be a fairly complex task. Therefore, faculty members of universities would need a wide range of competencies and skills to teach effectively and to successfully facilitate learning in online learning environments. In order to explore and categorize the competencies which pertain the most to these contexts, we conducted a systematic review of 77 scientific-research pertinent articles published in the last three decades in the field of online teaching; the analysis resulted in the identification of 106 competencies which were categorized under seven major dimensions: 1) knowledge of the field of distance learning and technological competencies, 2) Competencies of planning, designing and organizing electronic courses; 3) Competency in facilitation (of discussion); 4) Social interaction (presence) and communication; 5) Managerial and administrative competencies; 6) Assessing the learners' learning and evaluating the course; and 7) The ability to reflect and teach reflectively.

Dimensions and competencies of online teaching in higher education context

Competencies comprising the first dimension, knowledge of the field of distance learning and technology, addresses knowledge of support services, multimedia knowledge, basic knowledge of technology, knowledge of technology access, software skills, application of learning management system for course design and teaching, data analysis, and familiarity with the online teaching and learning environments (Alvarez et al., 2009). This knowledge is not limited to the instructor's access to and proper application of electronic resources, but it also encompasses (the ability in) helping learners in the face of some technical problems, addressing technical concerns, identifying and clarifying (source of the) problems, and giving students the opportunity to learn new programs (Hung & Chou, 2015). Possessing competencies of this dimension can create or enhance unique opportunities to promote reflective and participatory learning. However, absence of the competency and inadequate instructor support in the efficacious utilization of technology may reduce the efficiency and quality of his/her teaching (Hosseini Largani, 2009; Khodabandelou et al., 2022).

The competencies of planning, designing and organizing online courses—the second dimension—are considered as one of the most important competencies of online teaching in the research literature. This is because the instructors should provide their students with information about course expectations and procedures; introduce to them websites, supplementary course content and the like; and coordinate learning activities with (management of) the overall course structure on the first day of class (Khodabandelou et al., 2022; Williams, 2003). Actually, (if not planned adequately in advance) it would be difficult, if not impossible, to immediately adjust and modify the learning activities and provide resources tailored to the needs of learners (Arinto, 2013). As a result of designing the course with quality and coherence, the students can take more responsibility for their own learning, engage more deeply and extensively with the materials and resources, increase their participation in learning processes, and ultimately gain positive learning experiences from the course (Hung & Chou, 2015).

Facilitation, as the third dimension, pertains to an array of online activities (such as guiding learners, focusing on class topics, regularly asking questions from students, encouraging the creation of new concepts, and developing examples and concepts as well as principles and practical skills) which facilitate and support the students' learning of course content (Khodabandelou et al., 2022). In this role, the instructor—instead of transmitting information to the student's mind—creates an environment in which the learners can relate existing knowledge to previous learning experiences and construct their own learning structures. The online environment has fundamentally changed the nature of the interaction between instructor and learner by reducing the professor's control and power over the student. On the other hand, online students are expected to have more

control over their own learning process while being more active in motivating their peers to learn (Baran, 2011). Moreover, this competency can reinforce the learners' critical thinking and metacognitive skills (Hung & Chou, 2015).

Competencies related to the dimension of social presence and communication are among the most important competencies in the online teaching literature; they address the teacher's performance in establishing and improving teacher-student, student-student, and student-content interactions (Khodabandelou et al., 2022). Possession of these competencies can create a friendly, social atmosphere in the online learning environment, which in turn can promote knowledge creation and learning as well as learning verification (whereby instructors verify what students could understand from the course content) (Gorsky & Blau, 2009) and can reduce the learners' feelings of isolation (Hung & Chou, 2015). The lack of this competence can result in a decrease in the quality of learning processes, students' loss of their motivation, students' (heightened levels of) stress and, in the worst cases, students' dropping out of the program (Levinsen, 2007). Also, due to the complexity and diversity of instructors' responsibilities in the online learning environment, they cannot rely entirely on their linguistic skills to establish and maintain relationships with their students. Therefore, competencies of this dimension are necessary and important in order to enrich the social relations between instructors and their students in the long run. The competencies comprising facilitation (of discussion) suggest that promoting human relations, building group unity, maintaining the group as a unit, and helping members work collaboratively toward a common goal are all critical to success in any online enterprise (Berge, 1995).

The fifth dimension—managerial and administrative—includes the pedagogical competencies and skills associated with course management and control, managing student work and assignments, interacting with students, assessing marking, posting announcements, and controlling discussions (Setlhako, 2014). In addition, it embraces managing communication channels, monitoring virtual learning procedures, and establishing classroom rules and regulations (including how to enroll students, keep learners' records, and anticipate course security measures) (Alvarez et al., 2009; Aydin, 2005). It appears that due to the significant presence (and influence) of learning advisors and support team (rather than just the instructors), this dimension tended to be perceived to be of lower priority compared to other competencies in the research literature; nevertheless, this latter tendency can be questioned in light of the courses which are designed in accordance with the theories of social constructivism.

The competencies under the sixth dimension, online learning assessment and course evaluation, are frequently considered as subsets of the course design and organization dimension in the research literature (Khodabandelou et al., 2022). The competencies include announcing scores, giving feedback, evaluating learners' work, and monitoring

learners' learning progress in order to promote their strategic and self-regulated learning (Gómez-Rey et al., 2017). Due to the differences between online and traditional assessment, online instructors need effective and diverse assessment strategies and techniques (including peer-feedback, technology-mediated feedback, portfolio, self-assessment, and weekly assignments which should often be accompanied by immediate instructor feedback) in order to efficiently evaluate student and e-course performance, to instigate high levels of cognitive thinking in their learners, and to guide the students in completing their assignments. Hence, this dimension is among the most important ones for online teaching. Possessing its comprising competencies can substantially reduce one of the major concerns in online teaching, namely, cheating on the examinations (Hung & Chou, 2015).

