ATTITUDES, PERCEPTIONS AND COMPETENCE LEVEL OF PRE-SERVICE EFL TEACHERS TOWARDS USE OF EDUCATIONAL TECHNOLOGY AT AIR UNIVERSITY, ISLAMABAD, PAKISTAN

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Approval of the Graduate School of Educational Sciences

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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Art.

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Coordinator

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts.

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

ATTITUDES, PERCEPTIONS AND COMPETENCE LEVEL OF PRE-SERVICE EFL TEACHERS TOWARDS USE OF EDUCATIONAL TECHNOLOGY AT AIR UNIVERSITY, ISLAMABAD, PAKISTAN

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This research was designed to explore the attitudes, perceptions and level of competence of pre-service EFL teachers towards the use of educational technology in their classrooms. The research took place at Air University campus which is located in the capital city of Pakistan: Islamabad. Participants were selected by random sampling. A total of 62 participants took part in the study. The study employed a mixed research methodology for collection of data. Educational Technology questionnaire (Albirini, 2006) was used to collect quantitative data. Focus group interview sessions were conducted as part of qualitative data collection process. The questionnaire was analyzed by SPSS 25.0. Thematic analysis was used for the interpretation of qualitative data.

The results indicated that pre-service EFL teachers had moderately high competence level, perceptions towards using digital resources, and attitudes towards technology usage. The results also indicated that perceptions of the teachers towards use of educational technology largely impact their attitudes towards technology integration. In addition, the studies pointed out three primary obstacles faced in the process of technology integration: Individual, technical and lack of resources and knowledge.

Keywords: Technology integration, digital resources, teacher's attitudes, technology competence, pre-service EFL teachers.

Dedicated to my beloved parents, *Kiran & Irfan*, who relentlessly encouraged me to strive for excellence.

Öz

Bu çalışma İngilizceyi yabancı dil olarak öğretecek olan öğretmen adaylarının yeterlilik seviyelerini, algılarını ve tutumlarını incelemeye yöneliktir. Araştırma, Pakistan'ın başkenti olan İslamabad'da yer alan Air Üniversitesi'nde gerçekleşmiştir. Katılımcılar rastgele örnekleme yöntemiyle seçilmişlerdir. Bu çalışmada toplam 62 katılımcı yer almıştır. Veri toplamada karma araştırma yöntemi kullanılmıştır. Nicel veri toplama işlemi için Eğitim Teknolojileri Anketi (Albirini, 2006) kullanılmıştır. Nitel verilerin toplanması sürecinde ise odak grup görüşmeleri düzenlenmiştir. Anket sonuçları SPSS 25.0 tarafından analiz edilmiştir. Nitel verilerin yorumlanmasında ise tematik analiz yöntemine başvurulmuştur.

Çalışmadan çıkan sonuçlar, hizmet öncesi İngilizce öğretmenlerinin yeterlilik seviyelerinin, dijital kaynaklar konusundaki algılarının ve teknoloji kullanımıyla ilgili tutumlarının orta derecede yüksek olduğunu göstermiştir. Ayrıca öğretmenlerin eğitim teknolojilerinin kullanımına yönelik algılarının teknoloji entegrasyonu konusundaki tutumlarını büyük oranda etkilediği görülmüştür. Ek olarak, araştırmalar teknoloji entegrasyonu aşamasında karşılaşılan üç temel engele dikkat çekmiştir: kişisel bilgi, teknik bilgi, bilgi ve kaynak eksikliği.

Anahtar Kelimeler: Teknoloji Entegrasyonu, Dijital Kaynaklar, Öğretmenlerin Tutumları, Teknoloji Yeterliliği, Hizmet Öncesi İngilizce Öğretmenleri

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LIST OF ABBREVIATIONS

ELT English Language Teaching

EFL English as Foreign Language

ICT Information and Computer Technology

IT Information Technology

PD Professional development

ESSA Every Student Succeeds Act

1. Introduction

The advancement and development in the field of technology has made it an integral part of everyday life. Life, nowadays, is dependent on technological devices in lots of ways. Technology has improved the standard of living by advancements in the fields of health, research, economy, transportation and communication. In the last few decades, lots of researches have been done about the impact of integrating technology in the education sector. Efforts are being done to improve the education sector by incorporating computers and other technology items in the study design (Inan & Lowther, 2010).

A lot of efforts are being done in Pakistan to improve the standard of education by incorporating Information and Computer Technology (ICT). However, this is not a short and easy procedure. There exist problems like lack of resources and lack of training for staff. A lot of countries have very successfully integrated technology into their education system and, more precisely, language classrooms. Australia, Finland and United States of America are examples of the countries which have modified their second-language education system with the help of technology. Implementation of technology that facilitates in learning procedures has some conditions for successful integration. Firstly, teachers working at the institutes need to show dissatisfaction with traditional methods. If teachers are not satisfied by the outcomes of the traditional ways, they will feel the need of incorporating modern ways. Secondly, knowledge of technology, skills of integrating technology and sufficient digital equipment for the integration of technology are required. Also, commitment is required. All the staff members, teachers, facilitators and administration must be committed to the cause of technology integration in educational settings. (Ely, 2014)

The successful integration of technology in language classrooms is dependent on a lot of internal and external factors. Some of these factors include perceived benefits and available resources. Perceived benefits and attitudes of teachers towards using technology in language classrooms are affected by their confidence in pedagogic and

content based knowledge of computer use (Hur, Shannon & Wolf, 2016).The availability of sufficient knowledge and skills to carry out the desired task is referred as "competence" (Verspoor, 1989). It is very essential to have technically trained staff for desired outcomes. Also, the better the level of competence of the teachers, the more will be their motivation to use technological devices in their classrooms. Another factor that contributes largely in successful incorporation of technology in language classrooms is the perception of teachers or perceived benefits of technology usage in classrooms (Hur et al. 2016).Perception has multiple facets like behavior, environment, social and personal. Researches have proved that the teacher's perceived importance of technology and its management varies with various factors (Chanlin, 2007). According to Warschauer (2002), teacher training is an important factor for effective technology usage in language classrooms. Seminars, teacher training programs and internships can greatly benefit teachers. Such programs can help to train teachers in a way that they can introduce new technology items in classroom settings in an 'intelligent and smooth' way (Warschauer, 2002).

1.1. Problem Statement

English Language is taught in most Pakistani schools from kindergarten, but the level of English proficiency is much lower than that desired at national level. Most of the schools in Pakistan employ traditional methods and pedagogical practices for teaching English like translation, vocabulary learning and grammar rules. Some private schools have started using modern ways of teaching English by incorporating technology into the teaching system however, educational technology is still a new concept in Pakistani education system and the staff lacks technical training. Digital resources are limited and pedagogical knowledge is insufficient.

This research will address this issue by finding out the perception, competence and attitudes of pre-service EFL teachers towards the use of technology in language classrooms.

1.2. Purpose of the Study:

The purpose of this study is to explore the attitudes, perceptions and competence of pre-service EFL teachers regarding the use of technology in English Language classrooms. The competence of pre-service teachers towards the use of technology in classrooms will be explored in this study. The competence will be measured byavailable knowledge, expertise and ease of using technology in classroom environment. Also, the perception and competence will be measured across the variable of gender.

1.3. Research Questions:

The study is guided by the following research questions:

1. What is the level of competence of Pakistani pre-service EFL teachers towards the use of digital resources in classrooms?
2. What are the perceptions of pre-service EFL teachers towards the use of digital resources in their future classrooms?
3. Does gender influence attitudes and perceptions of pre-service teachers towards using educational technology?
4. How are perceptions and competence of teachers correlated with their attitudes towards the use of digital resources?
5. What challenges do pre-service teachers face in the integration of digital resources and what are their possible solutions?

1.4. Significance of the Study:

A number of researches have been conducted on the use of technology in educational settings. Researches have been conducted upon the importance and usefulness of using technology in classrooms. This study specifically aims at exploring the perception and the competence of pre-service EFL teachers towards educational

technologies. The study aims at the perception and competence of pre-service EFL teachers only; hence, it provides some detailed and valuable insights on the use of educational technology in English Language classrooms by Pakistani teachers.

The study employs a mixed method research to find out the attitudes, perception and competence of pre-service EFL teachers. The data has been collected by quantitative as well as qualitative method. Questionnaires were distributed among the participants to find out the attitudes, perception and competence and focus group interviews were conducted for detailed and elaborate investigation about challenges faced by the participants.

2. Literature Review

English as a second language has grabbed attention among academics and scientists. In language teaching, the focus on teacher training is very strong nowadays and much more is needed to improve the specialized skills that instructors need to acquire. Spears (2012) found out that ICT is important for innovation and learning as it improves the teaching skills and raises standards which in turn improves student learning and raises the use of knowledge by providing feedback to students, teachers and schools.

