



Investigating Technological Innovation in English Language Teaching: Iranian EFL Instructors in Focus

Iran Kashanizadeh¹, Saeed Ketabi^{2*}, Mohsen Shahrokhi³

¹h.D. Candidate, Department of English, Shahreza Branch, Islamic Azad University, Shareza, Iran. iran_kashanizadeh@yahoo.com

²Associate Professor of the Department of English, University of Isfahan
s.ketabi@yahoo.com

³Department of English Language, Faculty of Humanities, Shahreza Branch, Islamic Azad University, Isfahan, Iran
mohsenshahrokhi@yahoo.com

ABSTRACT

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Technological innovation creates new opportunities for teachers to practice new methods of language teaching. Innovative teachers try to find new way for language teaching to improve their quality of teaching. Having sufficient information from teachers' technological innovation level is an effective predictor of language learners' achievements. Therefore, current research sought to assess Iranian English language teachers' level of technological innovation. The main data were collected from 375 EFL teachers comprising 125 university teachers, 125 high school teachers, and 125 institute teachers through a predesigned and validated questionnaire and interview. The results from the MANOVA indicated no significant differences among the high school, language institute, and university EFL teachers' overall means of technological innovation. Findings also revealed that most of the teachers are almost at the same level and have some information about technological innovations and try to apply them in their process of teaching in the classroom. The findings could provide implications for EFL materials developers, policymakers, teachers, and syllabus designers.

Keywords: Computer-based Technology, Mobile-based Technology, Multimedia, Technological Innovation, Web-based Technology

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1. Introduction

One of the main educational focus of every educational system is the quality of education (Aghajanzadeh Kiasi et al., 2016) and the position of the professional teacher seems to be important in creating the success of all education systems (Park & Lee, 2006). Teachers are the leading implementers of the curriculum in any educational context and the successful implementation of the curriculum is directly related to the ability of them (Greenier, 2018). In fact, second language teachers are extremely effective in the process teaching in the classroom and their level of innovation is an influential factor to reach the higher quality of teaching (Bang & Luft, 2013; Kim, 2021). As mentioned by Kim (2021), to reach educational objectives, teachers' innovation and competence play an important role and are considered two necessary factors to deliver the contents of the book based on the curriculum to the learners. Alharbi (2020) believes that being an innovative teacher and using innovative methods can improve students' achievement. In fact, innovative teachers try to use something new in the classroom. Then, successful teachers are those who are innovative and use new coming methods and technologies in the language classroom purposefully. Jeong (2016) asserts that many EFL instructors tend to integrate their teaching practice with technologies that lead to using technological innovation in the classroom. In fact, the applications of technological innovation such as mobile, computer, multimedia, and web facilitate collaborative learning through providing offline and online learning environments where EFL learners receive effective feedback from peers, teachers, and even different web-based applications (Ebadi & Rahimi, 2017). Previous studies (e.g., Alharbi, 2020; Kim, 2021) have highlighted the capacities of technological innovation to facilitate language teaching process. In fact, understanding English language teachers' technological level, as a determining factor in the quality of teaching, is influential to enhance the quality of teaching practice, and language learners' achievements, consequently (Kim, 2021). Therefore, having enough information about the use and usefulness of technological innovation in English language classrooms is so important and should be investigated more. To bridge this gap, the current study was conducted to assess and compare Iranian institute, high school, and university teachers' levels of technological innovation in English language classrooms.

2. Literature Review

In the last 30 years, the study of technological innovation has gradually been professionalized. Research (e.g., Malikow, 2006) has revealed that how teachers' teaching practice depends on various factors such as their perceptions, personality traits, and attitudes. Additionally, teachers' beliefs about themselves, and the learning and teaching process play a meaningful role in selecting appropriate methods of teaching in the classroom (Xiao, 2019). It

is believed that effective teachers should use various teaching aids and methods as innovations (Bang & Luft, 2013). Therefore, teachers' perception of their level of innovation and its components is significant. Generally, innovation has been defined as an attempt to do something new or different to reach educational achievements and goals (Chapelle, 2013). Therefore, innovative teachers are those who use a new method or integrate new technology into the process of teaching (Murray, 2008). With the advent of new technologies, language teachers began to use this capacity to teach in the classroom. In fact, by using new coming innovative tools, they tried to increase the quality of teaching. Evidence showed that technological innovations have a meaningful effect on the quality of educational systems at all levels (Bang & Loft, 2013).

