Developing a Scale to Measure Competencies of Online Teachers

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Abstract

Competencies are required to effectively execute a role or responsibility. Teachers perform multiple tasks, all requiring certain skills and competencies. Online education is the new normal now, and all levels of education, that is, school, college, and university, have been shifted to online education. In Pakistan, online education is a relatively new phenomenon, and teachers and educational institutions have learned online education on the run. No specialized trials were available for online teachers; hence, it was a trial and error and improved system for most online teachers. This highlights the need for a study to identify the competencies of online teachers. There is no specific study in Pakistan on the competencies of online teachers; hence the significance of developing a scale to measure the competencies of online teachers is magnified. The study focuses primarily on developing a scale to measure the competencies of online teachers. Semi-structured interviews were conducted to identify key themes of competencies, and then a close-ended questionnaire was developed based on those factors. Psychometric properties of the scale were ensured, and a final scale having items was finalized for further administration.

Keywords: competencies, online teachers, scale

Online teaching is a recent phenomenon in the education sector of Pakistan. Pakistan is not well equipped in terms of technological resources compared to developed countries such as the US, Canada, and Australia. Despite this, there has been some decent progress and growth observed in this field in Pakistan during the last fifteen years. Education is the basic right of all citizens, and technology helps expand educational access effectively. Through technology-based education, the marginalized people and different segments of society can acquire education hence addressing the equity and equality challenges in Pakistan.

Many international universities offer online education, e.g., the University of Florida, the University of Arizona, and Boston University of the USA. Moreover, a few worth mentioning are web resources by the name 'Coursera' 'EdX' and 'Massive Open Online Courses (MOOCs)' that provide different degrees and certificates from renowned universities around the world. Recently, the Higher Education Commission (HEC) of Pakistan has also taken the initiative with the 'coursera' under its digital learning and skill enhancement initiative. In its first phase, 8000 courses are being offered to the students included in the Prime Minister Laptop Scheme on merit. The purpose of this initiative is to provide access to the learners to vast resources of digital learning and enhance their skill set. Lewis and Abdul-Hamid (2006) have expressed the need to prepare online teachers due to the emerging prevalence of online education.

With the advent of the Covid-19 outbreak, the world has drastically shifted toward online learning. In Pakistan, there was no formal training in online teaching and education. The school, college and university teachers have moved to online education without formal training and development. Abdullah (2020) has mentioned online education for the levels of education in Pakistan. However, as online education is becoming the new normal in Pakistan, there is a dire need to identify the competencies of online teachers as the roles and responsibilities of online teachers differ from conventional teachers, so there is a gap in the literature to first identify the competencies of online teachers and then to develop those competencies in the teachers, after that.

The current study was planned to determine the competencies required to be an effective online teacher Based on the increasing trend in online education programs in Pakistan.

Research Objectives

1. Identify the competencies of an online teacher.
2. Develop a scale for measuring the competencies of online teachers.

Literature Review

There are a few models of online competencies available in the literature. Gulbahar and Kalelioglu (2015) have reported Association for Talen Development (ASTD), instructional competence, and media competence models. ASTD (2013) model includes competencies for training and development areas. These competencies are change management, performance improvement, instructional design, training delivery, learning technologies, evaluating learning impact, managing learning programs, integrated talent management, coaching, and knowledge management. The instructional competence model proposed by Al-Hunaiyyan, Al-Sharhan and Al-Sharhan, (2012) carries six competence aspects: knowledge and cultural, technical and technological, practical, behavioral and social, supervision and planning, and teaching methods and instructional design (Gulbahar, & Kalelioglu, 2015).

The media competence model for teachers, as proposed by Bremer (2010), spans three phases (a) initial practical years, (b) continuous professional development (c) advanced professional training (Gulbahar & Kalelioglu, 2015). UNESCO (2005) has given the following framework for Information Communication and Technology (ICT) in teacher education: content and pedagogy, collaboration and networking, social issues, and technical issues.

Bailie (2011) used the Delphi technique to collect data from online undergraduate faculty and students about online faculty competencies. Through repeated rounds of the Delphi technique, they identified and rated 19 competencies as critical.

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Penn State Online (2011) grouped 30 faculty competencies for online teaching into three main sections: pedagogical competencies, technical competencies, and administrative competencies having 11, 9 and 10 competencies, respectively.

Yuksel (2009) did a meta-analysis and reviewed 14 articles and book chapters on online competencies. The study compiled the 12 most recurrent roles and competencies from the meta-analysis. Ally (2019) identified competencies for digital teachers for future education by conducting research across six countries. The competencies identified were as follows: general competencies for quality support virtually to learners, use of digital technology, developing digital learning resources, re-mix digital learning resources, communication, facilitating learning, pedagogical strategies, and assessing learning.