There can be seen extreme opinions about ICT for educational purposes. At one extreme are those who don't accept that ICT will bring positive changes in education (McRobbie and Thomas, 1998;Postman, 1990, 1993, 1995). On the other hand, Papert (1996) argued that technology would change the nature of education forever and would create dramatic improvements in student performance. Between these two extremes are others who think critically. They unequivocally accept that ICT, in the event that legitimately coordinates, has the potential to progress instructing and learning. (Abang Ahmad Ridzuan& Ming-Koon Kuek, 2003; Bork, 2003; Dwyer, Ringstaff, and Sandholtz, 1990;Thompson, 2003). They confront challenges of financial, social, instructive and mechanical nature in the use of digital resources.

Understanding English media worldwide, Graddol (2000) emphasized that people who speak English as their second language are more likely than native English speakers to adopt English language careers. According to Johnson (2003), computers and technology, if used properly, have the ability to “invoke dreams in the minds of visionary educators who saw endless potential for altering traditional notions of teaching and learning” (p. 2).

A lot of efforts are being done Worldwide to ensure the integration of digital resources into education. In 2010, the President of Scientific and Technical Advisory Advisers made a statement to the President Obama. It underscored the urgent need to

prepare American students for a solid establishment of science, technology, engineering and math for students to transfer this knowledge into their personal and professional lives, which would eventually benefit all Americans. Steps like these must be taken in Pakistan to create awareness on the importance of technology integration.

2.1. Digital Literacy

The term 'Digital Literacy' was first coined by Gilster (1997) when he explained this concept in his book about digital literacy. He explained the term in the educational perspective and talked about the urgency and need of imparting knowledge about the internet and its effective use. He argues that with the advent of internet and technology the basic and traditional skills of literacy (reading, writing, listening, speaking) have been surpassed. Hockly&Dudeney (2018) explain the different ways in which digital resources can be effectively integrated into school curriculums. These activities include: "Blended learning" where technology is mixed with the traditional ways, and "flipped learning" in which the in-class activities and homework can be flipped for more effective learning (Hockly&Dudeney, 2018).

Meyers, Erikson and Small (2013) state that digital literacy comprises of three basic elements: technology skills, critical thinking capacities and contextually situated practices. Technology is still in the process of advancement and new things are being introduced with time. People who are able to use, work and create cyberspaces are equipped with digital literacy that will help them to cope with the advancement in technology. Alkalai (2004) talks about the necessary skills that is necessary for digital literacy.

Digital Literacy: a conceptual framework for survival skills in digital era. (Alkalai, 2004):

- Photo-visual Literacy: The cyberspace is not just about words and sentences and this is the reason the traditional skills of reading and writing the language are not sufficient. Photo-visual literacy refers to the knowledge of using graphic user

interfaces successfully. It includes the knowledge of signs, symbols and designs used in cyberspace.

- Reproduction Literacy: Accessibility of data has become easier and as a consequence the originality of data has become difficult to identify. Reproduction literacy refers to the ability to create "meaningful, authentic and creative work or interpretation, by integrating existing independent pieces of information". (pg: 98). This type of literacy makes people capable of avoiding plagiarism problems.
- Branching Literacy: It is also called as 'hypermedia literacy'. It refers to the ability of surfing through the hyperspace with ease and direction and without getting lost. A person with this kind of literacy has good spatial orientation.
- Socio-emotional Literacy: Cyberspace is not all good, pure and honest. False information and psychological traps can be found very often. The maturity of using the cyberspace without falling into the traps is known as socio-emotional literacy. A socio-emotional literate person is capable of working collaboratively to produce and share knowledge by using emotional maturity.
- Information Literacy: Information literacy refers to the knowledge of differentiating between the authentic and non-authentic data. People with information literacy are generally very skeptical towards the quality of data available.

2.2. Overview of Educational Technology

The 21st century is a time of internationalization and it is important to realize the importance and need of learning languages. English teaching has been gaining importance over the years and the pedagogy is becoming more developed. According to Graddol (2000) the number of English students in the world could be doubled in a decade. Undoubtedly, the growth of the Internet has led to the growth of English language. Hence, technology cannot be kept separated from language classrooms.

Warschauer (2000) explained two different ideas on how to integrate technology into the classroom. First, during the course, students have the opportunity to make the best use of their language in a meaningful way and create their own

knowledge. Second, in social interaction, students have the opportunity to have real human relationships to live well. This can be achieved through student collaboration and real-life projects.

A study conducted in Taiwan proposes that technology integration can be attributed to a number of factors. These factors include personal factors (seniority, experience, education) and place dependent factors like accessibility, school level, and location. The study also explains that shortage of time is the biggest challenge teachers' face in technology integration. (Yeh, Chang,& Chang, 2011).It is important that language teachers know the best of modern equipment and have adequate knowledge of what is available in every situation. There are varieties of digital resources which can be used in different ways. Some are useful for experimenting with distance learning and others for teaching business, speaking English, reading, listening or interpreting.

Teaching practices have evolved with technological advances and they are delivering new and valuable innovations. Teachers need to know the importance and pedagogy of integrating technology. Only through adequate knowledge and skills of technology integration can the teachers realize the importance of technology and the positive effects it can have on student learning and engagement.

2.3. Technology in English Language Classrooms

The implementation of new teaching styles has changed the way English education has been carried out as it offers a number of options that makes learning more interesting and successful in the development process (Patel, 2013). In traditional schools, teachers give lectures, details and instructions using blackboard or tablet. These processes need to change with technology development. The media also uses technology to improve language learning allowing students to gather information and provide them with tools to identify and interpret languages and situations (Arifah, 2014). According to Susikaran (2013), changes have also happened within the classroom along with instructional strategies since chalk-discourse strategies are not adequate to in teaching English language.

Raihan and Bolt (2010) expressed that in a well-organized classroom environment student adopt skills to better understand the content and they retain the knowledge gained in such learning environment. Dawson, Cavanaugh, & Ritzhaupt (2008) and Gilakjani (2014) explained that utilizing technology in English language classrooms can make an environment of learning that is focused on the students and not the educator, hence creating a positive change. They emphasized that with technology integration, the language classroom can be modified into a work environment which is full of important practices.

Students can learn a lot by utilizing computers and the Web. As students learn technology, they develop their thinking enormously. It can be concluded that a great combination of digital resources and good pedagogical skills can produce very positive results with regards to English language learning of the students.

2.4. Previous Studies on Benefits of Educational Technology

According to Becker (2000), technology is very important and advantageous in the classes where teachers have good knowledge, are well prepared and have some autonomy in the syllabus. Many teachers regard computer technology as an important part of higher education. Language is one of the most important factors which affect international communication services. Students use various aspects of English, such as listening, speaking, reading and writing, for their certification and communication (Grabe & Stoller, 2002). Ahmadi and Leong (2017) also pointed out that an important factor that affects learning is the method used by teachers in their classrooms to facilitate language learning.

Some studies have been conducted on the advantages of integrating technology, practicing digital resources and learning them. Hennessy et. al (2005) pointed that the use of meditation can help teachers and students to work in a different way. The researchers recognize that as students become more independent, teachers are more likely to support and encourage their students to practice and think critically.

Eaton (2010) noted that communication with computers is a valuable resource for language learning. Computer-aided communication is very much equal to face to face. Zhao (2013) supports the above hypothesis and states that acquiring good content in the target language is important for good language learning. Based on Rodinadze and Zarbazoia (2012), technology helps in the learning of students and teachers. Advancements in technology play an important role and allow students to use what they are learning about any subject to find their place in the world of work. Technology enhances student learning and acts as a real learning tool that enables learning to be conducted in an easy and efficient way.

2.5. Effects of Integrating Digital Resources on Students' Learning, Engagement and Motivation

The integration of digital resources in student learning and student achievement must be the trademark of any scholastic institution. Technology integration makes the quality of instruction better and strongly establishes the good learning (Clemets and Sarama, 2008). Students are positively impacted from the different benefits of educational technology that can improve their learning (Bottge et al., 2010). According to Renzulli et al. (2009), "Technologically skilled students can usually be recognized by the innovative item they deliver, the way they help others with technology, and the technology-related questions they ask." (p. 96).

A group of researchers (Hwang et al., 2014) conducted a study on thirty five elementary school students of the fifth grade to find out the perception of students towards the use of 'computer assisted' activities in English Language Learning and the factors which predict the success in using a mobile English Listening and Speaking system. Six mobile computer-based activities were designed for this research. All the activities had diversity in them. Activities included individual as well as peer-oriented and group-oriented activities. The results showed that students had positive attitude towards the use of system. They found it easy to use and productive. Also, the

achievement and success rate improved, and students were found to be motivated in learning English Listening and Speaking.