Finally, the competencies of the dimension of reflection (reflective practice or teaching) refer to the teacher's ability to design and control his/her own learning processes with regard to the components and elements of the online learning environment (Khodabandelou et al., 2022). Reflection before teaching requires reflecting on the online learning environment and its differences with the face-to-face teaching environment, identifying the strengths and weaknesses of electronic tools, and selecting the most appropriate tool(s) for online learning environments as well as the expected learning outcomes. Reflection in teaching suggests that the efficacy of an online course depends on an instructor whose knowledge is beyond mere technical knowledge; an instructor who has an innovative and reflective approach and whose priority in the learning process are the learners. This process will be achieved through continuous evaluation of the course and the tools used to teach online courses (Abdous, 2011; Queiroz & Mustaro, 2003). Reflection after teaching requires an evaluation of one's own teaching, identifying the strengths and weaknesses of the course, and applying new knowledge and insights in designing and reviewing subsequent online courses (Abdous, 2011). Reflection through continuous and accurate study of ideas, personal values governing (their) teaching practice, questioning the assumptions governing online teaching, and analysis of their own experiences will increase the knowledge, skills, and attitudes of instructors towards their own teaching; such a reflection would result in a critical evaluation of the standards for competency models and will ultimately lead to professional growth, development, and empowerment of instructors (Baran et al., 2011).

Implications of the proposed multilevel model for professional development in higher education

The conceptual model proposed in this study can contain several important implications for designing and preparing professional development programs in the area of online teaching for higher education institutions. The first implication of the model is that all the dimensions encompassing the identified competencies should be considered in the

professional development programs for the faculty members, and they should not be restricted to a single competency or one dimension (such as technological knowledge or designing online courses) (Hosseini Largani, 2009). Absence of comprehensive education (targeting faculty members) on online teaching can lead to inadequate levels of faculty participation and unsatisfactory design of online courses, which in turn can lead to lower success rates of the students along with lower levels of instructor satisfaction (Mohr & Shelton, 2017). It is important to note that designing and organizing e-learning courses is a team process in which the instructor performs alongside other individuals, including educational designers, technical assistants, graphic designers, and computer specialists; it should not be assumed that an individual can/should be expected to acquire all these competencies single-handedly. However, it should be noted that different universities and institutions may need to put differential degrees of emphasis on various competency dimensions in professional development programs depending on their support services and infrastructure. For instance, the professors/instructors who work at higher education institutions which are bereft of online course support teams have to acquire all the seven competency dimensions of online teaching; this can exert too much pressure and workload on the instructors and can eventually overshadow the quality of online course design and teaching, though (Chang et al., 2014). Finally, the proposed conceptual framework is a dynamic and emerging framework; that is, it might be modified with changes in technology, the needs of the learner(s), and the curriculum.

The second implication of the conceptual model is the significance of anticipating professional learning opportunities along with multiple and diverse support for developing various competency dimensions given their significance, their difficulty of acquisition, and the busy schedule of faculty members. It means that not all competencies of the dimensions can be taught through formal learning opportunities and/or in the form of workshops and seminars, but more informal and flexible learning experiences, short sessions, and individual support at any time and place should be anticipated to promote/instill these competencies and support instructors in online teaching. For instance, based on the proposed hierarchical model (1), acquiring competencies of the reflective teaching dimension is not attainable by mere participation in workshops, because of the unstructured, empirical, complex, and group-based nature of online teaching (McGee et al., 2017); improving these competencies requires the teacher to be constantly involved with the components of teaching and learning by doing (Arinto, 2013). In addition, given the constructivist nature of the online learning environment, the instructors are more likely to encounter unforeseen, unstable, and conflicting conditions. In such situations, using thinking and reflection skills (especially reflection in action), the instructor can make the best decisions for unanticipated situations. Therefore, improving competency in this dimension is closely related to improving teaching practice as well as other competencies

and should be a prerequisite for and at the heart of professional development programs (Keiny & Dreyfus, 1989). The formation of online learning communities and informal groups among faculty members at the level of faculty as well as peer support for discussion, mentorship, guidance, and transfer of "just-in-time/ just-in-case forms of professional development programs" play an important role in strengthening this competency (see Al-Naabi et al., 2021; Baran & Correia, 2014).

The second most important dimension the acquisition of which can be quite time-consuming deals with the competencies of procedural/process dimension including facilitation, social interaction and communication, and online learning management, which are often overlooked; their significance and time-taking nature can be attributed to the unstructured nature of human communication and interactions, different social and cultural backgrounds of the students, perceiving teaching as a dynamic and social activity, and managing social interaction and learning. Facilitation competency, however, is not easily acquired due partly to the paradigm shift from knowledge transmission and teacher-centered teachings to social constructivism and learner-centeredness (Gibson-Harman et al., 2002; Goodyear et al., 2001; Swan, 2010); hence it is essential to increasingly pay more attention, in the professional development programs for faculty members, to the ways which would facilitate online learning activities, manage online learning, and guide learners in pursuing knowledge. Moreover, as the instructor is not present in the online environment in person, his/her intervention is of utmost prominence in order to improve relations with/among students in the learning/teaching process in a virtual environment. In addition, learning communication skills that can be used in the online environment requires rediscovering and re-externalization of the instructor's internalized, tacit knowledge (Levinsen, 2007). If not, this knowledge cannot be changed according to the specific circumstances of an online environment. The process of acquiring communication competencies starts at an early age and can be fundamentally internalized. Given that changing deep-rooted, tacit knowledge can be more challenging than gaining something quite new, learning communication and social competencies through a workshop is not enough (Levinsen, 2007). It appears, consequently, that one helpful approach can be developing the competencies of the reflective teaching dimension through questioning the assumptions of online communication and peer support in this area.