A study from Brazi, Quieroz and Mustaro (2003) summarized that online education is a paradigmatic educational change and suggested the role change for teachers, students, learning experiences, curriculum, and new communication technologies. They concluded that cooperative learning, in which students work in small groups to achieve shared goals, is one solution and the reflective and innovative attitude of the teachers is the other essential for online learning.

Teacher Competency Defined

According to Koster and Dengerink (2008), competency means that a teacher acts professionally and appropriately in a situation and performs tasks effectively. Gulbahar and Kalelioglu (2015) added that competency includes the knowledge, skill and attitude to perform tasks that relate to the occupation and meet the required standards in the employment.

Significance of the Study

Knowledge of competencies is the basic requirement for designing a teacher education program. The present research not only identifies the competencies but will also propose a model for preparing online teachers. The virtual university will directly benefit from this research for strengthening and enhancing the effectiveness of its teachers. Other universities and institutions presently using or planning to use online teaching-learning may also benefit from the research. The scale developed in this research as an outcome will contribute to this online education field. The implications of this research are far across universities; the same competencies are required for online teachers. This research's scope is similar for universities, schools and colleges across the board.

Methodology

The researcher planned a mixed-method research study. This mixed-method research comprises qualitative and quantitative methods of research (Creswell, 2015). The qualitative methods will in-depth explore the competencies of online teachers. The quantitative research methods will ascertain and validate the scale items developed from the themes of the qualitative analysis. Based on the results and findings, a model will be designed for preparing online teachers.

Instruments of Data Collection

Following will be the instruments for this research.

1. Semi-structured Interview Schedule for exploratory qualitative research/interviews.
2. Questionnaire-based on data from exploratory interviews

The population of the study

The population of this research was grouped into two strata. One stratum was comprised of university faculty members already offering online education. The exploratory data was collected in the first stratum. Second stratum comprised of the faculty members who are assigned online courses at all other educational institutions offering distance education using LMS as a support to conventional or correspondence modes. This quantitative data collected will be analyzed to ensure the scale's psychometric properties.

Sampling Design

A purposive sampling technique was employed in this research to select the sample because the two strata mentioned above have different educational institutions with different natures of online teaching.

Sample for Exploratory Research

The Virtual University of Pakistan is the only university in Pakistan that was offering online education throughout its inception. Therefore, to assess the competencies of online teachers, the researcher purposely selected a sample of 30 participants for semi-structured interviews with a spread of instructors/tutors, lecturers, and assistant professors. The rationale for selecting only VU employees as participants at this stage is that they have full-time jobs as online faculty. Therefore, they are in a better position to describe the roles, needs, difficulties, and competencies of online teachers will be better identified.

Semi-structured Interview Questions

The researcher developed the semi-structured interview protocol based on the literature review of the competencies of online teachers. Questions of the interview, along with the objectives of the research project, were shared with the experts. The researchers identified three qualitative research experts. The interview protocol was shared with the experts online after taking formal consent. Expert opinion is used for the content validity of data. The experts reviewed the questions and commented on revising a few questions, especially to keep the answers open-ended. After careful consideration, the experts revised and rechecked the interview questions. The data collection of the present study was performed using a semi-structured interview guide.

Data Collection

The researcher conducted semi-structured interviews. The present study considered the ethical consideration, and data will be not used for any other purpose except for this study.

1. Formal permission from the host university of the researcher to visit other institutions for data collection
2. Formal approval from the heads of educational institutions to visit for interviews
3. The interviewees were emailed/telephoned before arrival
4. The formal written consent gained from the interviewees
5. After getting their consent and signatures on the voluntary participation form
6. the interviews were started and recorded
7. Any question was further explained to them during the interview, where needed.

Participants

The researcher initially identified the institutions offering online education. However, during the timeline of this project, the Covid-19 pandemic outbreak revolutionized the education systems worldwide. Similarly, in Pakistan, all universities went to online education, and all private sector schools and colleges also offer online education. Therefore, the researcher included

more participants from universities that offer online education. A total of 30 participants were eventually interviewed. The majority of the participants were female, 17 while 13 were male. These 30 participants were selected from five public sector universities in Pakistan.