Story telling is a successful and famous way of engaging students in learning the language. A group of researchers devised a system of web-based storytelling (Hwang, Huang, Shadiev, & Chen, 2014).This system was used in listening and speaking classrooms to aid the learning process. The research aimed at exploring the effects of using such a system on the post test scores of the participants. Also, it focused on the relationship of speaking performance and that of the visual animation representation in learning. In individual activities, students were given pictures and they were asked to create stories from them. In pair activity, they were shown pictures and were expected to create stories with the help of their partner. It was observed that participants of control group and experimental group performed equally well in the pre-tests which mean they were on the same level before the start of the research. However, in post-tests, students of the experimental group outperformed the students from the control group. These results very clearly indicate that web-based multimedia system provided better learning (Hwang, Shadiev, et al. 2014).

Two researchers (Cole & Griffiths, 2007) conducted a study employing the games of digital tools which largely focused on the socializing aspect of Massively Multiplayer Online Role-playing Gamers. The research used university generated questionnaire method to obtain data online. 912 participants volunteered to take part in the research from 45 countries. The questionnaire comprised of five parts to investigate different aspects of socializing over such platforms. The results showed that social interaction massively increased on such platforms. Friends made by such interactions start to connect through other means of communication as well. Males are more open to meet their online friends in person. The ratio of female is higher with respect to trust in sharing personal issues like family problems and love related matter. This research indicates the relations that are made through online gaming platforms. People from different countries with different ethnic backgrounds and different languages indulge in

conversations in the same language. In this process, conversation helps in the language acquisition. A very diverse set of accents and vocabulary are available to students in such a setting.

Engaging in the familiar features of books and technology can be a great way to improve student performance. Coppola (2004) pointed out a great deal of time is wasted when teachers have no knowledge of how to implement technology in the classroom. The learning and execution of digital resources is successful when the teachers are motivated to implement educational technology (Keengwe, Arome, Anyanwu, and Whittaker, 2006). Continuous advancement is fundamental to expand instructing capacity. (Lei & Zhao, 2007).

2.6. Teacher Perceptions towards Integration of Digital Resources

The importance of technology is being realized by the researchers and academicians all over the world. The governments are revising their educational policies and curriculums. This is putting more pressure on the teachers. Language teachers, in different parts of the world, have different attitudes and perceptions towards the use of digital resources in language classrooms.

When education system struggles with the needs of labor in the 21st century, technology has created considerable disputes in the education system (Bellanca & Brandt, 2010). It is because of advances in technology that teachers are struggling to organize teaching in parts because of the digital learning process (Prensky, 2001). Recent studies have measured difference in teachers' perceptions in their use of technology in classrooms. Teacher strength is seen in the use of technology that is becoming as important as knowledge and skills. The rules of Every Student Succeeds Act (ESSA, 2015) have shown that information and communication technology increase the learning experience of students in the classroom, but teachers are still hesitant to incorporate it into their teaching.

It is essential to consider the perspectives of students and instructors while evaluating the benefits of ICT. Students' impression of ICT has been a significant research theme identified with the utilization of ICT in the academic setting. Beauchamp and Parkinson (2008) led a test in the country regions of Wales and the UK. The examination was directed to decide if students' impression of school science changed as they go ahead from the field of Informational Technology to the littlest financial aspects. Meetings with primary school students gave significant bits of knowledge into students' impression of ICT in the study. The estimation of students finding in the human condition is rich to such an extent that they permit students to do as such. Ideas of instructors' utilization of ICT have been investigated in numerous examinations.

2.7. Technology Integration and Pre-service EFL Teachers

A lot of researchers have conducted researches and emphasized on the need of training teachers and teacher educators in the area of technology for academic purposes. Lotherington and Jenson (2011) talk about the ‘democratization of knowledge’ that has been caused by the advent of technology. They give example of the Wikipedia. It is a platform on which people have the liberty of editing the information that is available to them and then sharing it with other people. They state that the portable digital mediated interactional spaces are easy to use and better. They also state that the teaching spaces which used to be two dimensional (reading and writing) have now become four dimensional. The integration of digital technologies has made the learning environment 3D and their interactive nature has rendered it four dimensional.

ICT has made its way into all the spheres of life and it is here to stay. This is the reason that changes need to be made in the curriculum and teaching practices to accommodate the current and increasing needs. There are four core components of integrating ICT (Krumsvik, 2008). ‘Basic ICT skills’ which refers to the importance of basic knowledge of using digital products. It has become common because of user-

friendly technology products and the use of technology in everyday life. Second,'didactic ICT competence'. It emphasizes on the need of incorporating all the three necessary traits together: subject, pedagogy and digital competence. The third one is 'learning strategies'. It discusses the pedagogical landscape, the necessary skills and strategies needed in the classroom settings. The fourth one is 'digital bildung'. It focuses on the participation of pupils, multi-membership and the development of personality and identity as a result of digital integration. (Krumsvik, 2008).

Krumsvik (2012) in another article about digital competency of teacher educators also talks about the ethical issues regarding the integration of technology into the learning environment. Especially the ethical issues concerned with digital bildung. Using technology in the classroom setting is challenging. It is sometimes difficult for teachers to decide which products are best to be used for better learning of students. Also, implementing these technology items into the classrooms can sometimes be challenging. To use social media positively, some ethical issues have to be kept in mind, like "how TEs' and teacher students' digital lifestyles affect how they communicate with each other as well as with pupils in practicum, how we can use social media positively in teacher education and at the same time be aware of the ethical pitfalls among pupils, and how ethical dilemmas attached to assessment can be tackled before they become a problem for certain pupils." (Krumsvik, 2012, pg. 277).

3. Methodology

This chapter focuses on the methods employed for this research. The first part of this chapter introduces the mixed research design employed for conducting this research. Then, it moves on to the research questions which guided the study and the detailed description of the participants and the setting. The fourth part of the chapter gives detailed description of the instruments used for collecting the data. The fifth section focuses on the procedures used for collection of the data. The last part entails the data analysis procedures and protocols.

3.1. Research Design

This research study aims at finding out the perception and attitudes of pre-service teachers towards the use of technology in English language classrooms and general classrooms. Also, it aims at finding out the pre-service teachers' competences in terms of using the basic technology items in academic settings. The mixed research design was employed to conduct this research. Almalki (2016) has explained that using a mixed research design can have lots of benefits. A mixed design research helps the researcher in gaining in-depth knowledge on the topic by obtaining both 'words and numbers'.

Most of the researchers believe that a mixed research design is the one which combines qualitative and quantitative ways of collecting and analyzing data. However, some researchers also believe that a research design can be classified as a mixed design if it employs a combination of 'qual-qual' techniques or 'quan-quan' techniques (Janice & Linda, 2009). This study contains a 'qualitative-quantitative' mixed research design. The quantitative data was collected through a questionnaire and the qualitative data was obtained by focus group interviews. The questionnaire aimed at finding out the answers of the first four research questions, whereas, the last research question was explored through focus group interview sessions.

3.2. Research Questions

The following research questions were investigated in this study:

1. What is the level of competence of Pakistani pre-service EFL teachers towards the use of digital resources in classrooms?
2. What are the perceptions of pre-service EFL teachers towards the use of digital resources in their future classrooms?
3. Does gender influence attitudes and perceptions of pre-service teachers towards using educational technology?
4. How are perceptions and competence of teachers correlated with their attitudes towards the use of digital resources?
5. What challenges do pre-service teachers face in the integration of digital resources and what are their possible solutions?

3.3. Setting and Participants

The study was conducted at Air University, located in the capital city of Pakistan, Islamabad. The participants of the study comprised of students from sixth and final semesters of bachelor's program, students from Masters' program and some lecturers. All of the participants were from English department. All participants were selected through the procedure of convenience sampling.

For qualitative data, four focus group interviews were conducted. Focus groups can be highly helpful in understanding the issues in detail (Niyumba, Wilson, Derrick, and Mukherjee, 2018).Three to four focus groups are deemed sufficient and appropriate for researches employing one-to-three research questions (Krueger, 1994). First focus group comprised of sixth semester bachelor students. Second and third focus groups comprised of final semester bachelor students. Fourth focus group comprised of students enrolled in 'Masters in English' program. Before the sessions, all the participants were guided about the research. Also, participants were told that they may abstain from

answering any question.Table1 shows the statistics of participants who took part in qualitative study.

Table 1

Information of focus group participants:

Focus Groups	**Participants Level**	**Number of Participants**	**Gender of Participants**
FG-1	6th semester (BA)	6	All male
FG-2	Final semester (BA)	5	All female
FG-3	Final semester (BA)	8	All female
FG-4	Masters	5	3 female 2 male

A total of 62 participants (N=62) took part in the quantitative study. 49 of the participants were females and 13 participants were males. Figure 1 shows the percentages of the participants with respect to their gender.

