Remittances Review
April 2024,
Volume: 9, No: 2, pp.4598-4618
ISSN:2059-6588(Print)|ISSN2059-6596(Online)

Received : 30 March 2024, Accepted: 25 April 2024
DOI: https://doi.org/10.33282/rr.vx9i2.242

The Impact of Critical Demographic Variables on the Instructors' Teaching Competencies in an Online Mode of Education

1. **Dr. Maria Bibi Corresponding Author**
   Faculty, Department of Education

Fatima Jinnah Women University, Rawalpindi, Pakistan

2. **Dr. Farhana Khurshid**

Associate Professor, Department of Education

Fatima Jinnah Women University, Rawalpindi, Pakistan

Abstract

The demographic variables of the instructors influence their teaching competencies. The main aim of this research was to identify the influence of demographic variables on the teaching competencies of instructors in online teaching. The 'online teaching competencies (OTCs) matrix was applied as the theoretical framework for the current research. An explanatory study was conducted in a virtual university, and the Open University. . The sample of the study consisted of 250 online instructors. Data was collected through a standardized Five-point Likert scale developed by Bigatel, Ragan, Kennan, May, and Redmond (2012). Multiple regression analysis was applied to analyze the data. The finding shows that the demographic variables 'qualification' and ' years' of experience' influence instructors' teaching competencies as compared to their 'age' and ''number of professional trainings'. The finding suggested that the quality of the professional trainings for the instructors should be conducted. The findings of this study could be utilized by the administration and management of the universities to organize the professional development training programmes for the instructors to improve their online teaching competencies in higher education.

Key words: Demographic variables, teaching competencies, online education.

1 Introduction

1.1 Online Teaching

In the current century, it is necessary to improve the quality of online teaching in terms of improving instructor's qualification, professional development training, and rich experiences. Online teaching has become an important mode of teaching to the wider population in various educational institutions around the world. Due to technological advancement, online teaching emerged as the substituted teaching mode for traditional teaching (Tallent-Runnels, Thomas, Lan, Cooper, Ahern, Shaw, & Liu, 2006). To teach in an online mode of education, instructors need technology, and personal motivation (Bonk, 2006). Furthermore, online teaching is an adaptive and flexible mode, providing opportunities for teachers to teach at any space and time (Schifter, 2000). It helps to increase the quality of the course, to enhance the access of students to course content, and also to teach a large audience (Bonk, 2006; Schifter, 2000).

Teaching in an online setting requires adapting the new pedagogical practices at a higher level (Bailey & Card, 2009). Online instructors need to think about their teaching regarding how to manage, develop, and create programs and courses in terms of teaching students without their physical presence and interaction (Albrahim, 2020). Teaching in an online mode of education demands the instructor to develop an understanding of the implementation of the pedagogical skills to facilitate students. Successful online instructors try their best to facilitate students through collaboration, active communication, engagement, and interaction in online courses (Palloff & Pratt, 2011).

Moreover, teaching in an online mode of education requires some specific teaching competencies in terms of teaching effectively, and these competencies are the core of online teaching. The instructors can better teach those who possess these teaching competencies. Over time, the internet and its related tools such as tablets, LMS, Moodle, video conferences, and discussion boards, are utilized for online teaching (Namli, & Demir, 2020). Online instructors' knowledge, skills, and dispositions are necessary for effective teaching in an online environment (Smith, 2008).

For online instructors, it is a requirement to get adequate knowledge about overcoming technical issues and problems (Alman & Tomer, 2012). Technological Pedagogical Content Knowledge

(TPACK) developed by Koehler, Mishra, and Cain (2013) highlights that technology helps for effective teaching of instructors. They need the knowledge and in-depth understanding of pedagogy, content, and technology. Furthermore, the instructor's teaching competencies depend upon their involvement in their work in the light of the aims of the online mode of education. Professional competencies are required for instructors to operate effectively in the educational system. Instructors need teaching competencies to teach different courses and programs to improve the learning of students (Bennett & Lockyer, 2004).

There is a relationship between the demographic variables and teaching competencies (Rana, 2019). Moreover, Sengottuvel and Aktharsha (2015) argued that demographic variables have a significant influence on the teaching competencies of the instructor. The demographic variables of the instructor e.g. age, qualification, years of experience, and the number of professional training attended, play a vital role in the success of online teaching. These bring change in the online teaching of the instructor. Demographic variables of instructors are the motivational tools that have effects on the teaching competencies and improve their performance to make their teaching successful (Sa'adatu, 2014).

1.2 Teaching Competencies of Instructors

Competency is individualized and allows flexibility to achieve the outcome. Instructors' competencies are the systematic actions such as attitude, abilities, and knowledge needed to complete the tasks (Guasch, Alvarez & Espasa, 2010). The competency of the instructor is the capability to fulfill complex demands through psychological resources such as attitude and skills in a specific context. Competency is necessary for instructors' pursuit of excellence (Nessipbayeva, 2012). Instructor's competencies are comprised of collaboration competency, leadership and management competency, pedagogical competency, ethical competency, subject-related competency, continuous professional development competency, and evidenced-based practice competency (Kuivila, Mikkonen, Sjögren, Koivula, Koskimäki, Männistö, & Kääriäinen, 2020). The online instructors remain active in their teaching as subject experts (Coppola, Hiltz, & Rotter, 2002). They have more skills and qualities in terms of technological innovation as compared to a traditional teacher (Davis, Roblyer, Charania, Ferdig, Harms,

Compton, and Cho, 2007). These skills and qualities are systematically constructed and enable a particular instructor to teach online.