Knowing the impacts that new coming technological innovations have on teachers, students, and schools is vital to applying appropriate techniques and strategies to use different technologies in education (Ndesaulwa & Kikula, 2016). In fact, due to easy-to-access to information, technology can accelerate language learning and provides pleasant atmosphere for learners to increase their motivation and reduce their anxiety. Therefore, the integration of technology in the process of teaching may provide greater opportunities for teachers to enhance their quality of teaching and consequently learners' achievement. Actually, teachers have a responsibility to improve their information regarding new technological innovations and apply them in their teaching process (Alharbi, 2020). Thus, their perception of the use of different innovative technologies such as multimedia, web-based, computer-based, and mobile-based technologies in the classroom is very important.

In the new age, multimedia as an important innovative technology has generated a positive and appeal context for changing and inspecting English language teaching models (Pun, 2013). Multimedia as a type of technology-based communication blends audio, text, images, and movies or animations in a single interactive presentation to help learners and teachers for improving their achievements and quality of teaching, respectively (Wagner, 2010). This process includes the use of visual, audio, audio-visual, and animation or movie in English language teaching classrooms. Teachers can use this innovative tool to create more colorful and stimulating language classes (Xiao, 2019). Researchers found that as an innovative tool, multimedia has positive effects on improving the different language skills of EFL learners (e.g., Haghverdi & Abdpur, 2013; Marashi & Adiban, 2017). Therefore, teachers' perception of their capability to use this technology in the classroom could be important.

Furthermore, mobile-based technology is one of the most attractive technological innovations, which represents a revolution in education (Sharples, 2000). Thornton and Houser (2005) state that mobile learning provides a better opportunity for integration through exposure to language,

which results in learning in everyday communication. Therefore, mobile is considered an effective tool for language learners that provides them additional support to communicate and comprehend. The results of several studies have confirmed the effectiveness of MALL as a technological innovation on different language skills (e.g., Rahimi & Soleymani, 2015; Thornton & Houser, 2005). Thus, teachers can use this capacity to improve their quality of teaching.

Moreover, computer-based technology as another attractive technological innovation has revolutionized the teaching profession and shaped a new approach namely CALL for language learning and teaching. Teachers can use this extraordinary innovation to teach, strengthen, present, and evaluate the material to be taught (Peterson, 2010). Teachers can use the capacity of the computer to search for novel approaches and methods of teaching English (Barrs, 2012). The learners also can use computers to do the homework given by their teachers, write assignments, and so on. Researchers found that as an innovative tool, a computer has positive effects on improving the different language skills of EFL learners (e.g., Ghafoori et al., 2016; Hsu, 2020). Therefore, assessing teachers' level of innovation in terms of using computers can provide effective information about the quality of their teaching.

In addition, web-based technology as another innovation attracts the attention of researchers (e.g., Lenders, 2008; Mohammad-Salehi & Vaez-Dalili, 2022). According to Ranalli (2018), students are enthusiastic to use web-based instruction in their learning process. Web-based instruction provides different opportunities for the language teachers to practice different exercises with their language learners in groups or individually in a suitable environment. Researchers (e.g., Lenders, 2008; Zapata & Sagarra, 2007) found that web-based teaching as an influential innovative instruction has positive effects on the teaching process and can enhance language proficiency of the learners. Therefore, it can be the focus of teachers to enrich their teaching quality.

As it was mentioned earlier, besides all research that has been done on innovation in language teaching (e.g., Alharbi, 2020, Ranalli, 2018; Xiao, 2019), to the best knowledge of the researchers, to date, no study has compared the level of EFL teachers' technological innovation in the universities, high schools and institutes contexts simultaneously. Accordingly, current research was an attempt to fill this gap. In this regard, the following research questions were addressed here:

Q1: Are there any statistically significant differences among high school, institute, and university English language teachers' levels of technological innovation?

Q2: What are Iranian teachers' beliefs about technological innovation concerning English language teaching?