Based on the proposed conceptual model, competencies of pedagogical dimension—such as designing, organizing, and evaluating the course—assume the third place in terms of its acquisition due mainly to the need for prerequisite theoretical and practical knowledge along with some experience. This does not by any means suggest that this dimension is less important; on the contrary, based on our review of the pertinent research literature, it can be concluded that a lack of pedagogical competencies is highly likely to lead to an insufficient, if any, learning along with unpleasant experiences for all people involved in

online courses. On one hand, many higher education institutions and universities benefit the services of online educational design and support teams (e.g., course manager(s), content specialist(s), educational designer(s), media designer(s), and instructor assistant(s)) that support some of the online instructor roles; therefore, the course instructor may not need to acquire all the competencies included under the pedagogical dimension (Khodabandelou et al., 2022). On the other hand, due to the marked increase in the instructors' facilitative and supportive roles induced by the paradigm shift from cognitive behaviorism to social constructivism and communication-focused instruction, there has been a decline in the instructors' responsibilities in designing and organizing learning activities (Arentio, 2013). Formal learning experiences including internships, paired-teaching, workshops, and individual support by the University Support Centers are good methods to instigate these competencies (Al-Naabi et al., 2021).

Finally, acquiring the competencies of technological knowledge appears to pose the least challenge for the online educators thanks to their being familiar, accessible, and structured, not to mention that many students today possess the competencies and skills subsumed under technological knowledge (Darabi et al., 2006; Setlhako, 2014). Notwithstanding, the competencies of this dimension are more emphasized in the design of in-service courses on online teaching (Levinsen, 2007). No doubt, internships and workshops are good methods to promote these skills.

The third implication of the proposed model is that in order to have successful teaching in an online learning environment, the assistance and support for professors should not be limited to the acquisition of online teaching competencies; in fact, it is essential to support them at the two higher levels, namely, establishing a scientific community (interacting with other faculty members and support staff) as well as the prevalence of a positive organizational culture with regard to online teaching at the university level (Baran & Correia, 2014; Gast et al., 2017; Mohr & Shelton, 2017) . Faculty-level support requires the creation of an online learning community, the design of peer observation and evaluation programs (to observe and criticize each other's teaching), and peer support programs (in which an experienced instructor supports and guides an inexperienced novice instructor). Forming collaborative learning groups plays an important role in embracing new technologies, adapting to the online environment, solving online teaching challenges, and fostering shared perceptions among faculty members. University-level support can be argued to be a key motivating aspect for faculty members' unremitting involvement and interest in online teaching. One apt incentive can be establishing a reward system including grants, tenure or desirable academic positions, promotion, and freeing up some of their time in order to acquire online teaching competencies. A positive organizational culture with regard to online education is another vital reason in promoting a successful migration from traditional teaching to online education. It might be claimed, as also noted by

Davis (2009), that the mere existence of technological infrastructure may not sufficiently motivate instructors to teach effectively online. Organizational culture, however, has been frequently known to play a leading role in the effective integration of technology with pedagogy (as cited in Baran & Correia, 2014).

Conclusion

All in all, it can be concluded that teaching successfully in an online learning environment in higher education depends on the intricate interplay of personal factors (acquisition of online teaching competencies), creating a learning community, and organizational culture. The conclusions and implications of the study should be considered cautiously with regard to a few of its (de-)limitations. One delimitation was reviewing only research articles while excluding the grey literature (namely, theses, dissertations, reports, and books). Not evaluating the methodological quality of the selected studies can be one limitation of the study (although the selected articles have already been evaluated during the rigorous peer review process). In case the methodological quality of the papers were among our inclusion criteria, the papers with questionable methodology could be excluded from the analysis sample, which in turn could affect the research findings (i.e., the observed frequency of the competencies). The next limitation is the possible discrepancy between the keywords (and search string definitions) of this research and the way they are indexed in the Scopus and Web of Science databases, which might lead to the exclusion of some relevant papers. Notwithstanding such issues, this study can be a point of departure for further research in the field of online teaching in higher education. For instance, identifying competencies and formulating professional development programs based on the levels of expertise from novice to professional and according to academic disciplines while taking into account the differences in disciplinary culture, can be among the viable research proposals derived from studies like ours for prospective researchers.

Abbreviation
HE: Higher education

Acknowledgements
The authors would like to thank the two anonymous reviewers for their suggestions and comments on an earlier draft of this paper.

Authors' contributions
Hossein Chaharbashloo contributed to all stages of the study including designing the main study, collecting and analyzing the data, and writing and revising the manuscript.

Hossein Talebzadeh contributed to the study design and data analysis (particularly the second stage), wrote the second draft of the manuscript, and revised all drafts of the paper.

Maryam Hosseini Largani mainly contributed to data collection and analysis.

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Funding
Not applicable.

Availability of data and materials
Not applicable.

Declarations

Competing interests
The authors declare that they have no competing interests.

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Received: 30 December 2022 Accepted: 27 June 2023
Published online: 1 January 2024 (Online First: 4 August 2023)

References

*Abdous, M. (2011). A process-oriented framework for acquiring online teaching competencies. *Journal of Computing in Higher Education*, *23*(1), 60–77. https://doi.org/10.1007/s12528-010-9040-5

*Adi Badiozaman, I. F., & Segar, A. R. (2022). Exploring online teaching competence in the context of the COVID 19 pandemic: insights from Sarawak, Malaysia. *Journal of Further and Higher Education*, *46*(6), 766–779. https://doi.org/10.1080/0309877X.2021.2002284

*Adi Badiozaman, I. F., Segar, A. R., & Iah, D. (2022). Examining faculty's online teaching competence during crisis: One semester on. *Journal of Applied Research in Higher Education*, *14*(2), 541–555. https://doi.org/10.1108/JARHE-11-2020-0381

*Adnan, M., Kalelioglu, F. & Gulbahar, Y. (2017). Assessment of a multinational online faculty development program on online teaching: Reflections of candidate e-tutors. *Turkish Online Journal of Distance Education-TOJDE*, *18*(1), Article 2.

* Akram, H., Yingxiu, Y., Al-Adwan, A. S., & Alkhalifah, A. (2021). Technology integration in higher education during COVID-19: An assessment of online teaching competencies through technological pedagogical content knowledge model. *Frontiers in Psychology*, *12*, 736522. https://doi.org/10.3389/fpsyg.2021.736522

*Alarcón, R., Jiménez, E. d. P., & Yagüe, M. I. V. (2020). Development and validation of the DIGIGLO, a tool for assessing the digital competence of educators. *British Journal of Educational Technology*, *51*(6), 2407–2421. https://doi.org/10.1111/bjet.12919

*Albrahim, F. A. (2020). Online teaching skills and competencies. *Turkish Online Journal of Educational Technology-TOJET*, *19*(1), 9–20.