1.3 Teaching Competencies of Online Instructors

The practices of online teaching competencies are helpful to increase the quality of education. Professional teaching competencies play a central role in the effective teaching of the instructor. Instructors teaching in an online setting must consider multiple roles and incorporate different teaching competencies (Bawane & Spector, 2009**).** The instructors need specific technical skills in terms of facilitating chat sessions and online discussions (Rosenburg, 2001; Kearsley, 2000). Researchers and analysts explained online teaching roles and competencies of online instructors such as technologists, managers/administrators, analysts, assessors, advisors/counselors, and also facilitators, etc. (Goodyear et al., 2001). Online instructors teach as proficient, social, academic, evaluator, technologist, director, analyst, and advisor/counselor (Bawane & Spector, 2009). The instructor utilizes the latest and innovative teaching methods in their instruction. Instructors set a flexible timetable for the submission of their various course-related activities. They learned methodologies from the designing of the course content, teaching, and also in the assessment process (O'Neil, 2006).

In online asynchronous discussions, the online instructors' competencies involve such as to allow time to students for reflection, keep the discussion productive and alive, and organizing discussions so that everyone can participate in them (Spector & De La Teja, 2001). Instructors need to set the rules for discussions, empower students to interact with each other, and know their cultural differences. The priority on the competencies of online instructors is found in the literature, and it depends on the context and where online teaching is being practiced. Such as communication competencies (Williams, 2003), technology-related competencies (Egan & Akdere, 2005), and also assessment-related competencies (Aydin, 2005) are considered more essential as compared to others, depending upon the culture and context in the online environment of teaching. David and Roblyer (2005) identified five specific key online teaching competencies; a) instructors' required to plan and organize the course in such a way as to maximize the strength and reduce the constraints, b) nonverbal and verbal presentation skills to improve the students' learning, c) to promote collaborative work with each other to produce

course efficiently d) to empower students that they can use the questioning technique, and e) involve students in various learning activities.

1.4 Theoretical Framework of the Research

Researchers and field experts develop various models and framework related to the teaching competencies of the online instructors, such as 'Seven Principles for Good Practice' (Chickering & Gamson,1987), 'The Role of Online Instructor' (Berge,1995), 'Assessing Teaching Presence' (Anderson, Rourke, Garrison, & Archer, 2001), ' Competencies for Online Teaching' by (Goodyear, Salmon, Spector, Steeples, and Tickner,2001), 'Fifty-one competencies for online instruction (Smith, 2005), and 'The Identification of Competencies for the Online Teaching Success' (Bigatel, Ragan, Kennan, May, and Redmond, 2012). The 'Online Teaching Competencies (OTCs) matrix' by Farmer and Ramsdale (2016) is the latest, based on all previous related models from 1987-2012. 'Online Teaching Competencies (OTCs) is the latest, innovative, and comprehensive model consists of a wide range of teaching competencies. The instructors can use it as a tool for their self-assessment as well, to know how many teaching competencies they have. The 'Online Teaching Competencies (OTCs)' matrix is utilized as the theoretical framework for this study. The detail of this is given in the following text.

1.5 Online Teaching Competencies (OTCs) Matrix

For the current research, the online Teaching Competencies (OTC) matrix given by Farmer and Ramsdale (2016) was utilized as the theoretical framework. The purpose of using this framework was that it is more appropriate, latest, and based on the previous research conducted from 1970 to 2012. The online Teaching Competencies (OTC) matrix consists of five components (competencies): a) Community & Netiquette, b) Active Teaching, c) Instructional Design, d) Tools and Technology, and e) Leadership and Instruction, as shown in Figure 1.