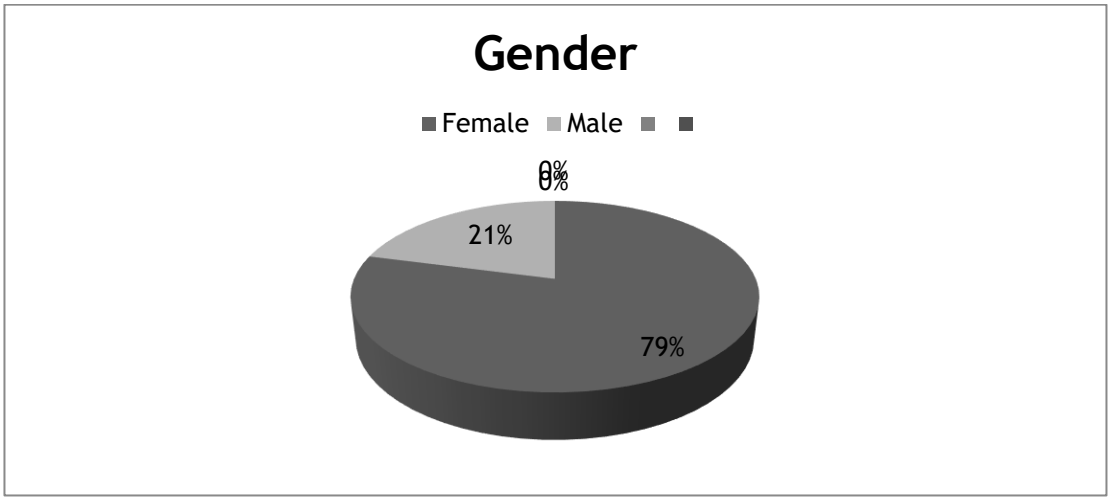

Figure 1. Pie Chart for Showing Gender Statistics of Participants

All the participants were per-service teachers. They were either students of English or they were in their 'teacher training' phase. 48 participants (77.4%) had 0-2 years of teaching experience. 12 participants (19.35%) had a teaching experience between 2-3 years. Only 2 participants (3.2%) had a teaching experience of four years or above (teaching experience mostly refers to internships). The figure 2 shows the distribution of participants with respect to their ages.

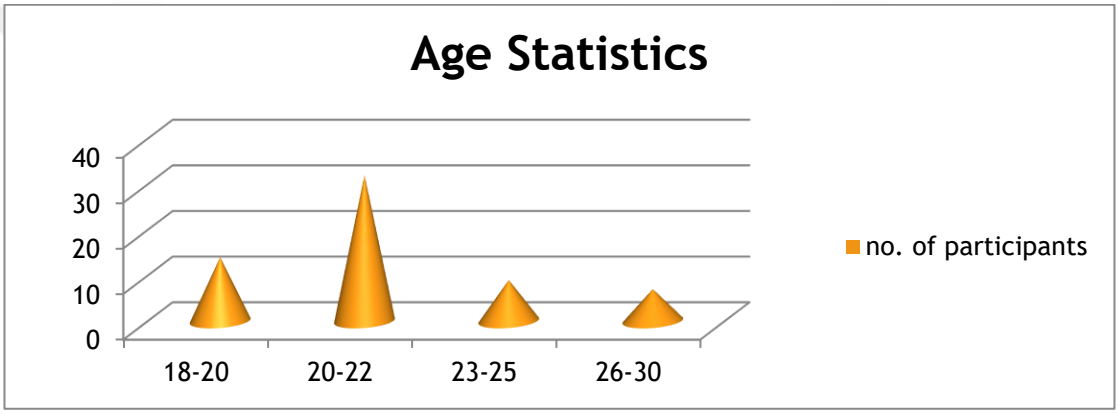

Figure 2. Bar Graph Showing the Age Statistics of Participants.

3.4. Data Collection Instruments

The study was mixed research design. It involved qualitative and quantitative methods of collecting and analyzing data. Two data collection instruments were used for this study: (1) a questionnaire for the collection of data for quantitative part, (2) semi-structured interview sessions with focus groups for qualitative part.

3.4.1. **Questionnaire**

Keeping in mind the purpose of the study and the research questions, the already piloted and tested questionnaire developed by Albirini (2006) was used for this study (see Appendix A). Albirini developed this questionnaire after careful and extensive study of literature and scales that are used in various educational contexts. For content and face validity, a panel of experts (three content experts, two bilingual experts, one

measurement expert, and four population experts) evaluated this questionnaire. The questionnaire was then tested for reliability by calculating the Cronbach's α coefficient. For the first four scales the Cronbach's α reliability coefficients were as follows: computer attitude = 0.90, computer attributes = 0.86, cultural perceptions = 0.76, and computer competence = 0.94. These results clearly indicate that the developed scale is reliable and consistent.

The questionnaire comprised of six sections. There was a total of 72 items which were divided into five sections. A 5-point-Likert-type scale was used in the first 3 scales. "Perhaps the greatest advantage of Likert scaling is the simplicity and practicality" (Waples, Weyhrauch, Connell, & Culbertson, 2010, p. 479). The first section of the questionnaire comprised of 20 Likert-type statements. All these statements were dealing with the participants attitudes towards technology in education. These items were designed to measure the following domains:

- Computer attitudes (items 1-6)
- Cognitive domain (items 7-15)
- Behavioral domain (items 15-20)

In the second section of the questionnaire, participants were asked to respond to 18 Likert-type statements dealing with computer attributes. The following domains were measured by this section:

- Relative advantage of computers (items 1-5)
- Computer compatibility with their teaching practices (items 6-10)
- Simplicity/ non-complexity (items 11-14)
- Observability (items 15-18)

Section three of the questionnaire contained 16 Likert-type statements. All were designed in a way to measure the cultural perceptions of participants.

The fourth section of the questionnaire was designed to measure the computer competence of the participants. It was a 15-item scale. The responses were measured on a 4-point scale with 1 (no competence) to 4 (much competence). Gliem & Gliem (2003) stated that the use of multi-item scale is more reliable and trustworthy as compared to other single item scales. The fifth section of the questionnaire aimed at finding out the access of computer to participants at three places: home, school, and other places. The responses were represented on a 5-point scale with 1 (never) to 5 (daily).

The last section of the questionnaire contains the demographic information of the participants. The section had eight independent items. Five out of the eight items (gender, age, years of experience, school type, and workshops or seminars attended) were used in this research. Item 3 (monthly average household income) and item 8 (teaching method) were not found relevant to the context of the current study. Hence, they were excluded from the questionnaire.

3.4.2. **Focus group interviews**

Focus group interviews were also conducted in addition to the survey to gain in-depth insight into the topic. The focus group interviews were introduced by Merton in 1940s.Focus groups are a way in which individuals interact with each other and with the moderator to generate data for qualitative data analysis (Merton et. al., 1956).

The focus group interviews were semi-structured. They were designed in a way to obtain data about three main categories. The first category was ‘classroom environment’. The aim was to gather data about the participants’ teaching settings, their students, classroom environment, and their teaching style. The second set of questions aimed at investigating their perceptions about the use of educational technology in their language classrooms. The last set of questions was designed in a way to gather information about the problems that the participants face in the process of technology integration in classroom settings and the possible solutions to them. (Appendix B).

Focus groups can be very helpful in gaining in-depth knowledge about the research questions if the group dynamics are well-understood. The understanding of group dynamics can help the researcher in smoothly running the group discussion and then for effective data analysis (Catterall & Maclaran, 1997).

3.5. Data Collection Procedures

The participants of the research were from the English department of Air University, Islamabad, Pakistan. To ensure the credibility of the data, triangulation technique was used. Triangulation involves a mix of data collection tools for example observation, open-ended questions, and closed ended questions (Shenton, 2004). Observation, questionnaire, and focus groups were used for this study.

A research proposal with a request of conducting research was sent to the university administration. The request was examined in terms of the purpose, context, significance and method that were to be administered. Permission to conduct the research was granted by the Dean of Humanities Department and the Head of English Department (see Appendix C). On receiving permission, the researcher collected the data in February 2020.

3.5.1. **Questionnaire**

The questionnaires were given to a teacher of Air University to be distributed among the pre-service teachers, students of MA and senior students of BA (hons). A consent form (see Appendix D) was attached with each questionnaire which contained information about the research study and the contact information of the researcher. A total of 75 questionnaires were distributed. 68 participants filled and returned the questionnaires. The response rate (90%) was high; no need of distributing more questionnaires was felt necessary. Out of the 68 responses, 62 fulfilled the requirements and were used in the study.

3.5.2. **Focus groups**

Four focus group interviews were held in the month of February. The researcher acted as the moderator. All the group interviews were videotaped for data analysis. The participants were selected through random sampling. They were given information about the subject and design of the study. There were 5 participants in the first (final semester BA) and fourth (MA) focus groups, 6 participants in second focus group (6th semester BA), and 8 participants in third focus group (final semester BA). All the participants signed the voluntary participation form (see Appendix E). The size of the groups was kept medium. Focus groups with members ranging from six to eight are considered suitable as they show more potential (Krueger & Casey, 2000).