3. Method

3.1. Participants

The participants of the current research were 475 EFL teachers who took part in three different phases. In the first phase, 100 Iranian female and male EFL teachers with the age range of 25-45 ($SD = 2.11$, $M = 29$) were selected by **convenience** sampling to check the reliability of the questionnaire in a pilot study. In the second phase, 375 EFL teachers (169 females & 181 males) with the age range of 24-47 ($SD = 2.22$, $M = 31$) who taught English at different institutes, high schools, and universities in Iran, each with 125 participants, were selected by **convenience** sampling for the main phase of the study. Furthermore, in the qualitative phase of the study, 30 EFL teachers were selected by **convenience** sampling as representative of all three groups each with 10 participants to elicit the required data. Their age range was 28-43 ($SD = 1.88$, $M = 30$) and all of them had more than 5 years of teaching experience. In addition, Persian was the first language of all participants in the current study.

3.2. Instruments

The current study utilized a pre-designed and validated scale and an interview as follow:

3.2.1. *Questionnaire for Technological Innovation*

A questionnaire instrument of technological innovation by Kashanizadeh (2023) was used to collect the required data (See Appendix). This five-point Likert scale encompasses 28 items ranging from never (coding 1) to almost always (coding 5) and the process of construct validity of the questionnaire was previously done through factor analysis. It includes four factors of “using web-based technology” with eight items (i.e. 4, 8, 7, 1, 6, 5, 3 & 2), “multimedia” with eight items (i.e. 9, 13, 11, 14, 10, 12, 15 & 16), “mobile-based learning”, with seven items (i.e. 17, 18, 19, 20, 21, 22 & 23) and “computer-based learning” with five items (i.e. 24, 25, 26, 27 & 28). The reported Cronbach’s alpha reliability for the scale in a pilot study and the main phase of the study was calculated to be 0.86 and 0.89 respectively. Three ELT experts, who were Ph.D. holders of Applied Linguistics, confirmed the validity of the scale and mentioned that the questionnaire is suitable for the context of Iran.

3.2.2. Interview

In order to catch Iranian EFL instructors' beliefs about technological innovation concerning English language teaching, eight questions were developed by the researchers. This semi-structured interview questions were designed from the content of the technological innovation questionnaire. In this process, the researcher consulted with three experienced ELT experts to check the validity of the interview. The time devoted to holding this interview was 30 minutes for each participant.

3.3. Procedure

To conduct the present research and achieve the goals of the study, the data were collected from an interview and a questionnaire in three phases. To collect data in both pilot study and main study, the online version of the questionnaire, produced via Google Forms was used. The survey link was sent to the teachers through email and messaging on social networks (e.g., WhatsApp & iGap Messenger). In this way, a total of 100 questionnaires were collected to check the reliability of the technological innovation scale in the pilot study. For the main phase of the study, a total of 357 questionnaires were collected from 28 high schools, 21 language institutes, and 31 universities after nearly six months to check the participants' level of technological innovation.

In the last phase, the participants were required to answer a semi-structured interview to elicit EFL instructors' perception of technological innovation in English language teaching. In so doing, among those who filled the technological innovation questionnaire, 30 EFL teachers were selected by convenience sampling as representative of all three groups (e.g., institute, university & high school) each with 10 participants to elicit the required data.

During each interviewee's session, the responses were recorded. After completing the interview, the audio recordings were transcribed for easier analysis and then analyzed by three colleagues and were finally verified and coded. That is, after transcription, similar responses were categorized into one group for each question of the interview. For example, in the fifth question of the interview, 15 high school teachers mentioned that "*A computer can help students to improve their language proficiency through providing different possibilities such as word processor and game-based learning*". They were categorized as those teachers who believe that computer-based learning is a useful tool for improving the different language skills of learners. Finally, based on the frequency of the responses their percentages were calculated. For the quantitative question, to compute the score, first, the researchers must add up all the individual item's scores and then, they must calculate the weighted score by dividing the total score by the number of items. Accordingly, a score of five reflects one's higher level of technological innovation. Finally, after

coding the interview, the collected data from all three phases of this study were analyzed.

3.4. Data Analysis

The following statistical procedures were performed on the data to answer the questions presented in the current study:

- 1) To test the quantitative question, multivariate analysis of variances (MANOVA) was run to investigate any statistically significant differences among high school, institute, and university English language teachers' levels of technological innovation.
- 2) To examine the qualitative question, the percentage of the responses for each question of the interview were reported to find Iranian instructors' beliefs about technological innovation concerning English language teaching.

4. Results and Discussion

4.1. Results

4.1.2. Results of the First Research Question

To answer the first research question, MANOVA was run to probe any statistically significant differences among high school, institute, and university English language teachers' levels of technological innovation.