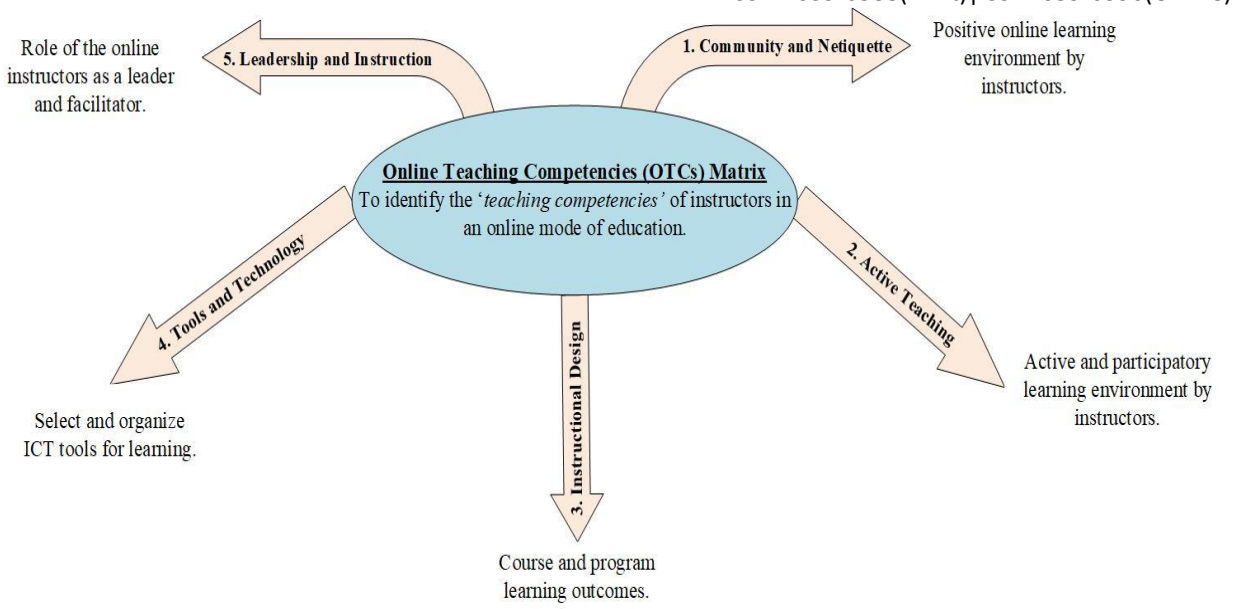

Figure: 1 Online Teaching Competencies (self-made description of the model) adapted (Farmer & Ramsdale, 2016).

Following is the detail of the components of the 'Online teaching competencies' matrix.

1.5.1 Community & Netiquette

In this competency, the online instructor establishes a positive environment of online learning and supportive relations with students that contribute to their professional, personal, and academic growth. Faculty fosters and enhances a comprehensive community by designing and planning meaningful learning opportunities and activities for the students to collaborate, discuss, and interact with each other.

1.5.2 Active Teaching

This competency entails the online instructor's struggle to create an interactive, participatory, and active learning environment for learners in the online classroom setting. Through regular learner interaction, online instructors keep students on task, modify materials, support regarding group work, to assess the strategies of teaching, and provide feedback.

1.5.3 Instructional Design

The instructors in the online mode of education make sure that the course, curriculum, and learning experiences of the students help to fulfill the learning outcomes of the course as well as of the program. Instructors apply the methodologies in terms of the flow of the students learning

by activities, contents, and assessment strategies, to consider the experiences of the user in the incorporation of the technology related to the course. The hands-on learning activities and authentic experiences of students, support learners to participate and share, gain knowledge and skills, along with to construct the solutions.

1.5.4 Tools & Technology

It is the main competency that is mandatory along with the content knowledge for the online Instructors. With an integrated and conscientious approach, the online instructor selects and organizes tools and technology for learning. Online instructors manage and assess technology relevant to the course to make sure that selected tools are productive, helpful, and easy to use for students who have multiple abilities and match with the outcomes of the course learning.

1.5.5 Leadership & Instruction

The instructor in an online environment should act as a facilitator and leader. Their main role and function are to provide examples, focus discussions, guide students, and perfect behaviors that show skills, principles, and critical concepts.

Moreover, in the light of (OTCs) as a theoretical framework, the influence of demographic variables on instructors' teaching competencies was identified.

1.6 Demographic variables and instructor's teaching competencies

The demographic variables are particular characteristics of research participants e.g. age, gender, qualification, years of experience, etc. Demographic variables are independent variables that cannot be manipulated and have an influence on the teaching competencies of online instructors. Instructors' qualifications, teaching experience, and age are the important factors that can assist the teaching competencies of instructors (Dong, Chai, Sang, Koh, & Tsai, 2015). Instructor's qualification (level of education) and their teaching competencies are positively correlated with each other (Akiri & Ugborugbo, 2009; Sogillo, Guimba, & Alico, 2016).

The 'qualification' is considered the first independent variable in this study. It refers to the subject matter knowledge of the instructor that they have. The qualified instructor is certified and becomes able to teach their relevant field, effectively (Darling-Hammond, 1998).

The variables 'age' and 'teaching experience' of the online instructor bring positive change in their teaching competencies (Patrick and Yick, 2005; Kopp, Matteucci, & Tomasetto, 2012). The

'years of teaching experience' refers to how many years the instructor spend teaching online. The experienced instructor's practices about the pedagogical content knowledge can change and modify with the help of the quality professional development training programs, that bring changes into their teaching. Jimoyiannis and Komis (2007) conducted research and found that there is a strong relationship between teaching experience and technology-related teaching competencies. Experienced teachers get more insight from their richer backgrounds and incorporate innovative ideas into the course of teaching (Kosgei, Mise, Odera, & Ayogi, 2013). The less experienced teachers are motivated to improve their teaching competencies as compared to the more experienced instructors in terms of the utilization of advanced technology in their teaching (Teo, & Zhou, 2017). The teachers with less teaching experience, mostly participate in and attend teaching seminars and workshops, to improve their teaching competencies (Tsai, 2002; Teo, & Zhou, 2017).