3.6. Data Analysis

The data obtained by this research design was of two types: quantitative and qualitative. Both these forms were analyzed by their own specialized data analysis methods.

Table 2

Research Tools and Analysis for Research Questions:

Research Question	**Data Collection Tool**	**Analysis**
What is the level of competence of Pakistani pre-service teachers towards digital resources?	Questionnaire	Means and standard deviations
What are the perceptions of pre-service EFL teachers towards use of digital resources?	Questionnaire	Means and standard deviations

Does gender influence attitudes and perceptions of pre-service teachers towards using educational technology?	Questionnaire	t-tests
How are teachers' perceptions, competence and attitudes correlated?	Questionnaire	Correlation and regression analysis
What challenges do pre-service teachers face in technology integration and what are possible solutions?	Focus group interviews	Thematic analysis

3.6.1. **Analysis of questionnaire**

The data collected through the questionnaire was entered into the Statistical Package for Social Sciences (SPSS 25.0). Tests were conducted on this statistical package for descriptive and inferential statistics. The results of the research questions were justified through these statistics.

3.6.2. **Analysis of focus group interviews**

Focus group interviews are widely used as a method of collecting data for qualitative research. Focus group discussions and interviews provide in-depth data. Also, since these discussions are mostly casual, participants don't hesitate in responding. However, the analysis of the data obtained by this method can be challenging (Rabiee, 2004).

A lot of approaches and methods have been laid out by researchers about the procedure of analyzing data obtained by focus groups. These methods include thematic analysis, conversation and membership categorization analysis, CAQDAS approaches, and narrative analysis (Gilbert & Stoneman, 2016). Thematic Analysis was employed for this study.

Data analysis procedure employed by the researcher for this research was thematic analysis. The thematic analysis used was semantic and descriptive in nature. "Critical realist/ contextualist" approach of thematic analysis was used for this study. Critical realist or contextualist approach is the one which says, "Reality is 'out there' but access to it is always mediated by socio-cultural meanings" (Smith, p. 224). The researcher adopted the six phases of thematic analysis developed by Braun &Clarke (2006).

To get familiarized with the data, the researcher listened to the audio and video recordings again and again. Also, the transcripts were read and re-read. This helped to gain in-depth meaning of the conversations. The researcher recognized the patterns and categorized them into codes in accordance with the research question. After the coding process, the established labels were viewed with great precision to find some themes.

After the construction of initial themes, they were studied again to find more similar fragments and matching sequences that can be utilized in comprehensive theme construction. Suitable names were given to the constructed themes and this interpreted data was reported in the results section.

Trustworthiness: It is important to add trustworthiness in the qualitative data. To ensure that the present study is credible and trustworthy, Guba's constructs of trustworthiness were keenly followed in this study. It has four categories: credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1981).

The study employed a very well researched and well-constructed data collection method through focus groups. Previous studies were carefully studied to ensure smooth research and quality work synthesis. Early familiarity with the university was established by staying in contact with some of the employees and frequent university visits. Random sampling also helped in making the data credible. Consent was taken from all participants (see Appendix E) and they were free to abstain from answering any question.

4. Results

This chapter focuses on the results obtained from the collected data. The data for this study was collected by a mixed research design: Quantitative (questionnaire) and Qualitative (focus groups). The quantitative data was analyzed statistically by using SPSS 25.0. The focus groups data was analyzed by thematic analysis which was semantic and descriptive in nature. The steps laid down by Braun and Clark (2006) were followed to obtain the results.

4.1. What is the Level of Competence of pre-service EFL Teachers in using Digital Resources in Classrooms?

The competence of pre-service EFL teachers was obtained through 15 Likert-scale items. The participants responded to the statements that inquired their perceived competence towards different digital resources. Descriptive statistics were used to obtain results from the collected data. Frequencies, percentages, and mean scores were calculated for the interpretation of the data.

The total mean score of M= 2.948 was calculated by the participants' responses to the educational technology competence scale. This mean score reveals that the participants consider themselves moderately competent in the use of digital resources in classroom environment.

The results indicate that a large number of participants (n=40) believe that they are much competent in using internet and applications for the purpose of communication (emails, chats). Furthermore, the mean scores (M = 3.48) indicate that participants are considerably competent in using keyboard for educational purposes. Most of the participants also showed high level of competence in the use of Microsoft Programs like MS PowerPoint (n= 36) and MS word (n =34). The mean scores indicate that the participants have low level of competence in using database programs (M = 2.35) and graphic programs (M = 2.32)

4.2. What are the Perceptions of pre-service EFL Teachers towards use of Digital Resources in Classrooms?

4.2.1. **Teachers' perceptions:**

The participants were required to respond to 18 Likert-scale items in order to calculate their perception of using digital resources in language classrooms. Their perception was calculated in the areas of their perceived advantages of computers, the compatibility of computers with teaching, simplicity and observability. An overall mean score of M =3.78 (SD=0.51) was obtained. This shows that pre-service teachers have moderately positive perception towards using computers in language classrooms.

The participants showed positive attitudes and agreed that computers have advantages (M=3.8). Most participants (n=47, 75.8%) agreed that computers can improve education. Participants (n=46, 74.1%) also agreed that computers are useful for language learning. The participants reported moderate compatibility of computers with teaching (M=3.6). A mean score of 3.7 was calculated for computer simplicity.

A mean score of M= 4.01 was recorded for Observability. This mean score shows that the participants considerably positive perceptions about technology integration.

4.2.2. **Teachers' attitudes:**

The attitudes of pre-service EFL teachers towards the use of digital resources for educational purposes was calculated by the data obtained from 20 Likert-scale items which were further divided into computer attitudes, cognitive domain and behavioral domain. The overall mean score calculated from the participants' responses was M = 3.65 (SD=0.48), which is a little above the average. This indicates that the participants' have moderately positive attitudes towards using technology for educational purposes.

A mean score of M= 3.59 (SD=0.55) was obtained on the computer attitude subscale. A large number of participants (n= 46) said that using computers is enjoyable. Participants (n= 38) also expressed that they feel comfortable in using computers.

A mean score of *M* = 3.75 (*SD*=0.49) was obtained for cognitive domain. Most of the participants (*n*= 52) agreed that the use of computers can save time and effort. However, many participants (n=22) gave neutral response when asked about the increased motivation of students with the integration of computers.

A mean score of 3.57 (SD=0.72) was obtained for the behavioral domain. A large number of participants (n=48, 77.5%) expressed that they are likely to use computers in the near future.

4.3. Does Gender Influence Attitudes and Perceptions of pre-service Teachers towards Technology Integration?

Independent sample t-tests were conducted in order to know if there exists any difference in the attitude and perceptions of pre-service teachers towards the use of educational technology with respect to gender. There was a large number difference between male (n=14) and female (n=48) participants. Welch's test is used because the group sizes are considerably different. Lakens (2015) suggests that Welch's t-test is better than student t-test even with equal group sizes. Welch's test (t-test with 'equal variances not assumed') was conducted. Table 3 shows the results.

Table: 3

Means differences of gender on teacher attitudes, computer attributes, cultural perceptions, computer competence & computer access (N=62)

	Male (n=14)		Female (n=48)				95%CI		
Variables	M	SD	M	SD	*t*(62)	*P*	LL	UL	Cohen's d
Teachers Attitudes Questionnaire									
All questionnaire items	3.74	.51	3.63	.48	.69	.49	-.22	.43	.22

Computer Attitudes	3.66	.65	3.56	.52	.51	.62	-.30	.49	.17
Cognitive Domain	3.91	.43	3.70	.50	1.50	.15	-.08	.49	.45
Behavioral Domain	3.52	.85	3.58	.68	-.24	.82	-.58	.46	.08
Computer Attributes Questionnaire									
All questionnaire items	3.74	.45	3.79	.52	-.36	.77	-.34	.25	.10
Advantages of Computer	4.01	.62	3.77	.57	1.30	.21	-.15	.63	.40
Computer Compatibility with teaching	3.54	.58	3.63	.54	-.53	.61	-.46	.28	.16
Simplicity	3.39	.70	3.79	.74	-1.86	.08	-.85	.05	.56
Observability	4.01	.58	4.01	.71	.04	.97	-.38	.39	.64
Cultural Perceptions Questionnaire									
Cultural perceptions	3.08	.37	3.17	.38	-.76	.45	-.33	.15	.24
Computer Competence Questionnaire									
Computer Competence	2.78	.74	2.99	.52	-1.01	.33	-.67	.23	.33
Computer Accessibility Questionnaire									
Access to computers	2.26	1.0	2.58	.90	-1.01	.32	-.98	.34	.34

The table shows the results of Welch's t-tests. A *p* value which is greater than 0.05 is considered insignificant. In this survey, *p* values for all the scales and subscales is greater than 0.05 ($p > 0.05$) and hence, insignificant. This implies that gender does not affect the attitudes and perceptions of pre-service teachers towards the use of digital resources in classrooms.

