



Iranian Arabic teachers' perception of applying educational software

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Abstract

Educational technology with its wide variety of usage has assisted teachers and learners to learn from the material which has been produced and reviewed by experts. However, the question may come to mind concerning the number of teachers applying such productions, how they perceive such productions, and if they use them, for what purpose they use them. This study was designed to investigate the Iranian Arabic teachers' perception of applying educational software. To find the answer to these questions, the researchers have developed a survey and interview with 29 Arabic teachers in Ahar. The results from the interview and survey indicated that more than half of the teachers apply such productions for teaching grammar and pronunciation more than other skills and sections of the book. However, they also believe that not all parts of the available software are adequate for usage. Thus, the findings of the present study might be useful for Arabic language supervisor teachers and educational software designers, to improve the quality of the software and also to motivate the teachers to use them in their classrooms.

Keywords: Arabic language; educational software; foreign language.

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1. Introduction

One of the goals for integrating Information and communications technology (ICT) in education is to enhance teaching and learning practices thereby improving the quality of education (Higgins, 2003; Class et al., 2021). In most developing countries like Iran, the potential of ICT to support pedagogy is yet to be fully realized. To date, most of the attention both on policy and research has been on how the lack of infrastructure and access to technology affect the use of ICT in pedagogy (Koo, 2008; Ismail, Nikpoo & Prasad, 2023). It has also been shown that even in cases where the infrastructure is available, few educators are effectively integrating ICT into curriculum delivery (Decker-Woodrow et al., 2023; Babović et al., 2023; Wang, 2023).

It can be said, therefore, that there are also non-technical factors that affect the adoption of ICTs for curriculum delivery (Chen et al., 2020; Knapp et al., 2022; Abu-Hashem et al., 2023). Several studies by Mumtaz (2000), and Grainger & Tolhurst (2005) have shown that there is a wide range of factors that influence educators' underutilization of ICT in their teaching. These include access to resources, quality of software and hardware, ease of use, incentives to change, support and collegiality in their school, school policies, commitment to professional learning, and background in formal ICT training (Mumtaz, 2000). In addition, computer phobia is argued to be a major deterrent to the utilization of ICT by educators. It is believed that capabilities and constraints determine the efficacy (real and perceived) of an individual's taking particular actions. For many teachers who may have the capability to use ICT, a lack of self-confidence in using the technology is noted to be a strong limiting factor to its use. To achieve an effective and efficient learning process in students, it is necessary to pay special attention to the effective factors in the learning process. For this purpose, taking advantage of educational software is one of the important factors in the process of learning a language.

Arabic and English languages are the two main foreign languages taught at Iranian schools. Teaching the Arabic language has an important value in Islamic countries; hence, it is the language of Muslims' Holy Book Quran. Therefore, in Iran, Arabic has been used to be mainly taught to make the students able of reading and translating Quranic texts. Since, many years ago teachers have been practicing deep teaching of grammar at schools. Therefore, students have the burden of vocabulary to remember in addition to memorizing and learning Arabic grammar. However, the publication of new textbooks for Iranian schools has changed the views toward language learning and language teaching (Alipour, 2018). Yet some teachers believe in what they have used to do, and they still follow their rituals. Since the publication of the new textbooks, an abundance of educational materials such as posters, software, and applications have been published to aid Arabic language learning. It should also be mentioned that it was partially due to the development and expansion of technology in Iran in recent years which has made the production and access to educational applications very easy. The result is that applying such applications can facilitate learning the Arabic language. Without any exposure to visual, textual, and accompaniment audio material can facilitate learning.

Iranian Arabic textbooks have several sections including a photo story, letter and sound, grammar, dialogue, and texts for reading and practice. The texts include both formal sentences and Quranic clauses. The grammar has been reduced so much in comparison to the previous textbooks, and the focus is to make learners able to make dialogue and to read and understand the texts. Applying

educational software developed by various publications, especially Iranian textbook publications have the advantage

In contrast to this development and availability of educational software and multi-media material, it can't be certainly mentioned what number of teachers are using this material in their classes. Therefore, this problem came to the researcher's mind to investigate whether the adaptations and changes in the textbook and production of educational software have found their way into the Arabic classes in Iran, and then how it is perceived among Iranian Arabic teachers.

1.1 Purpose of the Study and Research

Therefore, this study was designed to investigate the Iranian Arabic teachers' perception of applying educational software. Therefore, it was tried to answer the questions:

Q1: How many percent of Arabic teachers apply educational software in their teaching?

Q2: What are Iranian Arabic teachers' perceptions of applying educational software?

Q3: For which sections of the book do they apply educational software in their teaching?