Allen, E. l., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States.* Babson Survey Research Group and Pearson.

*Ally, M. (2019). Competency profile of the digital and online teacher in future education. *International Review of Research in Open and Distributed Learning*, *20*(2). https://doi.org/10.19173/irrodl.v20i2.4206

*Almazova, N., Krylova, E., Rubtsova, A., & Odinokaya, M. (2020). Challenges and opportunities for Russian higher education amid COVID-19: Teachers' perspective. *Education Sciences*, *10*(12), 368. https://doi.org/10.3390/educsci10120368

Al-Naabi, I., Kelder, J., & Carr, A. (2021). Preparing teachers for emergency remote teaching: A professional development framework for teachers in higher education. *Journal of University Teaching & Learning Practice*, *18*(5). https://doi.org/10.53761/1.18.5.4

*Alvarez, I., Guasch, T., & Espasa, A. (2009). University teacher roles and competencies in online learning environments: A theoretical analysis of teaching and learning practices. *European Journal of Teacher Education*, *32*(3), 321–336. https://doi.org/10.1080/02619760802624104

*Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, *35*(4), 203–220. https://doi.org/10.1080/21532974.2019.1646169

*Arinto, P. B. (2013). A framework for developing competencies in open and distance learning. *The International Review of Research in Open and Distance Learning*, *14*(1), 167–185. https://doi.org/10.19173/irrodl.v14i1.1393

*Aslami, M., Esmaeili, Z., Saeidipour, B., & Sarmadi, M. R. (2016). A model for professional competency of instructors in E-learning environments using meta-synthesis method. *International Journal of Humanities and Cultural Studies*, *2*(4), March 2016.

*Aydin, C. H. (2005). Turkish mentors' perception of roles, competencies and resources for online teaching. *The Turkish Online Journal of Distance Education*, *6*(3), 58–80. https://dergipark.org.tr/en/pub/tojde/issue/16929/176725

*Badiozaman, I. F. A. (2021). Exploring online readiness in the context of the COVID 19 pandemic. *Teaching in Higher Education*, 1–19. https://doi.org/10.1080/13562517.2021.1943654

Bailie, J. L. (2011). Effective online instructional competencies as perceived by online university faculty and students: A sequel study. *Journal of Online Learning and Teaching, 7*(1), 82–89. https://jolt.merlot.org/vol7no1/bailie_0311.pdf

Baran, E. (2011). *The transformation of online teaching practice: Tracing successful online teaching in higher education*. Graduate Theses and Dissertations. Iowa State University. https://lib.dr.iastate.edu/etd/12206

Baran, E., & Correia, A. P. (2014). A professional development framework for online teaching. *TechTrends, 58*(5), 95–101. https://doi.org/10.1007/s11528-014-0791-0

*Baran, E., Correia, A. P., & Thompson, A. (2011). Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers. *Distance Education*, *32*(3), 421–439. https://doi.org/10.1080/01587919.2011.610293

*Bawane, J., & Spector, J. (2009). Prioritization of online instructor roles: Implications for competency-based teacher education programs. *Distance Education*, *30*(3), 383–397. https://doi.org/10.1080/01587910903236536

*Berge, Z. L. (1995). The role of the online instructor/facilitator. *Educational Technology*, *35*(1), 22–30.

*Bigatel, P. M., Ragan, L. C., Kennan, S., May, J., & Redmond, B. F. (2012). The identification of competencies for online teaching success. *Journal of Asynchronous Learning Network*, *16*(1), 59–78. https://doi.org/10.24059/olj.v16i1.215

*Blayone, T. J. B., Mykhailenko, O., vanOostveen, R., Grebeshkov, O., Hrebeshkova, O., & Vostryakov, O. (2018). Surveying digital competencies of university students and professors in Ukraine for fully online collaborative learning. *Technology, Pedagogy and Education*, 27(3), 279–296. https://doi.org/10.1080/1475939X.2017.1391871

Bower, M. (2011). Synchronous collaboration competencies in web conferencing environments – Their impact on the learning process. *Distance Education*, *32*(1), 63–83. https://doi.org/10.1080/01587919.2011.565502

Briggs, S. (2005). Changing roles and competencies of academics. *Active Learning in Higher Education*, *6*(3), 256–268. https://doi.org/10.1177/1469787405057753

Button, D., Harrington, A., & Belan, I. (2014). E-learning & information communication technology (ICT) in nursing education: A review of the literature. *Nurse Education Today*, *34*(10), 1311–1323. https://doi.org/10.1016/j.nedt.2013.05.002

Carrillo, C., & Flores, M. A. (2020). COVID-19 and teacher education: A literature review of online teaching and learning practices. *European Journal of Teacher Education*, *43*(4), 466–487. https://doi.org/10.1080/02619768.2020.1821184

Chaharbashloo, H., Gholami, K., Aliasgari, M., Talebzadeh, H., & Mousapour, N. (2020). Analytical reflection on teachers' practical knowledge: A case study of exemplary teachers in an educational reform context. *Teaching and Teacher Education*, *87*, 102931. https://doi.org/10.1016/j.tate.2019.102931

*Chang, C., Shen, H. Y., & Liu, E. Z. F. (2014). University faculty's perspectives on the roles of e-instructors and their online instruction practice. *International Review of Research in Open and Distributed Learning*, *15*(3), 72–92. https://doi.org/10.19173/irrodl.v15i3.1654

*Cleveland-Innes, M., & Campbell, P. (2012). Emotional presence, learning, and the online learning environment. *The International Review of Research in Open and Distributed Learning*, *13*(4), 269–292. https://doi.org/10.19173/irrodl.v13i4.1234

*Cook, H., Apps, T., Beckman, K., & Bennett, S. (2023). Digital competence for emergency remote teaching in higher education: Understanding the present and anticipating the future. *Educational Technology Research and Development*, *71*, 7–32. https://doi.org/10.1007/s11423-023-10194-4

