

Pre-service EFL Teacher's Attitudes, Perceptions and Competence Level towards the Use of Technology

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Keywords

- Technology integration
- language classrooms
- Digital resources
- English language teaching
- Teacher technology training

Abstract

The research focused at exploring the attitudes, perceptions and level of competence of pre-service EFL teachers towards using technology in English Language classrooms. This research took place at Air University which is in the capital city of Pakistan: Islamabad. Participants were selected by random sampling. 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 quantitative data was analysed by SPSS 25.0. Thematic analysis was used for the interpretation of qualitative data. The results indicated that pre-service EFL teachers had above average level of competence towards technology usage. The participants had moderately positive perceptions towards using digital resources and exhibited positive attitudes towards technology integration. The results also indicated that perceptions of the teachers towards use of educational technology is largely impacted by their attitudes towards technology integration. In addition, the study pointed out obstacles in three primary areas in the process of technology integration: individual, technical and lack of resources and knowledge.

1. Introduction

The advancement and development in the field of technology has made it crucial to everyday life. Technology has improved life's standard by advancements in the fields of health, research, economy, transportation and communication. In the last few decades, educationists have researched 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 ICT. However, this is not a short and easy procedure. There exist problems like lack of resources and lack of training for staff. Implementation of technology that facilitates in learning procedures have some conditions for successful integration. Firstly, dissatisfaction with the current system is required. If people are not satisfied by the outcomes of the traditional ways, they will feel the need of incorporating modern ways. Secondly, knowledge, skills and resources are required. Also, all the staff members, teachers, facilitators and administration must be committed to the cause. (Ely, 2014)

The successful integration of technology in classrooms depends on a lot of factors. Some of these factors include available resources (software and hardware), perception and attitudes of teachers towards using technology in language classrooms and available content and pedagogical knowledge for incorporating technology for effective outcomes. The availability of sufficient knowledge and skills to carry out the desired task is referred as "competence" (Verspoor, 2010). It is very essential to have technically trained staff for desired outcomes. Another factor that contributes largely in successful incorporation of technology in language classrooms is the perception of teachers towards using technology in classrooms. 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). Teacher training is an important factor. 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. 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. This research will address this issue by finding out the perception, attitudes and competence of pre-service teachers towards the use of technology integration.

1.2. Purpose of the Study:

The main objective of this study is to explore the attitudes, perceptions and competence of pre-service EFL teachers regarding technology use in English Language learning. The competence will be measured by available 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:

- i. What is the level of competence of Pakistani pre-service EFL teachers towards the use of digital resources in classrooms?
- ii. What are the perceptions of pre-service EFL teachers towards the use of digital resources in their future classrooms?
- iii. Does gender influence perceptions and attitudes of pre-service teachers towards the use of educational technology?
- iv. How are perceptions and competence of teachers correlated with their attitudes towards the use of digital resources?
- v. What challenges do pre-service teachers face in the integration of digital resources?

2. Research Methodology

2.1. Research Design

The research employed mixed design to conduct this research. 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-quant' techniques (Morse & Niehaus, 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.

2.2. Setting and Participants:

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. For simple research questions, three to four focus groups are deemed sufficient and appropriate (Krueger, 1994). A total of 62 participants (N=62) took part in the quantitative part of the study. 49 of the participants were females and 13 participants were males.

2.3. Data Collection Instruments

Two instruments were used of this study: (1) a questionnaire, (2) semi-structured interview sessions with focus groups.

2.3.1. Questionnaire:

In view of the research questions, the already piloted and tested questionnaire developed by (Albirini, 2006) was used for this study. 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.

2.3.2. Focus groups:

Four focus group interviews were held in the month of February. The researchers acted as the moderator. All the group interviews were videotaped for data analysis. The participants were selected through random sampling.

2.3.3. Data Analysis:

The collected data was analyzed by the following methods:

2.3.4. Analysis of questionnaire

The data collected by means of 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.

2.3.5. Analysis of focus group interviews

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).

Data analysis procedure employed by the researchers 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, 2003). The researchers adopted the six phases of thematic analysis developed by (Braun & Clarke, 2006).

A short description of these six phases (Braun & Clarke, 2006):

- i. Familiarization: This refers to the knowledge of in-depth meaning of the conversation. It involves the listening and re-listening of the audio/ video recordings, reading and re-reading of the transcripts in order to be better familiarized with the data set.
- ii. Coding: This is the first step in which the patterns in the data set are recognized. It involves labeling the data segments in accordance with the research questions.
- iii. Searching' for themes: This is always a tough task. It needs careful analysis of the data in order to find out the matching sequences which can be transcribed into

- themes. Themes are not easily established. They require careful interpretation so that every theme has a specific central point or essence.
- iv. Reviewing themes: This is done to check if the developed themes fit with the original and coded data. In this step the process is stopped and reviewed for better understanding of the data. This step may lead to some changes in the developed themes.
 - v. Defining and naming themes: After the themes have been developed, they need to be named or labeled. This is done to ensure that the themes are coherent. This step is also very helpful in the report writing process.
 - vi. Writing Report:

In the final step of the process, the results are compiled and reported. This involves a detailed and coherent display of all the themes that have been constructed from the data obtained.

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 (Shenton, 2004).

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, and they were free to abstain from answering questions.

3. Data Analysis & Discussion

A mean score of 2.95 on this scale shows that the participants consider themselves moderately competent towards 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 competent 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 the younger the people, the more their interest towards technology, and they tend to learn it. This reason seems to be true in the case of the study under discussion.

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. (Cuban, 2001) states that schools and colleges frequently purchase computers for use in 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 sufficient pedagogical knowledge about the integration of technology in classroom settings. Second, the institutions do not actively facilitate the teachers in successful integration of technology. This can also be seen true in the case of the study under discussion.