The means of teachers' responses to questions of four constructs were estimated by the MANOVA. Having measured these four dependent variables, these three groups of teachers, that is, high school, institute, and university English language teachers (the independent variables), were compared to see whether they were different with regard to the different constructs of technological innovation in the teaching English language. Table 1 presents more information on teachers' responses to the different constructs of the technological innovation questionnaire.

Table 1

Descriptive Statistics Components of Technological Innovation by Types of Institute

Dependent Variable	Place	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Mobile-Based	High school	2.955	.077	2.804	3.106
	Language institute	2.829	.077	2.678	2.980
	University	2.853	.077	2.702	3.004

	High school	3.246	.077	3.094	3.397
Multimedia	Language institute	3.132	.077	2.980	3.284
	University	2.946	.077	2.795	3.098
	High school	2.944	.086	2.776	3.112
Computer-Based	Language institute	2.802	.086	2.633	2.970
	University	2.802	.086	2.633	2.970
	High school	2.964	.077	2.812	3.116
Web-Based	Language institute	2.764	.077	2.612	2.916
	University	2.891	.077	2.739	3.043

Table 1. displays the descriptive statistics for the university, high school, and institute teachers' means of components of technological innovation. The results showed that the high school, university, and institute language teachers had almost the same means of mobile-based, multimedia, computer-based, and web-based technology.

Before the analysis, the normality assumption of MANOVA was checked and the results are presented in Table 2.

Table 2.

Box's Test of Equality of Covariance Matrices Components of Technological Innovation by Types of Institute

Box's <i>M</i>	22.526
<i>F</i>	1.109
<i>df1</i>	20
<i>df2</i>	496737.346
<i>Sig.</i>	.331

Findings revealed that the normality assumption was tenable because all the skewedness measures were between -2 and +2. In addition, the results of the Box's test (Box's $M = 22.52$, $p > .001$) indicated that the assumption of homogeneity of covariance matrices was maintained. Moreover, Table 3 presents the results of Levene's test of homogeneity of variances.

Table 3*Levene's Test of Components of Technological Innovation by Types of Institute*

<i>sig.</i>		Levene Statistic		<i>df1</i>	<i>df2</i>
Mobile-Based	Mean	.551	2	372	.577
	Median	.503	2	372	.605
Multimedia	Mean	1.354	2	372	.260
	Median	1.294	2	372	.275
Computer-Based	Mean	3.493	2	372	.031
	Median	3.303	2	372	.038
Web-Based	Mean	.088	2	372	.916
	Median	.103	2	372	.902

The results showed that the assumption of homogeneity of variances was retained in mobile-based learning ($F(2, 372) = .503, p > .05$), multimedia learning ($F(2, 372) = 1.29, p > .05$), and using web-based technology ($F(2, 372) = .103, p > .05$); however, it was violated on computer-based learning ($F(2, 372) = 3.30, p < .05$). To solve the violation of the homogeneity, the alpha level can be reduced from .05 to .01 (Tabachnick & Fidell, 2014). Therefore, regarding computer-based learning, MANOVA results were reported at .01 levels of significance. Table 4 presents the main results of MANOVA, which inspects the first null hypothesis of this study.

Table 4*Multivariate Tests Components of Technological Innovation by Types of Institute*

Effect	Value	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	<i>Sig.</i>	Partial Eta Sqd	
Intercept	Pillai's Trace	.968	2755.831	4	369	.000	.968
	Wilks' Lambda	.032	2755.831	4	369	.000	.968
	Hotelling's Trace	29.874	2755.831	4	369	.000	.968
	Roy's Largest Root	29.874	2755.831	4	369	.000	.968

Group	Pillai's Trace	.032	1.525	8	740	.145	.016
	Wilks' Lambda	.968	1.523	8	738	.145	.016
	Hotelling's Trace	.033	1.520	8	736	.146	.016
	Roy's Largest Root	.022	2.046	7	370	.087	.022

The results represented a weak effect size and ($F(8, 740) = 1.52, p > .05$, partial $\eta^2 = .016$) revealed that there were not any significant differences among the high school, language institute, and university EFL teachers' overall means of technological innovation. Thus, the null-hypothesis of "there were not any statistically significant differences among high school, institute, and university English language teachers' levels of technological innovation" was supported.

In addition, the results of the Between-Subjects Effects are displayed in Table 5.