*Cyrs, T. E. (1997). Competence in teaching at a distance. *New Directions for Teaching and Learning*, *71*, 15–18. https://doi.org/10.1002/tl.7102

*Darabi, A. A., Sikorski, E. G., & Harvey, R. B. (2006). Validated competencies for distance teaching. *Distance Education*, *27*(1), 105–122. https://doi.org/10.1080/01587910600654809

Daumiller, M., Rinas, R., Hein, J., Janke, S., Dickhäuser, O., Dresel, M. (2021). Shifting from face-to-face to online teaching during COVID-19: The role of university faculty achievement goals for attitudes towards this sudden change, and their relevance for burnout/engagement and student evaluations of teaching quality. *Computers in Human Behavior*, *118*, 106677. https://doi.org/10.1016/j.chb.2020.106677

Davis, N. E. (2009). How may teacher learning be promoted for educational renewal with IT? In J. Voogt & G. Knezek (Eds.), *International Handbook of Information Technology in Education* (pp. 507–542). Springer. https://doi.org/10.1007/978-0-387-73315-9_31

Denis, B., Watland, P., Pirotte, S., & Verday, N. (2004). Roles and competencies of the e-tutor. In S. Banks, P. Goodyear, V. Hodgson, C. Jones, V. Lally, D. McConnell & C. Steeples (Eds.), *Proceedings of Networked Learning Conference* (pp. 150–157). Lancaster University & University of Sheffield.

Dogra, P., & Kaushal, A. (2022). Underlying the triple burden effects on women educationists due to COVID-19. *Education and Information Technologies*, *27*(1), 209–228. https://doi.org/10.1007/s10639-021-10645-6

*Egan, T., & Akdere, M. (2005). Clarifying distance education roles and competencies: Exploring similarities and differences between professional and student-practitioner perspectives. *The American Journal of Distance Education*, *19*(2), 87–103. https://doi.org/10.1207/s15389286ajde1902_3

*Farmer, H., & Ramsdale, J. (2016). Teaching competencies for the online environment. *Canadian Journal of Learning and Technology/La revue canadienne de l'apprentissage et de la technologie*, *42*(3). https://doi.org/10.21432/T2V32J

Fouche, I., & Andrews, G. (2022). "Working from home is one major disaster": An analysis of student feedback at a South African university during the Covid-19 lockdown. *Education and Information Technologies*, *27*, 133–155. https://doi.org/10.1007/s10639-021-10652-7

Gast, I., Schildkamp, K., & van der Veen, J. T. (2017). Team-based professional development interventions in higher education: A systematic review. *Review of Educational Research*, *87*(4), 736–767. https://doi.org/10.3102/0034654317704306

Gibson-Harman, K., Rodriguez, S., & Haworth, J. G. (2002). Community college faculty and professional staff: The human resource challenge. *New Directions for Community Colleges*, *2002*(117), 77–90. https://www.learntechlib.org/p/94527/

Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, *10*(1), 20–30. https://doi.org/10.5204/jld.v9i3.293

*Glukhov, G. V., & Gromova, T. V. (2016). Functional components and roles of the university teacher in distance education. *International Review of Management and Marketing*, *6*(5), 235–242.

Gómez-Rey, P., Barbera, E., & Fernández-Navarro, F. (2017). Student voices on the roles of instructors in asynchronous learning environments in the 21st century. *International Review of Research in Open and Distributed Learning*, *18*(2), 234–251.

*González, C., Ponce, D., & Fernández, V. (2023). Teachers' experiences of teaching online during COVID-19: implications for postpandemic professional development. *Educational Technology Research and Development*, *71*(1), 55–78. https://doi.org/10.1007/s11423-023-10200-9

González-Bravo, L., Nistor, N., Castro Ramírez, B., Gutiérrez Soto, I., Varas Contreras, M., Núñez Vives, M., & Maldonado Robles, P. (2022). Higher education managers' perspectives on quality management and technology acceptance: A tale of elders, mediators, and working bees in times of Covid-19. *Computers in Human Behavior*, *131*, 107236. https://doi.org/10.1016/j.chb.2022.107236

*Goodyear, P., Salmon, G., Spector, J. M., Steeples, C., & Tickner, S. (2001). Competences for online teaching: A special report. *Educational Technology Research and Development*, *49*, 65–72. https://doi.org/10.1007/BF02504508

Gorsky, P., & Blau, I. (2009). Online teaching effectiveness: A tale of two instructors. *The International Review of Research in Open and Distance Learning*, *10*(3). https://doi.org/10.19173/irrodl.v10i3.712

Grabowski, B. L., Beaudoin, M., & Koszalka, T. A. (2016). Competencies for designers, instructors, and online learners. In N. Rushby & D. W. Surry (Eds.), *The Wiley handbook of learning technology* (pp. 221–241). Wiley. https://doi.org/10.1002/9781118736494.ch13

Guasch, T., Alvarez,I., & Espasa, A. (2010). University teacher competencies in a virtual teaching/learning environment: Analysis of a teacher training experience. *Teaching and Teacher Education*, *26*(2), 199–206. http://dx.doi.org/10.1016/j.tate.2009.02.018

Güler, O. & Savaş, S. (2022). Stereoscopic 3D teaching material usability analysis for interactive boards. *Computer Animation and Virtual Worlds*, *33*(2). https://doi.org/10.1002/cav.2041

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, *27*. https://doi.org/10.3389/feduc.2022.921332

*Hodges, C. B., & Cowan, S. F. (2012). Preservice teachers' views of instructor presence in online courses. *Journal of Digital Learning in Teacher Education*, *28*(4). https://doi.org/10.1080/21532974.2012.10784694

Hosseini Largani, M. (2009). Factors influencing the development of virtual universities in Iran and its strategic status. *Journal of Educational Systems Research*, 7, 12–27.