1.2 Review of the Literature

Educational software has a wide variety of kinds including multimedia including text, graphics, animation, sound, and types of simulation. Learners will gain the ability to perceive and gain new information with the use of educational software programs. This is meaningful learning (Rezaie Rad et al, 2012). Nowadays *YouTube, Skype, Twitter, Blogs, and Smartphone Applications* are widely used as educational aids. However, specific software is usually developed by specific organizations to fit their accompanying product. In Iran, also, several publications such as Iran National Textbook Organization, Khate-Sefid, Gaj, and some others publications are developing educational software to accompany the school's Arabic Textbooks.

In education, enhancing the quality of learning and teaching has always been important issues. To achieve this purpose, getting help from technology to support teaching and learning activities can be effective. Educational technology provides conditions and helps them to achieve higher levels of learning finally to achievement in this process, learning occurs with more depth, and learners can learn their desired concepts in a very short time and memorize them for a long time. The following paragraphs, it is tried to present some of the findings of the previous studies related to the perception and effectiveness of educational software in teaching the Arabic language.

Al Omari (2015) studied the teachers' perception of educational software in Arabic as a Foreign Language context, and the research reported that most Arabic teachers perceive technology and educational software as useful for teaching; however, most of them apply traditional blackboards for teaching. The researcher adds that limited knowledge of technology, limited training, and limited technology for the Arabic language are the reasons that most teachers aren't willing to apply them in their classes.

Gharawi and Bidin (2016) have also studied the Arabic teacher's perception of applying Computer-assisted language learning (CALL) in teaching vocabulary and they reported that most of the teachers find CALL useful for helping learners, motivating, encouraging, and supporting individual learning.

However, about half of the participant teachers believe that applying such technology in the class is time-consuming.

Al-Busaidi et al. (2016) investigated the Arabic teachers' perception of educational software in Oman. The findings of the mentioned qualitative research based on the interview with 1 female teacher indicated that teachers think that the software is very effective in improving the learning of Arabic. They considered four criteria for effectiveness including quality of teaching, joy of learning, improvement of overall enjoyment, and overcoming reading difficulties. Especially the teachers found the software effective in teaching and learning reading and vocabulary. They have reported that in any case, the teaching software was positively effective, but they require some features such as attractiveness and quality. As a part of their study, they have also reported that because of several issues, teachers might avoid applying this educational software in their classes including lack of facilities, lack of time, negative attitude, and focus on high achievers. The results showed that teaching with podcast multimedia systems significantly increased learning of Arabic at the high school level. But of motivation, reinforcement between the traditional method and system for multimedia podcasts showed no significant differences.

A similar study on the other side of the classroom focusing on students rather than teachers has been done by Al Musawi et al. (2016). Al Musawi et al. (2016) studied the Arabic learner's attitude toward learning with educational software, and they found that applying such software improves students' achievement in reading comprehension and reading aloud with minimizing the errors in Arabic. In the same vein, Yazdanpanah Nozar and Siamian (2015) have also reported the positive effects of multimedia teaching of Arabic with the podcast on Iranian high school learners. However, their findings showed no effect on the motivation variable of the participants. As the review suggests there is a variety of aspects to investigate the teachers' perception of applying educational software in their classes. In addition, in Iran, fewer attempts have been done on this issue. Thus, it is essentially required to investigate the teachers' perception on one side and to find out about their amount of usage on the other side.

2. Materials and Methods

2.1 Participants

The sample of the present study included English teachers at middle schools and private English institutes in Ahar, Iran. The participants of the study (N = 33) included public-school English teachers (N = 17) and private-institute English teachers (N= 16). All teachers in Ahar were sent a questionnaire. Both genders participated in the study and they were aged from 22 to 45. All participants were experienced in teaching English for more than 4 years. Eighteen female teachers and fifteen male teachers were in the study groups. In both groups, teachers' degrees included Associate of Art up to postgraduate ones (Master of Arts or Ph.D. students). Except for one of the participants who was a native Persian speaker, the other teachers were native speakers of Azeri (Spoken in Ahar, East Azerbaijan Province, Iran). However, all teachers' second language was Persian which is the formal language of Iran and all syllabuses are presented in that language.

All teachers' qualification for teaching English was approved by the Education Office of Ahar according to their degree and skills in English language teaching. It should be mentioned that public school teachers have been trained in teachers training universities or accepted for teaching jobs

through a national exam and they must teach English for 24 hours a week. However private-institute teachers have just passed the institutional entrance exam, and they had no limitation of teaching hours. From the sample of the study, five teachers were experiencing both types of teaching contexts (public school and private institute).