Procedure

The interviews were recorded on a digital voice recorder. The researcher also took notes to highlight any significant points and make lead questions. The interviews were transcribed word for word for each participant. After the transcription was complete, a quick performed to ensure nothing was missed. The thematic analysis was performed to identify themes from the participants' answers. The participants were given codes. The university they belonged to was given codes A, B, C, D, and E. The participants from each university were given codes like 1, 2, 3, 4, 5, 6, and 7. Therefore, the codes were given as A1, A2, A3, A4, B1, B2, B3, B4, B5, B6, B7, C1, C2, C3, C4, C5, C6, D1, D2, D3, D4, D5, D6, D7, E1, E2, E3, E4, E5, and E6. After allocating the codes to the participants' themes were identified, and constant comparison was made to avoid any significant point being overlooked. The analysis is presented below in the form of responses to the interview questions to maintain the flow for the readers.

Data Analysis

The data analysis is presented as answers to each research question for a coherent flow and better reader understanding.

Interview Questions

1. According to you, what are the roles that an online teacher performs in your institution?

In response to this question, participants narrated many roles. For the easiness of readers, the roles identified are put in the table and figure below.

Table 1: *Roles identified by the participants of the study*

SR No.	Roles Identified	Participants
1	Guide to teaching subject matter	4
2	Co-learners and creating discussions	5
3	Build life skills by designing e-content	2
4	Manage correspondence with students and peers	3
5	Reflective practitioner	1
6	Provide online access and learn how to teach	7
7	Effective communication	9
8	Motivator and role model	2
9	Planning the learning content	15
10	Time management	15
11	Develop online learning activities	11
12	Engaging students	7
13	Design assessment activities and evaluate students	12
14	Giving feedback	5

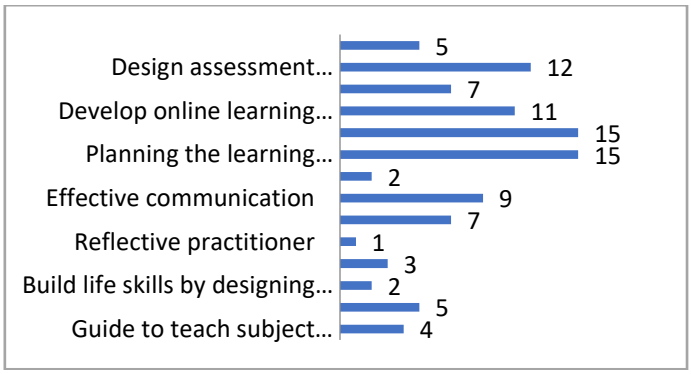

Figure 1: Roles identified by the participants

2. What skills are required by an online teacher to perform those roles?

Many skills were identified by the participants, which are presented in the table and figure below.

Table 2: *Skills identified by the participants*

SR.	Skills required to perform roles	Participants
1	Effective use of technology	12
2	Communication skills	13
3	Software/applications/gadgets usage skills	9
4	Pedagogical skills	11
5	Content skills	8
6	Time management skills	8
7	Conflict resolution skills	3
8	Creativity	5
9	Adaptability	7
10	Professional behavior	8

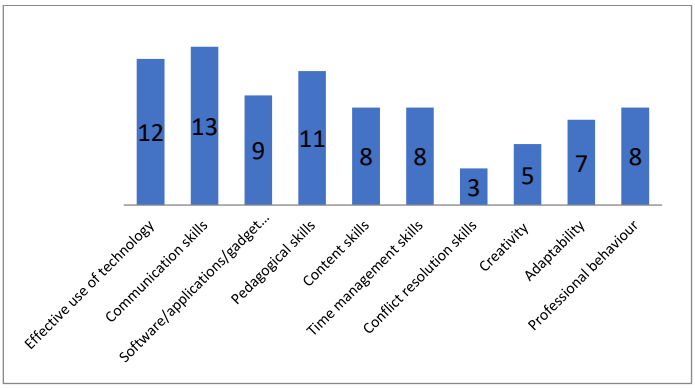

Figure 2: Skills identified by the participants.

3. Is there any unique responsibility of an online teacher?

The participants' responses were analyzed and displayed in the table and figure below.