Table 5

Between-Subjects Effects of Components of Technological Innovation by Types of Institute

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Place	Mobile-Based	1.119	2	.560	.757	.470	.004	
	Multimedia	5.703	2	2.852	3.831	.023	.020	
	Computer-Based	1.690	2	.845	.924	.398	.005	
	Web-Based	2.557	2	1.279	1.713	.182	.009	
Error	Mobile-Based	275.063	372	.739				
	Multimedia	276.873	372	.744				
	Computer-Based	340.287	372	.915				
	Web-Based	277.684	372	.746				
Total	Mobile-Based	3384.422	375					
	Multimedia	3904.950	375					
	Computer-Based	3385.920	375					
	Web-Based	3375.938	375					

Based on these results, and the statistics displayed in Table 3 it can be concluded that;

A: There were not any significant differences among high school ($M = 2.95$), language institute ($M = 2.82$), and university ($M = 2.85$) groups' means on mobile-based technology ($F(2, 372) = .757, p > .05$, partial $\eta^2 = .004$ representing a weak effect size).

B: There were significant differences among high school ($M = 3.24$), language institute ($M = 3.13$), and university ($M = 2.94$) groups' means on multimedia learning ($F(2, 372) = 3.83, p < .05$, partial $\eta^2 = .020$ representing a weak effect size).

The results of the posthoc Scheffe's tests (Table 6) revealed that the high school teachers had a significantly higher mean than the university teachers on multimedia learning ($MD = .30, p < .05$) and due to the weak effect size (partial $\eta^2 = .020$), the results should be interpreted cautiously. Considering the other two pairs of comparisons on multimedia learning, significant differences were not reported.

Table 6

Scheffe's Posthoc Comparisons Components of Technological Innovation by Types of Institute

(I) Place	(J) Place	Mean (I-J)	Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
High school	Language institute	.11		.109	.582	-.15	.38
	University	.30*		.109	.024	.03	.57
Language institute	University	.19		.109	.237	-.08	.45

*. Sig < .05.

C: There were not any significant differences among high school ($M = 2.94$), language institute ($M = 2.80$), and university ($M = 2.80$) groups' means on computer-based learning ($F(2, 372) = .924, p > .01$, partial $\eta^2 = .005$ representing a weak effect size).

D: There were not any significant differences among the high school ($M = 2.96$), language institute ($M = 2.76$), and university ($M = 2.89$) groups'

means on using web-based technology ($F(2, 372) = 1.71, p > .05$, partial $\eta^2 = .009$ representing a weak effect size).

4.1.3. Results of the Second Research Question

In order to probe Iranian instructors' beliefs about technological innovation concerning English language teaching, the percentage of the responses for each question was reported. With regard to the first question of the interview "*Are the necessary pieces of equipment (such as computer, headset, internet) available to apply technological innovation in language classes in Iran*", 40% of the high school teachers, 70% of the institute teachers and 50% of the university teachers mentioned that "*the necessary equipment such as computer, headset, and internet are available to apply technological innovation in language classes*". In contrast, 60% of high school teachers, 30% of institute teachers, and 50% of university teachers believed that "*the necessary equipment is not available for applying innovative teaching*".

In response to the second question of the interview "Is it possible to use new technological innovation for teaching English effectively with the existing infrastructure (such as stable internet connection, necessary software for the virtual classroom, and others) in Iran?", 30% of the high school teachers, 40% of the institute teachers, and 30% of the university teachers cited that "the existing infrastructure helps them to apply new technological innovation effectively". In contrast, 70% of the high school teachers, 60% of the institute teachers, and 70% of the university teachers believed that "in the Iranian context it is not possible to use new technological innovation for teaching English effectively with the existing infrastructure".

Concerning the third question "*What is your idea about mobile-based technology as an innovative tool for language teaching and learning?*", 70% of the high school teachers, 60% of the institute teachers, and 60% of the university teachers mentioned that "*using mobile-based technologies is useful*". They claimed that "*mobile-based technology provides a different possibility for teaching language and is an effective innovative tool*". In contrast, 30% of high school teachers, 40% of institute teachers, and 40% of university teachers believed that "*mobile-based technology is not an effective tool for language teaching*".