The demographic variable, ' number of professional training attended' is considered the last independent variable in this study. It refers to the instructor's professional training attended, to improve their teaching competencies. The pre-service and in-service professional training play a significant role in the teaching competencies of the instructor. It helps to polish the hidden skills and talent of the instructors in terms of improving their teaching competencies. The professional development of the instructor helps to improve the quality of the teaching (Walter, Wilkinson, and Yarrow, 1996).

Conclusively, the instructor's demographic variables such as their qualification, number of professional trainings attended, age, and years of experience can play a significant role in improving their teaching competencies. Due to these teaching competencies, the instructors can easily improve their teaching. In this research, the influence of the demographic variables on the teaching competencies of online instructors were investigated. Online teaching is a new concept and practice in Pakistan. The teaching competencies are the core in online teaching. From the literature, it appeared that demographic variables have an influence on the instructors' teaching competencies. It is a need to further discover this concept, therefore, this study was conducted to identify the influence of demographic variables (qualification, age, year of teaching experiences, and the number of professional training attended') of online instructors on their teaching competencies at higher education. For this, the following research questions was formulated.

1. What is the influence of online instructors' qualification, age, years of experience, and the number of professional training attended' on their teaching competencies in online mode of Education?

Research Methodology

To find out the influence of demographic variables on the teaching competencies of online instructors, this quantitative research was conducted. The sample of the study comprised of 250 instructors from two universities, one was a virtual university, and the other was Open University, where online courses were taught. From Open University, only those instructors were selected who were involved in online teaching.

2.1 Instrument

A standardized questionnaire developed by Bigetal et al., (2012) was utilized to collect the data about the competencies of online instructors. It is a Likert scale-type questionnaire related to the Online Teaching Competencies (OTCs) model. These competencies are; community and netiquette, active teaching, instructional design, tools and technology, leadership, and instructions.

The first section of the questionnaire consists of items about the information of demographic variables of instructors, such as qualification, age, year of experience, and number of professional trainings attended. The questionnaire consists of 54 items scored on five-point options a) Not important b) Slightly Important c) Fairly Important d) Important e) Most Important.

2.2 Reliability of the Instrument

To the best of my knowledge, this questionnaire was used first time in Pakistan, therefore, it was compulsory to find out its suitability in the Pakistani context. The internal consistency reliability of the questionnaire was calculated through Cronbach's alpha, which is specified as the alpha coefficient of reliability (Cohen et al., 2011; Cohen, Manion, & Morrison, 2007). The questionnaire was administered to 50 instructors involved in online teaching at different universities. Cronbach's alpha coefficient value of 0.80, indicated the suitability of the questionnaire to use in Pakistan.

2.3 Procedure

Information regarding the faculty members was obtained from the administration of the universities. Data was collected from the online instructors of 'Open University' and 'Virtual University. All instructors were contacted through email to obtain their consent for participation in the research. After their consent, the questionnaire was sent to 300 faculty members, however, 250 returned the questionnaire. Thus, the sample was 250 instructors in total

Table 1 Demographic variables of the instructors

Instructors Demographic Variables'	Units	Participants (Instructors')
Qualification	Master/MCS/MSC	75
	M.Phil/ MS	120
	PhD	50
	Post Doctorate	5
Age	Less than 30	5
	30-35	30
	36-40	50
	41-45	50
	46-50	95
	51-55	10
	56-60	5
	above 60	5
Professional Development attended Trainings	1-5	20
	6-10	110
	11-15	90
	15 and above	30
Years of Experience	1-5	30
	6-10	120
	11-15	80
	15 and above	20

3 Results

As mentioned previously, the instructors' responses about their teaching competencies were obtained on a questionnaire. It was distributed to 300 instructors based on their willingness to participate in this research, however, two hundred and fifty instructors responded. The data was analyzed through multiple linear regression to find out the influence of the demographic variable on the teaching competencies of the instructors. Data was analyzed according to the online teaching competencies (OTCs) matrix, and results are presented according to each competency in Table 2.

The influence of instructors' demographic Variables' such as their qualification, age, years of experience, and number of professional training attended, on the Components of OTC were identified through regression analysis. Results are presented in table 2.

Table 2 showed the results of multiple linear regression calculated for demographic variables and teaching competencies of instructors. Here the value of adjusted R^2 is 0.117 and with the R^2 = 0.135. It means that the multiple linear regression based on four variables qualification, age, years of experience, and the number of professional training attended', overall explains 13.5% about the variance in the 'community and netiquette' component of teaching competencies. Multiple linear regression was calculated for all variables, the results showed that 'years of experience' with sig value = 0.000 and 'qualification' with sig. value = 0.012 are significant predictors of the component 'community and netiquette'. Results indicated that the independent variables 'experience' has a higher influence as compared to the independent variable 'qualification' by comparing the standardized coefficients (beta = 0.333 versus beta = 0.170). Results showed that the rest of the two independent variables 'Age' and 'the number of Professional training attended' are non-significant predictors' of Community and Netiquette teaching competency.