4.4. How are Teachers Perceptions and their Competence Level Correlated with Teachers Attitudes towards Technology Integration?

4.4.1. **Correlation**

Schober, Boer, and Schwarte (2018) explain that in correlated data, the change in one variable often leads to change in the other variable. This change can be positive or negative. Correlation analysis is used to measure the association between study variables. Correlation analysis has been used in this study to see if there exists any relationship between Teacher's Attitude Scale, Computer Attributes Scale and Computer Competence Scale.

Table 4

Correlation matrix between Teachers' Attitude, Computer attitudes subscale, Cognitive domain subscale, Behavioral domain subscale, Computer attributes Scale, Relative advantages subscale, computer compatibility subscale, simplicity subscale, Observability subscale, computer competence scale(N=62)

	Teach.A	Com.A	CD	BD	Com.Att	RA	CC	Simp	Obs.	Comp.C
Teach.A	-	.78**	.91**	.87**	.75**	.69**	.67**	.58**	.47**	.32**
Com.A		-	.56**	.50**	.43**	.39**	.29*	.37**	.33**	.25
CD			-	.72**	.75**	.75**	.69**	.53**	.43**	.31*
BD				-	.72**	.59**	.69**	.57**	.44**	.26*
Com.Att					-	.82	.86	.80	.73	.37
RA						-	.67	.51	.45	.19
CC							-	.60	.49	.31

Simp	-	.44	.39
Obs.		-	.28
Comp.C			-

Note. Teach.A= Teachers attitudes, Com.A= computer attitudes, CD= cognitive domain, BD= behavioral domain, Com.Att= computer attributes, RA= relative advantages of computers, CC= computer compatibility with teaching, Simp= simplicity, Obs= Observability, Comp.C= computer competence.

**p <.01; *p < .05

Table 4 shows inter-scale correlation of Teacher's Attitude Scale, Computer Attributes (perceptions) Scale and Computer Competence. Teacher's Attitude Scale and its sub scales have significant positive correlation with Computer Attributes Scale and its sub scales and Computer Competence Scale.

4.4.2. **Regression analysis:**

Regression Analysis aims to predict and explain the relationship of two or more variables. Regression analysis measures the affect of independent variables on the dependent variable (Foley, 2019). Multiple Regression Analysis was conducted in this study to predict the effect of perceptions (computer attributes) and competence (computer competence) on Teachers' Attitudes towards using digital resources in classrooms. Table 5 shows the results.

Table5

Multiple Regression Analysis of Computer Attributes and Computer Competence on Teachers' Attitudes (N=62)

Variables	*T*	B	β	*F*	adj. R^2
Constant	2.65^{**}	.87		38.75^{***}	.55
Computer Attributes	7.96^{***}	.70	.73		
Computer competence	.58	.05	.05		

*Note. The dependent variable for regression is teachers' attitudes ***p< .001;**p < .01*

Table 5 shows a multiple linear regression was calculated to predict teachers' attitudes based on computer attributes and computer competence. A significant regression equation was found $F(2, 59) = 38.75$, $p < .001$ with an adjusted R^2 of .55.The value of R^2 shows that 55% statistically significant variance in teachers' attitudes is explained by computer attributes and computer competence. Change in teachers' attitude is 70 % due to computer attributes and 4.5 % due to computer competence. Computer Attributes (perceptions) were seen to significantly predict teachers' attitudes.

4.5. What Challenges do pre-service Teachers face in the Integration of Digital Resources and what are their Possible Solutions?

The focus group interviews were analyzed using thematic analysis. To ensure trustworthiness, the researcher did a thorough reading of the similar researches. Observation and multiple sessions were conducted to ensure 'triangulation' of data. Frequent visits to university were made to get better acquainted with the atmosphere. Consent was taken from all participants prior to the sessions. The transcripts and results were also shared with a fellow colleague for feedback. Following themes emerged from the data:

4.5.1. **Obstacles:**

The participants were asked about the difficulties that they encounter in the use of technology and in the integration of digital resources into academics. They were also asked about the challenges that they have to face with regards to the 'unaware administrative staff' which ignores the importance of technology integration. The participants explained that they have to face certain hurdles in the integration of digital resources. Obstacles of two primary natures were observed which are explained under.

Accessibility: The participants expressed that the digital resources are not always readily accessible. They expressed that although the administration realizes the importance of availability of digital resources, they still do not have sufficient equipment. A student expressed:

"Equipment is not sufficient. Not readily available either." (FG-1)

Participants also expressed that sometimes useful data is not accessible. They said that university has blocked certain websites and applications on university internet.

"University has banned some websites. They should remove the ban." (FG-2)
"May be we have access. I don't know. No one told me... and I never asked." (FG-3)

Participants said that university has given access to reach some sites and journals, but they are not enough. Some participants said that they are not aware of the journals and websites that their university has given them access to because no one gives them this information.

Technical Issues: The participants also expressed that they have to face technical issues sometimes. Some quotations about this issue:

"Sometimes projectors don't work or stop working suddenly." (FG-1)

"I lost my flash data once due to electricity fluctuation. Something went wrong with my USB." (FG-4)

The power-cutouts are very common in Pakistan and the generators sometimes take a few moments to start. This can interrupt their proceedings. Also, technical issues are unforeseen and sudden.

Lack of Knowledge and Skills: The participants expressed deep and disturbing concern about the lack of knowledge and skills of people to cope with technological advances in academics. Some quotations from the participants are as follows:

"It is difficult for parents to assist their children in homework's because they are not familiar and easy with technology. Parents don't encourage such activities." (FG-1)

"Students don't like listening to boring stuff. It is a challenge to use technology and to also make it interesting." (FG-4)

They expressed that it is a challenge to successfully integrate technology in classrooms. Sometimes teachers integrate digital resources but fail to deliver the content effectively. Also, some of the participants who had experience with junior students expressed that it is not suitable to give any technology related homework to the children because the parents complain.

Training Programs: Participants were asked if they have attended professional development activities or teacher training programs. The initial response was not very positive. However, on a description of the various activities that can classify as Professional development activities by the researcher, the participants started sharing their Professional Development experiences. Most of the participants had been a part of some training activity however, none of the participants attended any workshop or training addressing the use of digital resources in academic settings. However, the participants expressed that they believe such trainings should be made mandatory.

"We need plenty-plenty-plenty of workshops. The world is increasingly advancing, and we are way behind. I went to China for a conference and no one had

any pen or notebook. They were completely relying on smart phones and tablets. I felt like an outcast there." (FG-3)

The participants also expressed that in their circumstances it is not just important to give training to teachers but also to parents and students. They expressed that it is a need of the time and as a community they should start to accept it and learn it. Some quotations from the participants were as follows:

"We need to train students on the use of technology otherwise they can get into really messy things." (FG-1)

"Workshops are must not only for teachers but also students and their parents." (FG-2)

Some participants also said that training programs should be of the nature that they make people 'embrace technology' rather than just imparting them technology skills.

4.5.2. **Suggestions for effective technology integration:**

The participants were asked about their opinions on how the technology integration could be made more effective and useful. They were also asked what they would have done if they were on administrative posts. The participants highlighted things that should be done on government level, institute level and individual levels.

Government Level: The participant's satisfaction with the government in the field of technology integration was very low. They expressed that government should take sensible and effective steps for successful technology integration and effective curriculum design.The participants said that digital resources must be made part of the school life and curriculum so that the students can learn it and become easy with it from a young age. They also expressed that free 'skill imparting' courses, like graphic designing, content writing etc, should also be made available online.

"I studied the same curriculum as my father. They should update the curriculum first and then introduce technology." (FG-2)

One of the participants expressed that the government in the province of 'Sindh' does not update curriculum at all. They should revise the curriculum.

Institute Level: The participants expressed that the institutes, especially the private institutes, should take the responsibility of upgrading their systems in accordance with the modern educational needs.

"Lectures should be recorded and made available for later. My cousin is in US and over there they record lessons, so the absent students don't miss out." (FG-3)

They expressed that the institutions should arrange trainings and workshops and at the same time they should have sufficient amount of digital recourses. They expressed that they should be given access to reach credible data on internet and the lectures at university level should be recorded and made accessible.

Individual Level: The participants expressed that no change can be effective and successful unless the involved people take their responsibility. They said that administrators, teachers, parents and students should strive in their personal capacities to embrace, learn and implement technology. They also expressed that tutorial videos and courses like the ones available on YouTube can prove very successful for people who want to learn on their own.

5. Discussion and Conclusion

This chapter entails the discussions and conclusion on findings of this study in the light of the relevant literature. The discussion contains synthesis of the results obtained and analyzed by, both, quantitative (questionnaire) and qualitative (focus group interviews) data.

5.1. Overview

This study employed both quantitative and qualitative methods for the collection of data. The quantitative data was collected from the questionnaire developed by Albirini (2006) to measure teachers' attitudes, perceptions and competence with regards to the use of technology in classroom settings and amount of technology accessibility. The qualitative data was obtained with the help of multiple focus groups.