Regarding the fourth question of the interview "What is your idea about multimedia as an innovative tool for language teaching and learning?" 70% of the high school teachers claimed that "using multimedia such as film and cartoon as an innovative tool is useful and they apply this type of innovation in the classroom where it's possible" and 30% of them mentioned that "using multimedia in the process of teaching is not useful and they think that it can distract learners and lead to poor achievement". Also, 60% of the institute teachers asserted that "using multimedia can expose learners to authentic

materials and help them to improve their different language skills and can be considered as an effective innovation in the process of English language teaching” and 40% of them claimed that “multimedia is not an effective tool for language learning and teaching”. Furthermore, 70% of the university teachers claimed that “multimedia cannot be a useful innovative tool because the nature of materials in the universities are different and students will be distracted in the classroom”. On the other hand, 30% of them believed that “multimedia is an innovative tool for language learning and can help university students to improve their language skills through exposure to authentic materials and being familiar with the culture of the target language”.

In response to the fifth question “What is your idea about computer-based technology as an innovative tool for language teaching and learning?”, 60% of the high school teachers believed that “it depends on the situation but usually they think that it can help students to improve their language proficiency”. They mentioned that “computer provides different possibility such as word processor which can help the students to avoid a mistake in their writing. It also provides a good opportunity for game-based learning which make the learning process fun”. In addition, they mentioned that “computers can provide a different possibility for self-directed learning and distance learning through using different applications and can help students for better learning and teachers for better teaching”. In contrast, 40% of the high school teachers claimed that “it’s not useful in the classroom specially for students in the high school level because the number of students is high and the teacher cannot manage them appropriately”. Moreover, 70 % of the institute teachers believed that “a computer is an effective tool for language learning and can help teachers to use a wide variety of methods for teaching the English language” and 30% of them claimed that “it’s not a sufficient tool for language learning”. In addition, 60% of the university teachers claimed that “a computer is an effective innovative tool for language learning” and 40 % of them mentioned that “using a computer cannot lead to better performance”.

Considering the sixth question of the interview “What is your idea about using web-based technology as an innovative tool for language teaching and learning?”, 80% of the high school teachers believed that “web-based technology is a very effective innovative tool for language learning”. They mentioned that “through using different messenger based on the web they could improve learners’ motivation for language learning”. Besides, 70% of the institute teachers believed that “web-based technology is an effective tool for language learning and can help teachers to expose their learners to authentic materials”. In fact, they believed that “through using different applications on the basis of the web, students can use different possibilities for language teaching and learning”. Similarly, 70% of the university teachers claimed that “web-based technology is an effective innovative tool for

language learning”. They mentioned that “through using different possibilities such as automated writing evaluation programs on the basis of the web, they could help learners to enhance their different language skills”. On the contrary, 30 % of the university teachers, 20% of the high school teachers, and 30% of the institute teachers claimed that “web-based technology is not an effective innovative tool for language learning”.

With regard to the seventh question of the interview “*Do language learners have the necessary information and ability to use technological innovation for language learning?*”, 70% of the high school teachers, 80 % of the university teachers, and 90% of the institute teachers believed that “*students are up to date and due to the availability of the new coming technologies, many learners are familiar with the function of them and have the ability to use them for different purposes*”. In contrast, 30 % of the high school teachers, 10% of the institute teachers, and 20% of the university teachers claimed that “*students do not have adequate information and ability to utilize technological innovation for language learning*”.

For the last question of the interview “Do language teachers have the necessary information and ability to apply technological innovation for teaching language?”, 60% of the high school teachers believed that “they have the necessary information and ability to use technological innovation for language learning” and 40% of them mentioned that “they are not familiar with the applications and methods of using new technological innovation for language learning and teaching”. They mentioned that “due to inadequate infrastructure, it is difficult for them to use technological innovation for language teaching”. In addition, 100 % of the institute teachers and 90% of university teachers claimed that “they have enough information and ability to use technological innovation in their classroom” and only 10% of them mentioned that “they have not the necessary information and ability to use technological innovation for language learning”.

4.2. Discussion

This research was an attempt to investigate teachers’ perceptions about their level of technological innovation in English language teaching. For the first question, the findings revealed that there were no significant differences among the university, language institute, and high school EFL teachers’ overall means of technological innovation. It showed that most of the teachers are almost at the same level in this case and have partial information about technological innovation and try to apply them in their classroom. Findings from the qualitative phase also confirmed the results of the study. In fact, in most cases, participants indicated similar characteristic regarding the four constructs of the questionnaire. Having enough information about new

technology and implementation of them in teaching process in the classroom is very important (Ndesaulwa & Kikula, 2016). From the findings of the current research, it could be interpreted that an innovative teacher uses web-based technology, multimedia, computer-based technology and, mobile-based technology in their process of teaching.