Howard, S. K., & Tondeur, J. (2023). Higher education teachers' digital competencies for a blended future. *Educational Technology Research and Development*, *71*, 1–6. https://doi.org/10.1007/s11423-023-10211-6

*Hung, M. L., & Chou, C. (2015). Students' perceptions of instructors' roles in blended and online learning environments: A comparative study. *Computers & Education*, *81*, 315–325. http://dx.doi.org/10.1016/j.compedu.2014.10.022

Iglesias-Pradas, I., Hernández-García, Á. Chaparro-Peláez, J., & Prieto, J. L. (2021). Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Computers in Human Behavior*, *119*, 106713. https://doi.org/10.1016/j.chb.2021.106713

*Jung, I., Omori, S., Dawson, W. P., Yamaguchi, T., & Lee, S. J. (2021). Faculty as reflective practitioners in emergency online teaching: An autoethnography. *International Journal of Educational Technology in Higher Education*, *18*, 30. https://doi.org/10.1186/s41239-021-00261-2

*Kara, M., & Can, G. (2019). Master's students' perceptions and expectations of good tutors and advisors in distance education. *International Review of Research in Open and Distributed Learning*, *20*(2). https://doi.org/10.19173/irrodl.v20i2.3674

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. *Journal of Educational Technology Systems*, *46*(1), 4–29. https://doi.org/10.1177/0047239516661713

Keiny, S., & Dreyfus, A. (1989). Teachers' self-reflection as a prerequisite to their professional development. *Journal of Education for Teaching*, *15*(1), 53–63. https://doi.org/10.1080/0260747890150104

Khodabandelou, R., Chaharbashloo, H., Ghaderi, M., Zeinabadi, H., & Karimi, L. (2022). A systematic review on university instructors' roles and competencies in online teaching environments. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2022.2152057

*Khtere, A. R., & Yousef, A. M. F. (2021). The professionalism of online teaching in Arab Universities. *Educational Technology & Society*, 24(3), 1–12.

Kiss, T. (2012). The complexity of teacher learning: Reflection as a complex dynamic system. *Journal of Interdisciplinary Research in Education*, *2*(1), 17–35.

Koch, L. F. (2014). The nursing educator's role in e-learning: A literature review. *Nurse Education Today*, *34*(11), 1382–1387. https://doi.org/10.1016/j.nedt.2014.04.002

Koster, B., & Dengerink, J. J. (2008). Professional standards for teacher educators: How to deal with complexity ownership and function experience from the Netherlands. *European Journal of Teacher Education*, *31*(2), 135–149. https://doi.org/10.1080/02619760802000115

Kusmaryono, I., Jupriyanto, J., & Kusumaningsih, W. (2021). A systematic literature review on the effectiveness of distance learning: Problems, opportunities, challenges, and predictions. *International Journal of Education*, *14*(1), 62–69. https://doi.org/10.17509/ije.v14i1.29191

Leary, H., Dopp, C., Turley, C., Cheney, M., Simmons, Z., Graham, C. R., & Hatch, R. (2020). Professional development for online teaching: A literature review. *Online Learning*, *24*(4), 254–275. https://doi.org/10.24059/olj.v24i4.2198

Levinsen, K. T. (2007). Qualifying online teachers—Communicative skills and their impact on e-learning quality. *Education and Information Technologies*, *12*(1), 41–51. https://doi.org/10.1007/s10639-006-9025-1

*Li, S., Zhang, J., Yu, C., & Chen, L. (2017). Rethinking distance tutoring in e-learning environments: A study of the priority of roles and competencies of Open University Tutors in China. *International Review of Research in Open and Distributed Learning*, *18*(2), 189–212.

*Lin, X. (2022). First-time Chinese online students' expectations of their instructors in fully online learning environments. *Online Learning Journal*, *26*(4), 347–368. https://doi.org/10.24059/olj.v26i4.3117

*Lin, X., Huang, M., & Lin, Q. (2023). Students' expectations of instructors in face-to-face and online learning environments at a Chinese university. *E-Learning and Digital Media*. https://doi.org/10.1177/20427530231156482

*Martin, F., Budhrani, K., & Wang, C. (2019). Examining faculty perception of their readiness to teach online. *Online Learning*, *23*(3), 97–119. https://doi.org/10.24059/olj.v23i3.1555

*Martin, F., Budhrani, K., Kumar, S., & Ritzhaupt, A. (2019). Award-winning faculty online teaching practices: Roles and competencies. *Online Learning, 23*(1), 184–205. https://doi.org/10.24059/olj.v23i1.1329

*Martin, F., Kumar, S., & She, L. (2021). Examining higher education instructor perceptions of roles and competencies in online teaching. *Online Learning*, 25(4), 267–295. https://doi.org/10.24059/olj.v25i4.2570

*McGee, P., Windes, D., & Torres, M. (2017). Experienced online instructors: Beliefs and preferred supports regarding online teaching. *Journal of Computing in Higher Education*, *29*(2), 331–352. https://doi.org/10.1007/s12528-017-9140-6

McMullan, M., Endacott, R., & Gray, M. A. (2003). Portfolios and assessment of competence: A review of the literature. *Journal of Advanced Nursing*, *41*, 283–294.

*Mehrotra, R., Verma, R. M., Devi, M., & Jakhar, R. S. (2022). Online teaching skills and competencies. *World Journal of English Language*, *12*(3), 187–187. https://doi.org/10.5430/wjel.v12n3p187

*Metz, N., & Bezuidenhout, M. (2018). An importance–competence analysis of the roles and competencies of e-tutors at an open distance learning institution. *Australasian Journal of Educational Technology*, *34*(5). https://doi.org/10.14742/ajet.3364

*Mohr, S., & Shelton, K. (2017). Best practices framework for online faculty professional development: A Delphi study. *Online Learning*, *21*(4), 123–140. https://doi.org/10.24059/olj.v21i4.1273

*Muñoz Carril, P. C., González Sanmamed, M., & Hernández Sellés, N. (2013). Pedagogical roles and competencies of university teachers practicing in the e-learning environment. *International Review of Research in Open and Distributed Learning*, *14*(3), 462–487. https://doi.org/10.19173/irrodl.v14i3.1477

*Murphy, L. M., Shelley, M. A., White, C. J., & Baumann, U. (2011). Tutor and student perceptions of what makes an effective distance language teacher. *Distance Education*, *32*(3), 397–419. https://doi.org/10.1080/01587919.2011.610290

*Northcote, M., Gosselin, K. P., Reynaud, D., Kilgour, P., & Anderson, M. (2015). Navigating learning journeys of online teachers: Threshold concepts and self-efficacy. *Issues in Educational Research*, *25*(3), 319–344.