Table 3: *Unique responsibility identified by the participants*

SR	Unique Responsibilities	Participants
1.	Actively respond to students' queries	21
2.	different assessment activities	9
3.	Creating lessons and content design	20
4.	Reporting technical glitches/ hurdles	6
5.	Constantly keeping up with online resources	9
6.	Making professional relationships with students to identify their learning	11
7.	Conflict resolution in an online environment	5

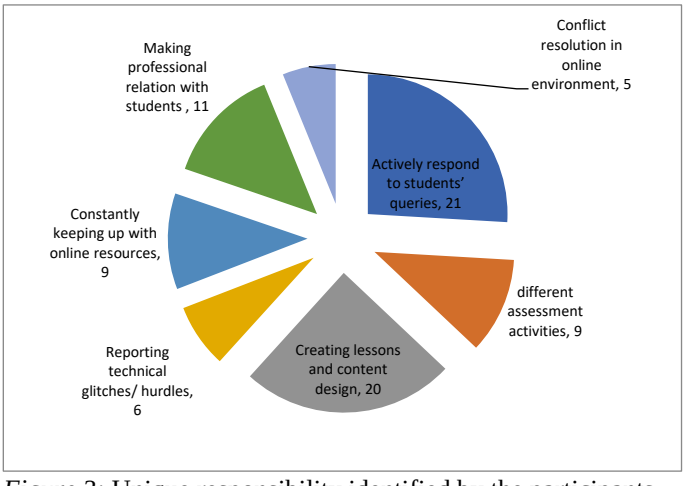

Figure 3: Unique responsibility identified by the participants

4. Do the e-teachers require any competence to perform these roles and responsibilities?

The competencies identified by the participants are summed up in the table and figure below.

Table 4: *Competencies identified by the participants*

SR	Competence	Participants
1	Effective use of ICTs	17

2	Technology expertise/ proficiency in creating new content/activities	13
3	Updating skills	8
4	Continuous improvements in knowledge	13
5	Active/ agile	15
6	Assessment competencies	11
7	Time management skills	7

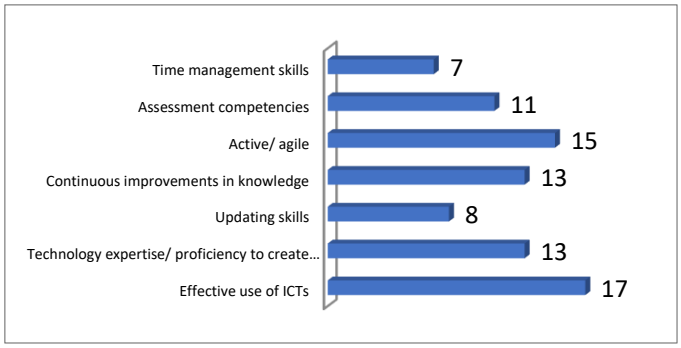

Figure 4: Competencies identified by the participants

5. Can you classify the competencies as essential and optional? If so, what competencies would you pool in the two categories?

The tables and figures below express the classification of competencies as essential and optional.

Table 5.1: *Essential Competencies*

Essential competencies	Participants
Use of ICTs	10
Content and Pedagogical knowledge	9
Time management	11
Providing constant feedback	15
Assessment and evaluation	12

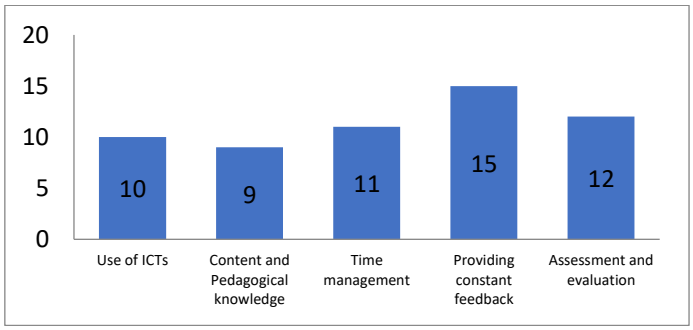

Figure 5.1: Essential Competencies

Table 5.2: *Optional competencies*

Optional competencies	Participants
Conducting a Research	7
Encourage contact between Peers	10
Discipline	13
Collaboration	7
Leading role	6

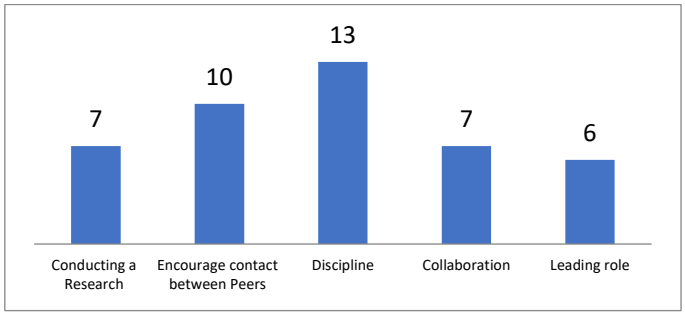

Figure 5.2: Optional Competencies

6. How would you rank those competencies in the order of preference, starting from the most to the least required?

The responses were analyzed, and preference sequence through the analysis.