Considering multimedia significant differences were found among the high school, language institute, and university groups' means, and high school teachers had a significantly higher mean than the university teachers on multimedia learning. Recently, teaching practice in the high school setting has changed and the communicative language teaching method has been replaced by previous methods. Therefore, to be efficient teachers, high school teachers tried to use different technological innovations in the classroom based on the different requirements of the students. As mentioned by the researchers, using technological aids in teaching English will diminish students' debilitating feelings, raise their motivation, and enhance the chances of learning (e.g., ChanLin et al., 2006; Rostami et al., 2015). Multimedia as one of the accessible technology has received great attention in high school settings and this is why Iranian high school teachers are trying to use multimedia in educational environments. These findings are in consonance with the ideas of the researchers (e.g., Mansooji et al., 2021; Marzban, 2011) who believed that using multimedia technologies in the classroom has many advantages and can reduce language learning anxiety and increase learners' willingness to communicate through reducing peer pressure in the classroom.

With regard to web-based technology, significant differences were not found among the high school, language institute, and university groups' means and they partially utilized web-based technology in the process of teaching which is consistent with statements of the researchers (e.g., Link et al., 2022; Wilson & Cziki, 2016) who mentioned that, as teaching aids, web-based technology should be applied in the teaching process.

Regarding computer-based technology, significant differences were not found among the high school, language institute, and university groups' means and they showed the same level of technological innovation. They used the feature of computers in the process of teaching, which is in agreement with the action of those researchers (e.g., Hsu, 2020; Kaltenbock & Mehlmauer-Larcher, 2005; Rafi et al., 2022) who used computer-based technology in language teaching and found positive results.

Considering mobile-based technology, significant differences were not found among teachers in the three levels and all three groups indicated nearly the same behavior in terms of using mobile-based technology for teaching English in the high schools, language institutes, and universities in Iran. Findings revealed that teachers in different contexts of Iran partially utilized

mobile-based technology in the classroom, which is in harmony with the action of the researchers (e.g., Ali & Bin-Hady, 2019; Fathi et al., 2018; Kim, 2021; Sydorenko et al., 2019; Xu et al., 2017) who integrated mobile technology in the process of teaching in a different context.

The findings of the second question regarding the necessary equipment for technological innovation and the possibility of using new technological innovation for teaching English effectively with the existing infrastructure revealed that institute teachers were more satisfied than university and high school teachers in terms of the availability of the necessary equipment and the possibility of using new technological innovation for language teaching. In the Iranian high school settings especially in public schools, due to limited resources, only basic needs such as desks, chairs, blackboards, and heating facilities are among the priorities, and necessary attention has not been paid to the use of technologies by educational policy makers (Jafarian et al., 2012). In the universities, the situation is not better and video projectors and internet connection are among the provided equipment (Golshan & Tafazoli, 2014). On the other side, due to the privacy of English language institutes and the importance of teaching quality, managers try to provide more facilities such as computers, headsets, and the Internet for better teaching and learning (Dashtestani & Karami, 2019).

Regarding using mobile-based technology and multimedia as two innovative tools for language learning and teaching most high school, institute, and university teachers believed that they can be valuable innovative tools especially for self-directed, distance, and blended learning. These findings are in accord with the ideas of the researchers who believed that using mobile technology (e.g., Hsu, 2012; Thornton & Houser, 2005) and multimedia (e.g., Abraham, 2007; Wagner, 2010) as two technological innovations can be used in the classroom and have a positive effect on EFL learners' achievements.

Considering computer-based technology and web-based technology as two innovative tools for teaching and learning, most of the participants in the three groups believed that they can increase learners' language proficiency. In agreement with these findings, researchers found that computer-based learning (e.g., Barrs, 2012; Hsu, 2020; Peterson, 2010) and web-based learning (e.g., Link et al., 2022; Ranalli, 2018; Wilson & Czik, 2016) are effective innovative tools to improve learners' different language skills.