*Orcutt, J. M., & Dringus, L. P. (2017). Beyond being there: Practices that establish presence, engage students and influence intellectual curiosity in a structured online learning environment. *Online Learning*, *21*(3), 15–35. DOI: https://doi.org/10.24059/olj.v21i3.1231

Ouyang, F., & Scharber, C. (2017). The influences of an experienced instructor's discussion design and facilitation on an online learning community development: A social network analysis study. *The Internet and Higher Education*, *35*, 34–47. https://doi.org/10.1016/j.iheduc.2017.07.002

*Ouyang, F., & Scharber, C. (2018). Adapting the TPACK framework for online teaching within higher education. *International Journal of Online Pedagogy and Course Design*, *8*(1), 42–59. https://doi.org/10.4018/IJOPCD.2018010104

*Pala, F. K., & Erdem, M. (2020). Development of a participation style scale for online instructional discussions. *Educational Technology Research and Development*, *68*, 3213–3233. https://doi.org/10.1007/s11423-020-09817-x

*Paliwal, M., & Singh, A. (2021). Teacher readiness for online teaching-learning during COVID-19 outbreak: A study of Indian institutions of higher education. *Interactive Technology and Smart Education*, 18(3), 403–421. https://doi.org/10.1108/ITSE-07-2020-0118

*Parrish, A. H., & Sadera, W. A. (2018). Teaching competencies for student-centered, one-to-one learning environments: A Delphi study. *Journal of Educational Computing Research*, *57*(8), 1910–1934. https://doi.org/10.1177/07356331188166

*Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. *International Journal on Studies in Education*, *3*(2), 70–85. https://doi.org/10.46328/ijonse.32

*Phelps, A., & Vlachopoulos, D. (2019). Successful transition to synchronous learning environments in distance education: A research on entry-level synchronous facilitator competencies. *Education and Information Technologies*, *25*, 1511–1527. https://doi.org/10.1007/s10639-019-09989-x

Philipsen, B., Tondeur, J., Pareja Roblin, N., Vanslambrouck, S., & Zhu, C. (2019). Improving teacher professional development for online and blended learning: A systematic meta-aggregative review. *Educational Technology Research and Development*, *67*(5), 1145–1174. https://doi.org/10.1007/s11423-019-09645-8

*Ponce, C., Espinoza Diaz, Y., & Avina, I. (2018). Distance teaching practice: Toward a framework of reference for its Evaluation. *Espacios*, *39*(46), 27. https://www.revistaespacios.com/a18v39n46/18394627.html

Queiroz, V., & Mustaro, P. N. (2003). Roles and competencies of online teachers. *The Internet Teachers of English as a Second Language Journal*, *9*(7), 1–6. http://iteslj.org/Articles/Queiroz-OnlineTeachers.html

Ragan, L. (2009). Defining competencies for online teaching success. *Distance Education Report*, *13*(19), 3–6.

*Reader, E. E., Campus, M. R., & Tahachal, K. N. (2020). Online education as a new paradigm for teaching and learning higher education in Nepal: Issues and challenges. *Global Scientific Journal*, *8*(8), 208–220.

Reid, D. (2002). A classification schema of online tutor competencies. In *Proceedings of International Conference on Computers in Education* (pp. 1049–1050). Institute of Electrical and Electronics Engineers (IEEE). https://doi.org/10.1109/CIE.2002.1186147

*Richardson, J. C., Koehler, A. A., Besser, E. D., Caskurlu, S., Lim, J., & Mueller, C. M. (2015). Conceptualizing and investigating instructor presence in online learning environments. *International Review of Research in Open and Distributed Learning*, *16*(3). https://doi.org/10.19173/irrodl.v16i3.2123

Richey, R. C., Fields, D. C., & Foxon, M. (2001). *Instructional design competencies: The standards (third edition)*. ERIC Clearinghouse on Information & Technology.

*Roberts, J., & Bezuidenhout, A. (2017). Technology, work roles and competencies of educators facilitating fully or partially via a distance. *International Journal of Educational Sciences*, *18*(1-3), 110–121. https://doi.org/10.1080/09751122.2017.1305750

Sahapong, S., Manmart, L., Ayuvat, D., & Potisat, S. (2006). *A systematic review of the roles and competencies of medical information professionals (Mips) in evidence-based medicine in Thailand*. EDU-COM International Conference. Engagement and Empowerment: New Opportunities for Growth in Higher Education, Edith Cowan University, Perth Western Australia.

Salmon, G. (2000). *E-moderating: The key to teaching and learning online*. Taylor & Francis.

Savaş, S. (2021). Artificial intelligence and innovative applications in education: The case of Turkey. *Journal of Information Systems and Management Research*, 3(1), 14–26. https://dergipark.org.tr/en/download/article-file/1483035

Savaş, S., Güler, O., Kaya, K., Çoban, G., & Güzel, M. S. (2022). Eğitimde Dijital Oyunlar ve Oyun ile Öğrenme. *International Journal of Active Learning*, *6*(2), 117–140. https://dergipark.org.tr/en/pub/ijal/issue/67649/1014960

*Schalk, A. E., McAvinia, C., & Rooney, P. (2022). Exploring the concept of the digital educator during COVID-19. *Australasian Journal of Educational Technology*, *38*(2), 129–141. https://doi.org/10.14742/ajet.7316

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

*Setlhako, M. A. (2014). Competencies required for the facilitation of online learning courses: An online teaching assistants competency based approach. *Mediterranean Journal of Social Sciences*, *5*(23), 1405–1405.