1. Content and Pedagogical knowledge
2. Use of ICTs.
3. Encourage active learning
4. Give prompt feedback
5. Conducting a Research
6. Communicate high expectations
7. Encourage contact between Peers
8. Develop reciprocity and cooperation among students
9. Leading role, content or subject expert, Technology knowledge and language,
10. Interpersonal communication, emotional intelligence, time management,
11. Assessment and evaluation,
12. Managing class, ensuring discipline, collaboration, understanding teacher students, and feedback.

Questionnaire items for online teachers' competencies

A close-ended questionnaire was developed from the themes identified through interview analysis. It is measured on a five-point Likert-type scale.

1. Online teaching requires content knowledge of the courses
2. Online teaching requires updating the content knowledge
3. Online teaching requires expertise in ICTs
4. The use of ICT in online teaching is a must
5. Understanding the handling of different ICT devices is essential in online teaching.
6. An online teacher has to be an active learner
7. An online teacher learns new things very often
8. Different media platforms for learners require teachers to be more active in learning.
9. An online teacher has to provide prompt feedback.
10. The students in online learning expect regular and continuous feedback.
11. The feedback required in online learning is more comprehensive
12. Students demand prompt feedback in online learning
13. Students expect a detailed, comprehensive feedback
14. As an online teacher, I have to research a lot
15. As an online teacher, I read the latest research studies
16. As an online teacher, I have to conduct research studies
17. Communication is an essential feature in online teaching
18. Effective communication is required for online teaching
19. Without good communication skills, the teaching-learning process is affected
20. Feedback also requires good communication skills
21. I have to design learning activities for peers to participate
22. Peer assessment needs to be incorporated into online teaching
23. I am practicing peer assessment in the learning activities of my assigned courses
24. Peer assessment cannot be used in online education
25. I have to develop an interest in students' cooperating
26. Giving practical assignments helps in students' cooperation
27. It is difficult to ensure students' cooperation in online learning
28. Time management is difficult for an online teacher

29. Online teaching requires time management competency to perform all tasks efficiently
30. I have to divide my tasks on a time scale to meet deadlines
31. The nature of the tasks of an online teacher is such that without proper time management
32. . I have to make assessments of the students regularly
33. I require special skills assessment to design multiple assessments of students
34. I have to make new assessments for every session/semester.
35. An online teacher requires good interpersonal skills
36. I have to make collaborations with colleagues in other institutions to cope with online teaching requirements
37. I have to build a strong professional teacher-student relation
38. In online education, the teacher-student bond has no benefit
39. An online teacher has to be emotionally intelligent to understand the student
40. As there is no physical meeting, the teacher has to be emotionally strong to understand the problems of the students
41. In online teaching, misuse of technology is a problem
42. Students are vulnerable in online education due to online harassment
43. As an online teacher, maintaining discipline in the virtual learning environment is difficult
44. I am comfortable maintaining strict discipline during teacher-student interaction.
45. It is easy to trace harassment in online education
46. There are strict rules of harassment in online education
47. As a teacher, I am very much capable of handling misbehavior in the virtual learning environment.

The research initially developed these 47 items. Each theme was studied in detail, and indicators were made for those themes. On a few occasions, sub-indicators were also made. The items were formed with the indicators and sub-indicators.

The initial questionnaire having 47 items measured on a five-point Likert type scale, was shared with subject experts for content validity. Five experts from the university level were selected, and themes identified from interview analysis were sent along with the questionnaire for evidence of content validity. Based on the experts' feedback, changes in the scale have been incorporated. Items 24, 35 and 46 were removed. Items 1, 5, 8, 14, 16, 25, 32, 33, and 37 were revised. The revised questionnaire had 44 items.

Quantitative data and analysis

After ensuring the questionnaire's content validity, the pilot testing was performed based on a sample of 30 online teachers other than the actual sample.

The questionnaire was created in google documents and shared with respondents for the data collection pilot study. Three weeks were consumed in the data collection. The pilot study analysis revealed that the coefficient of Cronbach's Alpha reliability was reported at 0.91. The value of the coefficient of reliability of the tool was strong enough to be considered for actual data administration. However, different trials were made on a different set of samples. Descriptive statistics include the mean, standard deviation, frequency and distractors. The mean and standard deviation were calculated for factors of the scale. In all three different studies, the reliability coefficient of the items was above 0.85. The mean score on the items was well above 3.50 in all studies.

Conclusion

The scale for measuring the competencies of online teachers is validated and tests for Cronbach alpha reliability on different samples. The statistical analysis also strengthens the accuracy of the scale. The researcher concludes that the scale is ready to use and administered in studies related to the competencies of online teachers.

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