The research aimed at finding out the attitudes of pre-service EFL teachers towards the use of digital resources in classroom settings. The perceptions of pre-service EFL teachers were also investigated in three areas: relative advantages of computers, computer compatibility with teaching, computer simplicity, and Observability. The level of competence of the teachers was also investigated. Furthermore, the study tried to determine the role of perception and competence on the attitudes of teachers towards incorporating digital resources for educational purposes.

5.2. Competence of pre-service EFL Teachers in using Digital Resources for Educational Purposes:

A part of the questionnaire inquired about the level of competence of the participants with the help of 15- Likert scale items. A mean score of $M = 2.95$ on this scale indicates that the participants consider themselves moderately competent in the use of digital resources for educational purposes. The participants were reported to be most competent in using technology for communication purposes like email, chats etc. They were least competence towards the digital resources like database programs (M=2.35) and graphic programs (M=2.32). From the focus group sessions, it was noted that

participants have used digital resources in language learning classes. “Duo-linguo” and “Google translator” were the most frequently used.

The competence of the pre-service teachers was not reported to be low. One explanation for it could be that all the participants were pre-service EFL teachers with ages ranging between 20-30 years. Akin (2015) argues that younger people show more interest in technology. As a result of this intrinsic motivation, they are better at learning technology. Similar pattern has also been recognized in the current study. The participants are pre-service (young) teachers and their competence is moderately high.

It was concluded from the focus group interview sessions that most of the participants have used computers since their childhood; however, most of them did not use computers efficiently for educational purposes. It was also noted that the participants expressed that they would largely benefit from workshops and Professional Development programs with regards to technology integration. A participant used the words, “We need plenty-plenty-plenty of workshops” while explaining the need of guidance needed for successful technology integration. Baran, Bilici, Sari, and Tondeur (2017) have examined the effects and perceptions of Turkish teachers towards teacher training programs on technology pedagogy. The results of their study show that teacher’s teaching strategies are positively affected by pre-service teacher training on technology pedagogy.

Cuban (2001) states that schools and colleges frequently purchase computers for use in the academic settings however, technology does not seem to be successfully integrated into the academic settings. He proposes two basic reasons for this. First, teachers lack the sufficient pedagogical knowledge about the integration of technology in classroom settings. Second, the institutions do not actively facilitate the teachers in the process of technology integration. The results of the study (under discussion) show similar situations with regards to integration of technology. Institutions need to train and equip teachers with the knowledge and skills for successful technology integration.

The attitudes of pre-service EFL teachers were measured by 20 Likert-scale items which were divided into three subscales: Computer attitudes (*M*= 3.59), Cognitive domain (*M*= 3.75), and Behavioral domain (*M*= 3.57). The analysis showed that the attitudes of pre-service teachers were moderately positive and not very high with respect to the integration of technology. In the focus groups discussions, the participants showed a positive attitude towards the use of technology in language learning. They seemed happy about the easy accessibility of knowledge because of the advances in technology. The results also show that the participants want to use technology efficiently in their classrooms in the future.

It was observed from the results that the attitudes of teachers towards use of technology can be affected by the attitudes of administration. Shattuck (2009) has conducted a study in which he states that the efforts of 'early adopters' of educational technology are not enough to bring radical changes. The role of 'school-leaders' is very important in the process of successful technology integration. This study aligns with the results of the study under discussion. Active participation on the part of the administration may improve the attitudes of teachers. Hughes (2005) also explains that pre-service teachers need collaborative activities and guided-help with respect to the integration of technology in language classrooms. Such help can only be provided to the pre-service teachers when the administration realizes the importance of technology pedagogy.

5.3. Perceptions of EFL Teachers towards the use of Digital Resources

The perceptions of pre-service EFL teachers towards the use of digital resources were measured by computer attributes scale with 18 Likert-scale items. The mean score (*M* = 3.78) indicated that the participants had positive perceptions. A mean score of *M* = 4.01 on Observability subscale show that participants have seen and used computers in the academic settings of Pakistan. The importance of technology integration was realized by the participants and they expressed that digital resources can have many positive impacts on student learning and engagement if the integration is done

efficiently. Hwang et al. (2014) has also proved that technology related activities (online platforms) can have positive effects on students' learning. It was also noted that most of participants had positive attitudes about the student's involvement in digital resources for educational purposes. Increase in student engagement and learning was also highlighted in a study by Cole & Griffiths (2007).

5.4. Relation between Teachers' Attitudes, Perceptions and Competence

Teo (2011) stated in a paper that 'perceived usefulness' of digital resources can lead to motivate teachers for the integration of ICT in educational settings. Similar relationship can also be observed in the study under discussion. Multiple regression analysis was used to determine the impact of teacher's perceptions and competence on their attitudes towards the use of technology in classrooms. It was observed that both, perceptions and competence, have effect on teacher's attitudes. However, perception has more effect on teachers' attitudes.

Taimalu and Luik (2019) found out that pedagogical knowledge of technology (technology competence) can directly affect technology integration. They also stated that teacher beliefs indirectly affect teacher attitudes towards technology integration. This study is similar to the study under discussion as it shows that competence and perception of teachers influence their attitudes towards integrating technology. Kim, Kim, Lee, Spector, and Demeester (2013) have also proved that teacher belief about technology integration plays a significant role in determining the effectiveness of technology integration in their classroom activities.

In addition, it was also noted that some of the primary hurdles faced by the EFL teachers in technology integration include lack of sufficient digital resources, technical issues in the computers and lack of training programs. The participants suggested that the integration of technology can be improved if the administration and government realize the importance of technology integration and makes conscious efforts to revise the education system.

5.5. Conclusion

The study focused on exploring the attitudes, perceptions and level of competence of Pakistani pre-service EFL teachers towards the use of digital resources in general classrooms and language classrooms. Mixed research method was employed to conduct this research. The quantitative data was collected from the scale developed by Albirini (2006). Quantitative results were analyzed by SPSS 25.0. Qualitative data was collected by focus group interview sessions. The focus group interviews were analyzed by thematic analysis steps laid down by Braun and Clarke (2006).

The results of the study showed that pre-service teachers at Air University, Islamabad have moderately high level of competence towards the digital resources used for educational purposes. The participants also showed moderately high attitudes and perceptions towards the use of technology in language classrooms. It has been observed that teacher beliefs and their knowledge of technology affects technology integration in their classrooms (Taimalu and Luik, 2019), and, in this study similar results can be seen. The results indicate that perceptions of teachers towards digital resources strongly affect their attitudes towards technology integration.

The study highlighted that participants consider teacher training and professional development necessary for successful technology integration. Similar results have also been observed by other researchers (Hughes, 2005). The study also indicated that the prime obstacles faced by the participants in technology integration were of individual and technical in nature. Also, insufficient knowledge of computers for educational purposes causes hindrance.

5.5.1. **Limitations**

There were some limitations in this study which need to be addressed. Firstly, all the participants of this study were from one university. More universities, public and private, can be used to get more in-depth knowledge. This study only focused on the university settings, similar researchers can be conducted on school and college levels. Only pre-service teachers were focused in this study. This kind of study can also be used

to gain information about the technology attitudes, perceptions and confidence of more experienced teachers.

5.5.2. **Future studies**

Future studies can focus on collecting data from a large number of public and private universities. This kind of research studies must also be done on primary and secondary levels of education. Future researchers can also focus on collecting data from the administrative bodies of the academic institutions to get to know their attitudes, perceptions and competence towards the integration of educational technology. Studies should also be conducted to gather in-depth information about the challenges faced by the teachers in integration of digital resources in the Pakistani education system.