Setlhako, M. A. (2019). Teaching assistants' competencies and the community of inquiry at an open distance learning institution. *Journal of social Sciences and Humanities*, *16*(8), 1–17.

Sharin, A. N. (2021). E-learning during COVID-19: A review of literature. *Jurnal Pengajian Media Malaysia*, *23*(1), 15–28. https://doi.org/10.22452/jpmm.vol23no1.2

Shattuck, K. (2013). Faculty participation in online distance education. In M. G. Moore & W. C. Diehl (Eds.), *Handbook of distance education* (pp. 390–402). Routledge.

Shirbagi, N. (2013). An analysis of the sources of bias and error in students' evaluation of teaching. *Higher Education Letter*, *6*(22), 7–24.

*Simamora, R. M., De Fretes, D., Purba, E. D., & Pasaribu, D. (2020). Practices, challenges, and prospects of online learning during Covid-19 pandemic in higher education: Lecturer perspectives. *Studies in Learning and Teaching*, *1*(3), 185–208. https://doi.org/10.46627/silet.v1i3.45

*Simsek, I., Kucuk, S., Kose Biber, S., & Can, T. (2021). Development of an online teaching competency scale for university instructors. *Open Praxis*, *13*(2), 201–212. https://doi.org/10.5944/openpraxis.13.2.137

Smith, S. U., Hayes, S., & Shea, P. (2017). A critical review of the use of Wenger's community of practice (CoP) theoretical framework in online and blended learning research, 2000-2014. *Online Learning*, *21*(1), 209–237. https://doi.org/10.24059/olj.v21i1.963

Smith, T. C. (2005). Fifty-one competencies for online instruction. *The Journal of Educators Online*, *2*, 1–18.

*Smits, A., & Voogt, J. (2017). Elements of satisfactory online asynchronous teacher behaviour in higher education. *Australasian Journal of Educational Technology*, *33*(2). https://doi.org/10.14742/ajet.2929

*Spector, J. M., & de la Teja, I. (2001). *Competencies for online teaching.* ERIC Digest. Online.

Swan, K. (2010). Teaching and learning in post-industrial distance education. In M. F. Cleveland-Innes & D. R. Garrison (Eds.), *An introduction to distance education* (pp. 120–146). Routledge. https://doi.org/10.4324/9780203860915

*Thach, E. C., & Murphy, K. L. (1995). Competencies for distance education professionals. *Educational Technology Research and Development*, *43*(1), 57–79.

*Thomas, J. E., & Graham, C. R. (2019). Online teaching competencies in observational rubrics: What are institutions evaluating? *Distance Education*, *40*(1), 114–132. https://doi.org/10.1080/01587919.2018.1553564

*Thumiki, V. R. R., & Magd, H. (2022). Online teaching competencies among faculty members at Modern College of Business and Science (MCBS) Sultanate of Oman. *International Journal of Information and Education Technology*, *12*(9), 121–125.

*Trammell, B. A., & LaForge, C. (2017). Common challenges for instructors in large online courses: Strategies to mitigate student and instructor frustration. *Journal of Educators Online*, *14*(1). https://files.eric.ed.gov/fulltext/EJ1133615.pdf

*Väljataga, T., Poom-Valickis, K., Rumma, K., & Aus, K. (2020). Transforming higher education learning ecosystem: Teachers' perspective. *Interaction Design and Architecture(s) Journal*, *46*, 47–69.

van Rensburg, E. S. J. (2018). Effective online teaching and learning practices for undergraduate health sciences students: An integrative review. *International Journal of Africa Nursing Sciences*, *9*, 73–80. https://doi.org/10.1016/j.ijans.2018.08.004

*Varvel, V. E. (2007). Master online teacher competencies. *Online Journal of Distance Learning Administration*, 10, 1–47.

*Vlachopoulos, D., & Makri, A. (2021). Quality teaching in online higher education: The perspectives of 250 online tutors on technology and pedagogy. *International Journal of Emerging Technologies in Learning*, *16*(6), 40–56. https://doi.org/10.3991/ijet.v16i06.20173

*Wang, Y., Wang, Y., Stein, D., Liu, Q., & Chen, W. (2019). Examining Chinese beginning online instructors' competencies in teaching online based on the Activity theory. *Journal of Computers in Education*, *6*(3), 363–384. https://doi.org/10.1007/s40692-019-00140-w

*Wang, Y., Wang, Y., Stein, D., Liu, Q., & Chen, W. (2021). The structure of Chinese beginning online instructors' competencies: Evidence from Bayesian factor analysis. *Journal of Computers in Education*, 8, 411–440. https://doi.org/10.1007/s40692-021-00186-9

Wertz, R. E. H. (2022). Learning presence within the Community of Inquiry framework: An alternative measurement survey for a four-factor model. *The Internet and Higher Education*, *52*, 1–15. https://doi.org/10.1016/j.iheduc.2021.100832

Whitelock, D., Herodotou, C., Cross, S., & Scanlon, E. (2021). Open voices on COVID-19: Covid challenges and opportunities driving the research agenda. *Open Learning: The Journal of Open, Distance and e-Learning*, *36*(3), 201–211. https://doi.org/10.1080/02680513.2021.1973400

*Williams, P. E. (2003). Roles and competencies for distance education programs in higher education institutions. *American Journal of Distance Education*, *17*(1), 45–57. https://doi.org/10.1207/S15389286AJDE1701_4

*Wolcott, L. (1993). Faculty planning for distance teaching. *The American Journal of Distance Education*, *7*(1), 26–36. https://doi.org/10.1080/08923649309526808

Xiao, J. (2018). On the margins or at the center? Distance education in higher education. *Distance Education*, *39*(2), 259–274. https://doi.org/10.1080/01587919.2018.1429213

*Yau, A. H. Y., Yeung, M. W. L., & Lee, C. Y. P. (2022). A co-orientation analysis of teachers' and students' perceptions of online teaching and learning in Hong Kong higher education during the COVID-19 pandemic. *Studies in Educational Evaluation*, *72*, 101128. http://dx.doi.org/10.1016/j.stueduc.2022.101128

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