For the 'active teaching' competency, the results of multiple linear regression analysis show the value of adjusted R^2 are 0.040 with the value of R^2 = 0.060. It means that the multiple linear regression based on four variables 'qualification, age, years of experience, and the number of professional training attended' generally explains the variance 6% in the 'active teaching' component of teaching competencies. The multiple linear regression results showed that only

"years of experience" with sig value = 0.044 and "qualification" with sig value = 0.050 are significant predictors of the 'Active Teaching' component of Teaching Competencies. Results showed that the rest of the two independent variables 'Age' and 'the number of Professional training attended' are non-significant predictors of the 'Active Teaching' component of teaching competencies.

For the 'Instructional Design' teaching competency, results in Table 2, presented multiple linear regression analysis. Here the value of adjusted R^2 are .015 and with the R^2 = .034. It means that the multiple linear regression based on the four variables 'qualification, age, years of experience, and the number of professional training attended, overall explains and shows 3.4% of the variance in the 'Instructional Design' component of teaching competency. This indicate that the independent variables 'Number of Professional Training attended' with sig. value =.034 is the significant predictor of the "Instructional Design" component of teaching competencies. While the rest of the three independent variables 'Qualification, Age, and years of Experience' are non-significant predictors of the 'Instructional Design' component of teaching competencies.

Moreover, table 2 showed the results of multiple linear regression calculated for instructors' scores on the competency of 'Tool and Technology' component and their demographic variables. Here the value of adjusted R^2 is 0.054 and with the R^2 = 0.73. It means that the linear regression based on four demographic variables, 'qualification, age, years of experience, and numbers of professional training attended', overall explains 7.3 % of the variance in the "Tools & Technology" component of teaching competencies. Multiple linear regression was calculated for all variables, the results showed and explain that the demographic variables 'Age' with sig value = 0.000, 'years of experience' with sig value = 0.000, and 'number of professional training attended' with sig. value = .059 are significant predictors of the component 'tools and technology '. this indicated that the independent variables 'Qualification' are non-significant predictors of the 'Tools & Technology' component of teaching competencies.

Finally, for the "Leadership & Instruction" component of teaching competency, Table 2 showed the results of multiple linear regression. Here the values of the adjusted R^2 are -.001 and with the R^2 = .019. It means that the linear regression based on four variables 'qualification, age, years of experience, and the number of professional training attended', overall describe 1.9% of the variance in the "Leadership & Instruction" component of teaching competency. Multiple linear regression was calculated for all variables, the results showed that all the independent variables

'qualification, age, years of experience, and the number of professional training attended' are non-significant predictors' of the 'Leadership & Instruction' component of the online teaching competencies.

Table 2 Multiple linear regression analysis results for Instructors' demographic variables and their online teaching competencies

Criterion Variable	Predictor Variables	Coefficient	Beta	Sig.	R^2	Adjusted R square
Community and Netiquette	Constant	2.899		0		
	Qualification	-0.043	-0.046	0.523		
	Age	-0.068	-0.132	0.198	0.019	-0.001
	Years of Experience	-0.054	-0.166	0.415		
	Professional Training	0.87	0.102	0.307		
Active Teaching						
	Constant	2.373		0		
	Qualification	-0.034	-0.037	0.596		
	Age	-0.1	-0.199	0.047	0.73	0.054
	Years of Experience	0.119	0.149	0.059		
	Professional Training	0.238	0.287	0.004		
Instructional Design						
	Constant	3.131		0		
	Qualification	0.072	0.073	0.306		
	Age	0.028	0.053	0.605	0.034	0.015
	Years of Experience	0.012	0.014	0.864		
	Professional Training	-0.189	-0.212	0.034		
Tools & Technology						
	Constant	2.188		0		
	Qualification	0.119	0.138	0.05		
	Age	0.026	0.056	0.574	0.06	0.04
	Years of Experience	0.12	0.16	0.044		
	Professional Training	-1.014	-0.018	0.857		
Leadership & Instruction						
	Constant	1.569		0		
	Qualification	0.176	0.17	0.012		
	Age	0.14	0.024	0.8	0.135	0.117
	Years of Experience	0.301	0.333	0		
	Professional Training	-0.161	-0.172	0.068		

4 Discussion

This study intended to identify the influence of demographic variables on the teaching competencies of online instructors teaching in higher education. The demographic variable plays a significant role in the teachers' teaching competencies (Aramide, Ladipo, & Adebayo, 2015). In the current research, the results of multiple linear regression analysis showed that some of the demographic variables had a strong influence on instructor's teaching competencies.

The results of the study indicated that the demographic variables, 'years of experience', and the 'number of professional training attended' influence the 'community and Netiquettes' component of the online teaching competencies. Therefore, these two variables help instructors in terms to improve their teaching competencies. Experienced and professionally trained instructors have more quality in their teaching. It means that more experienced and professionally trained instructors can build a positive relationship with their students for their academic, personal, and professional development along with good behavior. The rest of the two variables 'age' and 'qualification' did not influence the 'community and Netiquettes' component of the teaching competencies. On the other hand, some online instructors have inadequate professional training to teach in an online setting (Palloff & Pratt, 2013). The professional development of the instructor is an inclusive procedure that has three different dimensions includes self-development, faculty development, and the support of the institution (Palloff & Pratt, 2011).