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Appendix A

Section (1): Instructions: Please indicate your reaction to each of the following statements:

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Computers do not scare me at all	1	2	3	4	5
2	Computers make me feel uncomfortable	1	2	3	4	5
3	I am glad there are more computers these days	1	2	3	4	5
4	I do not like talking with others about computers	1	2	3	4	5
5	Using computers is enjoyable	1	2	3	4	5
6	I dislike using computers in teaching	1	2	3	4	5
7	Computers save time and effort	1	2	3	4	5
8	Schools would be a better place without computers	1	2	3	4	5
9	Students must use computers in all subject matters	1	2	3	4	5
10	Learning about computers is a waste of time	1	2	3	4	5
11	Computers would motivate students to do more study	1	2	3	4	5

12	Computers are a fast and efficient means of getting information	1	2	3	4	5
13	I do not think I would ever need a computer in my classroom	1	2	3	4	5
14	Computers can enhance students learning	1	2	3	4	5
15	Computers do more harm than good	1	2	3	4	5
16	I would rather do things by hand than with a computer	1	2	3	4	5
17	If I had the money, I would buy a computer	1	2	3	4	5
18	I would avoid computers as much as possible	1	2	3	4	5
19	I would like to learn more about computers	1	2	3	4	5
20	I have no intention to use computers in the near future	1	2	3	4	5

Section (2) Instructions: Please indicate your reaction to each of the following statements by circling the number that represents your level of agreement or disagreement with it. Make sure to respond to every statement

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Computers will improve education	1	2	3	4	5
2	Teaching with computers offers real advantages over traditional methods of instruction	1	2	3	4	5
3	Computer technology cannot improve the quality of students learning	1	2	3	4	5
4	Using computer technology in the classroom would make the subject matter more interesting	1	2	3	4	5
5	Computers are not useful for language learning	1	2	3	4	5
6	Computers have no place in schools	1	2	3	4	5
7	Computer use fits well into my curriculum goals	1	2	3	4	5
8	Class time is too limited for computer use	1	2	3	4	5
9	Computer use suits my students learning preferences and their level of computer knowledge	1	2	3	4	5
10	Computer use is appropriate for many language learning	1	2	3	4	5

	activities					
11	It would be hard for me to learn to use the computer in teaching	1	2	3	4	5
12	I have no difficulty in understanding the basic functions of computers	1	2	3	4	5
13	Computers complicate my task in the classroom	1	2	3	4	5
14	Everyone can easily learn to operate a computer	1	2	3	4	5
15	I have never seen computers at work	1	2	3	4	5
16	Computers have proved to be effective learning tools worldwide	1	2	3	4	5
17	I have never seen computers being used as an educational tool	1	2	3	4	5
18	I have seen some Pakistani teachers use computers for educational purposes	1	2	3	4	5

Section (3) Instructions: Please indicate your reaction to each of the following statements by circling the number that represents your level of agreement or disagreement with it. Make sure to respond to every statement

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Computers will not make any difference in our classrooms, schools or lives	1	2	3	4	5
2	Students need to know how to use computers for their future jobs	1	2	3	4	5
3	Students prefer learning from teachers to learning from computers	1	2	3	4	5
4	Knowing about computers earns one the respect of others	1	2	3	4	5
5	We need computers that suit better the Pakistani culture and identity	1	2	3	4	5
6	Computers will improve our standard of living	1	2	3	4	5
7	Using computers would not hinder Pakistani generations from learning their traditions	1	2	3	4	5
8	Computers are proliferating too fast	1	2	3	4	5
9	People who are skilled in computers have privileges not	1	2	3	4	5

	available to others					
10	Computers will increase our dependence on foreign countries	1	2	3	4	5
11	There are other social issues that need to be addressed before implementing computers in education	1	2	3	4	5
12	The increased proliferation of computers will make our lives easier	1	2	3	4	5
13	Computers dehumanize society	1	2	3	4	5
14	Working with computers does not diminish people relationships with one other	1	2	3	4	5
15	Computers encourage unethical practices	1	2	3	4	5
16	Computers should be a priority in education	1	2	3	4	5

Section (4) Instructions: Please indicate your current computer competence level (i.e., both your knowledge of and your skill in using computers) regarding each of the following statements. Make sure to respond to every statement

		No competence	Little competence	Moderate competence	Much competence

1	Install new software on a computer	1	2	3	4
2	Use a printer	1	2	3	4
3	Use a computer keyboard	1	2	3	4
4	Operate a word processing program (e.g., Word)	1	2	3	4
5	Operate a presentation program (e.g., PowerPoint)	1	2	3	4
6	Operate a spreadsheet program (e.g., Excel)	1	2	3	4
7	Operate a database program (e.g., Access)	1	2	3	4
8	Use the Internet for communication (e.g., email & chatroom)	1	2	3	4

9	Use the World Wide Web to access different types of information	1	2	3	4
10	Solve simple problems in operating computers	1	2	3	4
11	Operate a graphics program (e.g., Photoshop)	1	2	3	4
12	Use computers for grade keeping	1	2	3	4
13	Select and evaluate educational software	1	2	3	4
14	Create and organize computer files and folders	1	2	3	4
15	Remove computer viruses	1	2	3	4

Section (5) Instructions: Please identify how often you have computer access in the following contexts:

		Daily	2 or 3 times a week	Once a week	Once a month	Never
1	In your home	1	2	3	4	5
2	At school (computer lab or library)	1	2	3	4	5
3	Other (like Internet cafes, etc.)	1	2	3	4	5

Section (6) Instructions: Please indicate your response to the following questions by checking the appropriate boxes:

1. What is your gender? ☐ Male ☐ Female
2. What is your age? ☐ 18-20☐20-22☐23-25☐26-30
3. Including the current year, how many years have you been teaching? ☐0-2 ☐2-3 ☐4 or above
4. In what type of school do you teach? ☐Urban ☐Suburban ☐Rural
5. Have you ever attended any training course, workshop, or seminar on using computers? ☐No ☐Yes.

Appendix B

Interview Questions

The interviews will be conducted in focus group sessions.

Section 1: Classroom Environment

1. Can you describe your classroom? What kind of activities you do in your classroom?
2. Have you ever felt the need of change in teaching style? What changes?
3. How do you feel when you apply new things in your classroom? What elements of modern technology have you used?

Section 2: Perception about Technology use in Language Classrooms

1. What two words would you use to explain the process of foreign language learning?
2. Have you noticed any difference in your classroom when you use technology? Explain.
3. How does the use of technology influence teaching performance?
4. How do you think technology and language learning are linked?

Section 3: Problems and Solutions for Integration of Educational Technology

1. Are there any external or internal factors that hinder your use of educational technology?
2. What is your opinion about teacher training programs about the use of educational technology?

Can you suggest some reforms in our current educational setting that may help in integrating educational technology?

Appendix C

December, 2019

Prof. Dr. Wasima Shehzad

Dean Faculty of Social Sciences

Air University, PAF Complex, Sector E9, Islamabad

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN UNIVERSITY

Dear ma'am,

My name is **Tooba Irfan Haider**, and I am a student of 'English Language Teaching' at Bahcesehir University, Istanbul, Turkey. The research I wish to conduct for my master's thesis involves exploration of perception, competence and motivation of pre-service EFL teachers towards using educational technology in their classrooms. This research will be conducted under the supervision of **Dr. Kenan Dikilitas** (Associate Professor at BAU, Istanbul).

I am hereby seeking your consent to approach the students of English Department to provide participants for this research project.

I have provided you with a copy of my thesis proposal.

Upon completion of the study, I undertake to provide the Department of English with a copy of full research report. If you require any further information, please do not hesitate to contact me on toobairfan1996@gmail.com. Thank you for your time and consideration in this matter.

Yours sincerely,

Tooba Irfan Haider

Appendix D

Bahcesehir University, Istanbul, Turkey

Questionnaire Consent Form

I, _____ (participant's name), understand that I am being asked to participate in a survey/questionnaire activity that forms part of **Tooba Irfan**'s required research with Bahcesehir University Educational Sciences Department. It is my understanding that this questionnaire has been designed to gather information about the attitude and competence of pre-service teachers towards using technology for educational purposes, especially Language Learning.

I have been given some general information about this project and the types of questions I can expect to answer. I understand that the questionnaire will be conducted in person and that it will take approximately 15 minutes of my time to complete.

I understand that my participation in this project is completely voluntary and that I am free to decline to participate, without consequence, at any time prior to or at any point during the activity. I understand that any information I provide will be kept confidential, used only for the purposes of completing this assignment, and will not be used in any way that can identify me. All questionnaire responses, notes, and records will be kept in a secured environment.

I also understand that there are no risks involved in participating in this activity, beyond those risks experienced in everyday life.

I have read the information above. By signing below and returning this form, I am consenting to participate in this questionnaire project as designed by the University student.

Participant name: _____

Signature: _____

Date: _____

Appendix E

Informed Consent

Principal Investigator: Tooba Irfan Haider

Phone: +923342021999, +905522649367

Purpose

This study investigates the participants' opinions on use of technology for educational purposes. As part of this study you will be asked to participate in a focus group and answer structured and open-ended questions. This study will take approximately 45 minutes.

Participants Rights

I understand that my responses will be kept in the strictest of confidence and will be available only to the researcher. No one will be able to identify me when the results are reported and my name will not appear anywhere in the written report. Please do not share other people's identities or responses from the focus group with others to maintain the anonymity of the participants outside of the focus group. I also understand that I may skip any questions or tasks that I do not wish to answer or complete. I understand that the consent form will be kept separate from the data records to ensure confidentiality. I may choose not to participate or withdraw at any time during the study without penalty. I agree to have my verbal responses video-recorded and transcribed for further analysis with the understanding that my responses will not be linked to me personally in any way. After the transcription is completed, the tape recordings will be destroyed.

I understand that I am participating in a study of my own free will.

Consent to Participate

I acknowledge that I am at least eighteen years old, and that I understand my rights as a research participant as outlined above. I acknowledge that my participation is fully voluntary.

Print Name: _____

Signature: _____ Date: _____