In respect of the search information and the ability of language learners to use technological innovation, most of the teachers in the three groups mentioned that they have the sufficient information and the skill to utilize technological innovation for language learning. These statements are in line with the idea of the researchers (Golshan & Tafazoli, 2014) who believed that with rapid improvement in technology and the free flow of information through

the Internet, students are up to date and search for their needs and catch new information about them through different contexts such as reading different papers in the related journals, watching different educational videos, and installing different new coming applications. They add their knowledge about the application of such technology and prepared themselves to apply them in their process of English language learning.

Considering the last question of the interview, most of the participants claimed that they have the sufficient information and the skill to apply technological innovation. As mentioned by Greenier (2018), as a source of knowledge in the classroom, teachers must search for new innovative methods of teaching and use different technologies to improve learners' achievements. They are responsible to improve their knowledge about teaching practice. So, they always tried to be up-to-date and improve their quality of teaching.

5. Conclusion and Implications

The current research was designed to examine Iranian EFL teachers' level of technological innovation. It was found that no significant differences existed among the high school, language institute, and university EFL teachers' overall means of technological innovation and they partially have technological innovation in teaching language. Regarding acquiring different language skills, lack of innovation seems to be one of the most important problems (Bang & Luft, 2013) and the researchers suggest that familiarity of EFL teachers with the concept of technological innovation is very important and plays meaningful role in language learning achievements of the learners. It can rise students' motivation and helps them to study enthusiastically (Pun, 2013). The findings of the current research could help the Iranian EFL teachers to have better attitudes and perceptions to the constructs of technological innovation. Teacher educators can use these findings through a clearer picture of the current position of this concept and move forward by raising their awareness and understanding. Teachers in three levels partially used technological innovation but no significant differences were found among them. Therefore, teachers in the classroom need to be equipped with new technologies such as Internet connection, computers, and mobiles to apply technological innovation to language teaching. Findings also have pedagogical implications for materials developers and syllabus designers. They can benefit from the findings of the present research and add more tasks related to using technology-based activities in the textbooks and put more emphasis on them.

The quantitative and qualitative data in the current research were collected from English language teachers teaching English in high schools, language institutes, and universities in Iran. It needs to be noted that the data comes from different contexts, and this may affect the teachers' perceptions. In this

study, the possible effect of teaching experience and gender was not investigated. Therefore, further investigation would be valuable to probe the causal impacts of gender and teaching experience.

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Appendix

Technological Innovation Questionnaire						
Never (1), Rarely (2), Sometimes (3), Frequently (4), Almost always (5)						
N umber	Items					
1	I use online authentic language databases available via the internet to increase learners' motivation and achievements.					
2	I motivate learners to use Grammarly (Online assessment tool for writing) Language Tool to reduce their errors in writing.					
3	I recommend students use Italki which provides a place for learners to find a teacher for language learning.					
4	I use the web version of Phonemic chart, English accents coach, and Youngish which are all online tools to improve students' pronunciation.					
5	I use the web version of language learning applications (such as Ling Q & Doulingo ...) on the computer for language teaching.					
6	I guide students to use an automated writing evaluation program to improve their writing accuracy.					
7	I use a virtual classroom for teaching language.					
8	I motivate students to search for a new way of learning different skills on the web and give a report in the classroom.					
9	I use different conversations of films for teaching vocabulary.					
10	I motivate students to listen to English authentic songs to improve their speaking performance.					
11	I use cartoons for teaching English in the classroom.					
12	I use podcasts for language teaching.					
13	I motivate students to listen to English authentic songs to improve their pronunciation level.					
14	I use different conversations of films for teaching speaking.					
15	I use different conversations of film for teaching listening.					
16	I motivate students to listen to English authentic songs to improve their listening skills.					
17	I use LingQ (language learning tool) which is a mobile application for teaching different skills.					
18	I motivate students to have free discussions via mobile applications.					
19	I motivate students to listen to a bit of English every day (radio, music) at home.					
20	I use Adobe Connect features for teaching through mobile.					
21	I motivate them to have a video conference through different mobile applications.					
22	I use my mobile phone for language teaching.					

23	I use social media (such as I-Gap and Whats app) as an interactional tool for language teaching.						
24	I use Digital Game-Based Learning.						
25	I use Adobe Connect features for teaching through computer.						
26	I motivate students to use word processor of the Microsoft Word for writing accuracy.						
27	I expose learners to the authentic material through computer.						
28	I use Skype or other similar applications as tools for blended learning.						