The independent variables 'years of experience' and qualification" are significant predictors of the 'Active teaching' component of the instructor's teaching competencies. Experienced and qualified instructors bring quality into their teaching. This component refers to the competency involved when online instructor creates an interactive, participatory, and active learning environment for learners in the online classroom setting. Online instructors keep students on task, modify materials, provide support regarding group work, assess the strategies of teaching, and provide feedback. There is a positive relationship between the teaching competencies and demographic variables of the teacher (Rana, 2019).

The demographic variable 'qualification' has a relationship with the instructors teaching competencies to improve their teaching competencies as compared to the experience of the

instructors in terms of the effective learning of the students (Aslam, Rehman, Imran, & Muqadas, 2016). Qualification of the instructor, age, and teaching experience are the demographic variables that play an important role in the teaching competencies of the instructor at the university level (Robbins, 2008).

But the rest of the two variables 'number of professional training attended' and 'age' did not influence the 'Active Teaching' component of the teaching competencies of instructors. Furthermore, the findings show that the independent variable 'Number of professional training attended' influences the 'Instructional Design' component of teaching competencies of online instructors. Therefore, these two variables help instructors in terms to improve their teaching competencies. This component refers to the competency that allows the online instructor to plan and ensure that the curriculum and pedagogy of the course provide learners with experiences that support the program and outcomes of the learning.

Competent online instructors apply appropriate methodologies for an effective flow of learning about content, and educational activities, along with considering instructors' and students' experience about the technology integration of the courses and program as well. Thus, 'Number of professional training attended' helps instructors to improve their teaching competencies. The rest of the three independent variables 'years of experience', 'age', and 'qualification' are not the influencing variables to improve the 'Instructional Design' component of the online teaching competencies. Furthermore, the instructors' demographic variables such as their qualifications, the number of professional training attended, age, and 'years of experience' can play a significant role in improving their teaching competencies. The demographic variables can be used by the instructors as motivational tools due to their effects on their teaching competencies and also the success in their teaching (Sa'adatu, 2014).

Additionally, the results of the study revealed that the independent variables 'age', 'years of experience', and 'number of professional training attended' are significant predictors of the 'tools and technology ' component of Teaching competencies. It means that mature, experienced and trained instructors can integrate technology into their teaching effectively. Therefore, these three independent variables help instructors to improve their teaching competencies in the online mode of education. But, the independent variable 'Qualification' does not influence the 'Tools &

Technology' component of online teaching competencies. Moreover, the result of the study showed that all the four independent variables 'qualifications, age, years of experience, and the number of professional training attended did not influence the 'Leadership & Instruction' component of the online teaching competencies. Teaching in online mode demand instructors to work hard to achieve the learning aims of the course as well as programs. The teaching competencies of the instructors have got a lot of importance in terms of developing professional development programs and training for the instructors. The competencies and the skills of online teaching help them to plan and design professional development programs for instructors (Albrahim, 2020).

Research also demonstrates that to improve the teaching competencies of the instructor, demographic variables play an important role. This study revealed that the instructors' 'age' and 'number of professional training attended ' have the least influence on the instructors' teaching competencies as compared to the variables 'qualifications' and 'years of teaching experience' on their teaching competencies. The online instructor's 'age' did not has significant effect on their online teaching competencies, but the instructors' teaching experience, and their educational qualification, had a positive effect on the teaching competencies of the instructor' (Wang, Wang, Stein, Liu., & Chen, 2019). Online instructors need the competency to manage technology relevant to the course requirements to make sure that selected tools are productive, helpful, and easy to use for students and match the intended outcomes of the course.

In different disciplines, researchers identified that the more experienced teachers have traditional thoughts and ideas as compared to the less experienced instructors (Bautista, Echeverria, & Pozo, 2010; Castejón & Martı´nez, 2001). There is only one demographic variable 'number of professional trainings attended' that influences the 'instructional Design' competency of instructors. This competency refers to the important role of leading and facilitating in the online environment. This role and function are to provide examples, focus discussions, guide students, and model behaviors that demonstrate skills, principles, and critical thinking. Such practices and experience help students navigate course activities. Tsai (2002) highlight that less experienced instructors are active in participating in the training events such as teacher training workshops and seminars.

Teaching competencies might serve to make sure the instructors' qualification and readiness for teaching purpose in a virtual setting. This research demonstrates that the ‘qualification’, ‘years of teaching experience’, and ‘number of teacher training’, of the instructors help to improve their teaching competencies to teach in a virtual setting. Teachers’ qualification and their age have a significant impact on e-learning effectiveness (Islam, 2011). The demographic variables significantly influence the teaching competencies of instructors (Sengottuvel & Aktharsha, 2015). Active teaching plays a significant influence on the demographic variables of the instructors'. The active Teaching component is significant because active teachers motivate and help students in their learning.