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 towards the integration of technology. In the focus group 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.

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.

3.1. Teacher Perception towards the use of Digital Resources:

Teachers' perceptions:

The perception was calculated in the areas of their perceived advantages of computers, the compatibility of computers with teaching, simplicity and Observability. A mean score of 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.

4.01 mean score was recorded for Observability. This mean score shows that the participants have seen and used computers in the academic settings of Pakistan.

Teachers' attitudes:

The overall mean score calculated from the participants' responses was 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 3.59 ($SD=0.55$) was obtained on the computer attitude subscale. A large number of participants ($n=46$, 74.2%) said that using computers is enjoyable. Participants ($n=38$, 61.3%) also expressed that they feel comfortable using computers.

A mean score of 3.75 ($SD=0.49$) was obtained for cognitive domain. Most of the participants ($n=52$, 83.9) 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.

4.2. 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 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. (Delacre, Lakens, & Leys, 2017) 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 3.1 shows the results.

Table 1: Means differences of gender on teacher attitudes, computer attributes, cultural perceptions, computer competence and computer access (N=62)

Variables	Male (n=14)		Female (n=48)		t(62)	P	95%CI		Cohen's d
	M	SD	M	SD			LL	UL	
Teachers Attitudes Questionnaire									
All questionnaire items	3.74	.51	3.63	.48	.693	.496	-.215	.430	.22
Computer Attitudes	3.66	.65	3.56	.52	.512	.615	-.301	.495	.17
Cognitive Domain	3.91	.43	3.70	.50	1.50	.145	-.076	.489	.45
Behavioral Domain	3.52	.85	3.58	.68	-.237	.816	-.581	.463	.08
Computer Attributes Questionnaire									
All questionnaire items	3.74	.45	3.79	.52	-.315	.756	-.343	.252	.10
Advantages of Computer	4.01	.62	3.77	.57	1.30	.206	-.145	.632	.40
Computer Compatibility with teaching	3.54	.58	3.63	.54	-.525	.605	-.460	.275	.16
Simplicity	3.39	.70	3.79	.744	-1.86	.076	-.853	.045	.56

Observability	4.01	.58	4.01	.71	.040	.969	-.377	.392	.64
Cultural Perceptions Questionnaire									
Cultural perceptions	3.08	.37	3.17	.38	-.763	.454	-.328	.151	.24
Computer Competence Questionnaire									
Computer Competence	2.78	.74	2.99	.52	-1.01	.325	-.666	.233	.33
Computer Accessibility Questionnaire									
Access to computers	2.26	1.0	2.58	.90	-1.01	.323	-.984	.342	.34

The table shows the results of the t-tests. If $p < 0.05$, there is little or no significance. For all the scales and subscales, the p value is very large which suggests that there is no difference, with regards to gender, in the attitudes and perceptions of pre-service teachers towards the use of digital resources in classrooms.

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

Table 2

Correlation

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.At t	RA	CC	Simp	Obs.	Comp. C
Teach. A	-	.780*	.911*	.866**	.752**	.694**	.666**	.577**	.472**	.322**
Com.A		-	.561*	.500**	.433**	.395**	.285*	.370**	.334**	.245
CD			-	.717**	.748*	.752**	.685**	.529**	.432**	.312*
BD				-	.715*	.589**	.695**	.570**	.439**	.261*
Com.At t					-	.819	.857	.803	.733	.366
RA						-	.671	.505	.448	.197

CC	-	.603	.492	.306
Simp		-	.444	.391
Obs.			-	.280
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 2 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.

Regression analysis:

Multiple Regression Analysis was conducted to predict the effect of perceptions (computer attributes) and competence (computer competence) on Teachers' Attitudes towards using digital resources in classrooms. Table 3.3 shows the results.

Table 3:

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

Teachers' Attitudes (N=62)

Variables	T	B	B	F	adj. R ²
Constant	2.65**	.874		38.75***	.55
Computer Attributes	7.96***	.702	.732		
Computer competence	.583	.045	.054		

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

Table 3 shows a multiple linear regression 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 show 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. (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.

4.4. 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 the 6 phases of thematic analysis as described in the methodology – *familiarization, coding, searching for themes, reviewing themes, defining and naming themes and, writing report*. The audio recordings were listened and the manuscript was read many times in order to gain *familiarization* with the content. In order to put meaningful labels to data, *coding* was employed. Next, similar labels were identified and put together in the process of '*searching*' for themes. The emerged preliminary themes were checked against the original manuscript in the process of *reviewing themes*. In *defining and naming themes* stage, the emerged names were given clear, concise and meaningful labels. In the final stage of *report writing*, the emerged labels were explained in a cohesive and coherent manner.

Following themes emerged from the data:

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. The participants explained that they have to face certain hurdles in the integration of digital resources. After careful observation of data and systematic coding following the 6 phases by Braun and Clarke, obstacles of two primary natures emerged 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. Participants said that universities have given access to reach some sites and journals, but they are not enough.

Technical Issues: The participants also expressed that they have to face technical issues sometimes. 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. 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)*

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. 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. Some quotations from the participants are as follows:

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

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 & Clarke, 2006).

The results demonstrated 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 technology usage in language classrooms. The study indicated that the prime obstacles faced by the participants in technology integration were individual and technical in nature. Also, insufficient knowledge of computers for educational purposes causes hindrance. The results also indicated that perceptions of teachers towards digital resources can strongly affect their attitudes towards technology integration.

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

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Citation of this paper

Irfan, T. & Zahra, T. (2025). Pre-service EFL Teacher's Attitudes, Perceptions and Competence Level towards the Use of Technology *Erevna: Journal of Linguistics and Literature*, 9(1), 46-58.