5 Conclusion

Online teaching is an emerging practice in Pakistan. Few studies have been conducted regarding this concept in the Pakistani context. This study was conducted to find out an aspect of online teaching. The main aim of this study was to identify the relationship of instructors’ demographic variables and their online teaching competencies with the help of five point likert scale questionnaire. The result showed that online instructors’ demographic variable ‘age’ has impact on the ‘community and netiquette, tools and technology, and Active teaching’ components of OTCs. Moreover, the result showed that online instructors’ demographic variables ‘age’ and ‘years of teaching experience’ has an impact on the ‘instructional design and leadership and instruction’ component of OTCs.

Recently, in online teaching and learning, instructors’ need specific competencies for the quality online education. The online instructors' skills and competencies help instructors to plan and implement ‘professional development programs’ for instructors’ (Albrahim, 2020). Based on the findings of the research, it is concluded, that the instructors’ demographic variables plays an important role in improving instructors’ teaching competencies.

Future studies could be conducted by the professional development institutions and the administration of the university should develop effective professional development training programs and workshops to improve the quality of the instructors for online teaching. Future research may be conducted on the impact of the demographic variables of instructor’s teaching competencies to improve the students' learning and also to improve the quality of the teaching in

online education. The Online Teaching Competencies (OTCs) matrix can be used by the instructors to assess the level of their own teaching competencies in order to improve their online teaching.

References

Abdous, M. H. (2011). A process-oriented framework for acquiring online teaching competencies. Journal of Computing in Higher Education, 23(1), 60-77.

Ahmad, J., & Khan, M. A. (2016). A study of teaching competency of secondary school teachers in relation to their educational qualification, stream and type of school. *International Journal of Applied Research*, *2*(2), 68-72.

Akiri, A. A., & Ugborugbo, N. M. (2009). Analytic examination of teachers' career satisfaction in public secondary schools. Studies on Home and Community Science, 3(1), 51–56.

Albrahim, F. A. (2020). Online Teaching Skills and Competencies. *TOJET, 19*(1), 9-20.

Alman, S. W., & Tomer, C. (2012). Designing online learning: A primer for librarians. ABC-CLIO.

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.

Anderson, T., Rourke, L., Garrison, D., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. The Journal of Asynchronous Leaning Networks, 5(2), 1-17.

Aramide, K. A., Ladipo, S. O., & Adebayo, I. (2015). Demographic variables and ICT access as predictors of information communication technologies' usage among science teachers in federal unity schools in Nigeria. *Library Philosophy and Practice,* 1-28.

Aslam, U., Rehman, M., Imran, M. K., & Muqadas, F. (2016). The impact of teacher qualifications and experience on student satisfaction: a mediating and moderating research model. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, *10*(3), 505-524.

Aziz, F., & Akhtar, M. M. S. (2014). Impact of training on teachers' competencies at higher education level in Pakistan. *Researchers World*, *5*(1), 121.

Bailey, C. J., & Card, K. A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. The Internet and Higher Education, 12(3), 152-155

Bautista, A., Echeverria, M., & Pozo, J. (2010). Music performance teachers' conceptions about learning and instruction: A descriptive study of Spanish piano teachers. Psychology of Music, 38(1), 85–106

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

Bonk, C. (2006). Online teaching in online world. Bloomington, IN: CourseShare.com. Retrieved from http://www.publicationshare.com/docs/faculty_survey_report.pdf

Carraccio, C., Wolfsthal, S. D., Englander, R., Ferentz, K., & Martin, C. (2002). Shifting paradigms: From Flexner to competencies. Academic Medicine, 77(5), 361-367.

Castejón, J. L., & Martı´nez, M. A. (2001). The personal constructs of expert and novice teachers concerning the teacher function in the Spanish educational reform. Learning and Instruction, 11(2), 113–131.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE bulletin*, *3*, 7.

Cohen, L., Manion, L. & Morrison, K. (2007). Research Methods in Education. Routledge, Oxon.

Cruickshank, D.R; Jenkins, D.B; and Metcalf, K.K. (2003). The act of teaching. New York: McGraw-Hill.

Darling-Hammond, L. (1998).Teachers and teaching: Testing policy hypotheses from a national commission report. *Educational researcher*, *27*(1), 5-15.

Davis, N., Roblyer, M. D. P. , Charania, A., Ferdig, R., Harms, C., Compton, L. K. L., & Cho, M. O. (2007). Illustrating the "virtual" in virtual schooling: Challenges and strategies for creating real tools to prepare virtual teachers. Internet and Higher Education, 10, 27-39.

Dong, Y., Chai, C. S., Sang, G.-Y., Koh, J. H. L., & Tsai, C.-C. (2015). Exploring the profles and interplays of pre-service and in-service teachers' technological pedagogical content knowledge (TPACK) in China. Journal of Educational Technology & Society, 18(1), 158–169.

Dubins, B. H., & Graham, M. B. (2009, August). Training instructors to teach online: Research on competencies/best practices. Paper presented at the 25th Annual Conference on Distance Teaching and Learning, Madison, WI. Retrieved from http://www.uwex.edu/disted/conference/Resource_library/proceedings/09_20433.pdf

Farmer, H. M., & Ramsdale, J. (2016). Teaching Competencies for the Online Environment. *Canadian Journal of Learning and Technology*, *42*(3), n3.

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(1), 65-72.

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, 199-206.

Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational technology research and development*, *55*(3), 223-252.

Islam, M. (2011). Effect of demographic factors on e-learning effectiveness in a higher learning Institution in Malaysia. *International Education Studies*, *4*(1), 112-121.

Jimoyiannis, A., & Komis, V. (2007). Examining teachers' beliefs about ICT in education: Implications of a teacher preparation programme. Teacher Development, 11(2), 149–173.

Kim, M. C., & Hannafin, M. J. (2011). Scaffolding problem solving in technology-enhanced learning environments (TELEs): Bridging research and theory with practice. *Computers & Education*, *56*(2), 403-417.

Kakkar, S. B., Changing Perspectives in Education. Viskas Publishing house Pvt. Ltd.New Delhi, India. pp

Koehler, M.J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. Computers & Education, 49(3), 740–762.

Koehler, M. J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content knowledge (TPACK)?. *Journal of Education*, *193*(3), 13-19.

Kopp, B., Matteucci, M. C., & Tomasetto, C. (2012). E-tutorial support for collaborative online learning: An explorative study on experienced and inexperienced e-tutors. Computers & Education, 58(1), 12–20.

Kosgei, A.; Mise, J. K.; Odera, O. and Ayugi, M. E. (2013). Influence of Teacher Characteristics on Students‟ Academic Achievement among Secondary Schools. Journal of Education and Practice. 4(3): 76-82.

Kuivila, H. M., Mikkonen, K., Sjögren, T., Koivula, M., Koskimäki, M., Männistö, M., ... & Kääriäinen, M. (2020). Health science student teachers' perceptions of teacher competence: A qualitative study. *Nurse education today*, *84*, 104210.

Namli, S., & Demir, G. T. (2020). The Relationship between Attitudes towards Digital Gaming and Sports. *Turkish Online Journal of Educational Technology-TOJET*, *19*(1), 40-52.

Nessipbayeva, O. (2012). The Competencies of the Modern Teacher. *Bulgarian Comparative Education Society*.

Palloff, R. M. & Pratt, K. (2011). The excellent online instructor: Strategies for professional development. New York: John Wiley & Sons.

Palloff, R. M., & Pratt, K. (2013). Lessons from the virtual classroom. *International Journal of Information and Communication Technology Education*, *10*(2), 93-96.

Patrick, P. K. S., & Yick, A. G. (2005). Standardizing the interview process and developing a faculty interview rubric: An efective method to recruit and retain online instructors. Internet & Higher Education, 8(3), 199–212.

Prensky, M. (2001). Digital natives, digital immigrants. *On the horizon*, *9*(5).

Rana, N. (2019).TEACHING COMPETENCY OF SECONDARY SCHOOL TEACHERS IN RELATION TO SELECTED VARIABLES. *Journal of Research in Education*. 7(1).1-18.

Robbins, S.P., (2008). Organizational behaviour. Edisi 12.Jakarta: Salemba Empat.

Sala, F. (2003). Leadership in education: Effective UK college principal. Nonprofit Management Leadership,14(2), 171-189. http://dx.doi.org/10.1002/nml.28

Salmon, G. (2003). E-moderating: The key to teaching and learning online. Psychology Press.

Sa'adatu, S. L. (2014). Relationship between demographic factors and the performance of teacher education. *International Letters of Social and Humanistic Sciences*, (19), 140-147.

Schifter, C. (2000). Faculty Motivators and Inhibitors for Participation in Distance Education. Educational Technology, 40(2), 43-46.

Sengottuvel, A., & Aktharsha, U. S. (2015). Teacher effectiveness and professional competency in school education. *International Journal of Management*, *6*(1), 181-190.

Smith, R. D. (2008). *Virtual voices: Online teachers 'perceptions of online teaching standards and competencies* (Doctoral dissertation).

Sogillo, R. R. O., Guimba, W. D., & Alico, J. C. (2016). Assessment of mathematics teachers in a public and a private School: Implications to the quality of teaching secondary mathematics. Advances in Sciences and Humanities, 2(2), 7–16.

Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., & Liu, X. (2006). Teaching courses online: A review of the research. *Review of educational research*, *76*(1), 93-135.

Teo, T., & Zhou, M. (2017). The influence of teachers' conceptions of teaching and learning on their technology acceptance. *Interactive Learning Environments*, *25*(4), 513-527.

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

Tsai, C. C. (2002). Nested epistemologies: Science teachers' beliefs of teaching, learning and science. International Journal of Science Education, 24, 771–783.

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.

Walter, J. M., Wilkinson, M. & Yarrow, A. (1996). Facilitating professional development through the study of supervision and instructional change, British Journal of In-service Education,22,(1), International Refereed Research Journal Vol. V, Issue 1, Bigatel, P. M.,

Williams, P. E. (2003). Roles and competencies for distance education programs in higher education institutions. *The American Journal of Distance Education*, *17*(1), 45-57.