2.2 Data Collection Instrument

To gather information about teachers' motivation toward teaching English, a teacher motivation questionnaire by Dweik and Awajan (2013) was selected for the study, and two items were added to the questionnaire item list to issue more contextual factors.

The questionnaire included three sections; the first section included the personal and occupational data of the participants such as age, gender, educational degree, and experience of teaching in English. The second section included a list of motivational sources to find out to what extent English language teachers are motivated by these sources. The motivation sources section of the questionnaire included 12 items with a five-point Likert scale; Poorly Motivated = 1, Slightly Motivated = 2, Neutral = 3, Motivated = 4, and Strongly Motivated = 5.

2.3 Procedure

The present research was conducted in the middle of the 2016-2017 school year. The study was a quantitative one including two comparison groups; English teachers at public schools and English teachers at private language institutes. To calculate the reliability of the teacher motivation questionnaire, a pilot study was run and the questionnaire copies were distributed among high-school English teachers through the social Telegram group of teachers. A reliability level of 0.78 was gained for the questionnaire. The result of the pilot study was in line with the previous findings. For instance, previous research has already reported above 0.7 reliability based on Cronbach's alpha reliability test for the main teacher motivation questionnaire. Therefore, the questionnaire was administrated in the study.

To gather information about teachers' motivation to teach English, the questionnaires were distributed among teachers. Therefore, the researcher distributed the questionnaire papers in English group meetings or through the social media group of Ahar English teachers.

2.4 Data Analysis

The needed data for the present study included teachers' personal and occupational information and their level of motivation toward teaching English. The gathered data were analyzed through SPSS software, so descriptive and inferential statistics were reported. The independent samples t-test was run to compare the study groups' level of motivation.

3. Results

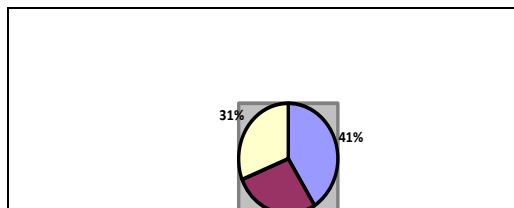
The following sections present the results from statistical procedures to deal with the study questions.

3.1 Percentage of teachers who apply educational software

As was mentioned in the procedure section, the teachers were asked to see whether they use educational software for teaching Arabic in their classes. The results of the one-on-one interview in

the Arabic teacher's workshop indicated that 69 % (n= 20) of the existing sample (n=29) use educational software; however, 31% (n=9) asserted that they don't use any educational software in their teaching of Arabic language (see Figure 1).

Figure 1
Percentage of Educational Software Usage



There was no statistically significant difference, as determined by the Mann-Whitney U-test, between Male (N=12) and Female (N=8) Arabic teachers' use of educational software (U= 48.000; P-value= 0.87, P > 0.05). See Table 1.

Moreover, the results of Mean Rank and Median analyses for the groups showed that female teachers received higher scores in this regard (Male, Mr=10.70; Mdn=3.00 and Female, Mr=10.30; Mdn=3.00).

Table 1
Gender and Use of Educational Software

	Group statistics				Mann-Whitney U-test			
	Gender	N	Mean Rank	Median	U	Z	Sig. (2-tailed)	r (= Z/N root square)
Use of educational software	Male	12	10.70	3	16368.00	-1.942	.052	0.183
	Female	8	10.30	3				
	Total	20		3				

To assess the effect of gender on teachers' use of educational software, the participants were divided into six different age groups. The age groups comprised the Below 25, 26 to 30, 31 to 35, 36 to 40, 41 to 45, and 46 and above. The results of the Kruskal-Wallis Test are as follows (table 2).

Table 2
Age and Use of Educational Software

	Ranks				Kruskal-Wallis Test		
	Age	N	Mean Rank	Median	Chi-Square	df	Sig.
Use of educational software	25 and below	2	11.86	2.00	7.110	5	0.213
	26 to 30	2	8.17	2.00			
	31 to 35	4	7.66	2.00			
	36 to 40	4	8.10	2.00			
	41 to 45	6	6.37	2.00			
	46 and above	2	7.82	2.00			
	Total	20	7.66	2.00			

The results of analyses for the age groups of '25 and below' (N=2), '26 to 30' (N=2), '31 to 35' (N=4), '36 to 40' (N=4), '41 to 45' (N=6), and '46 and above' (N=2), as determined by Kruskal-Wallis Test, showed no significant difference between the age groups and the use of educational software ($\chi^2(5, 386) = 7.110$; P-value = 0.213; $P > 0.05$). See Table 2.

Additionally, the results of Mean Ranks and Median analyses showed that the highest scores were received by the age group of '25 and below' in the use of educational software (25 and below, Mrk=11.86; Mdn= 2.00).

3.2 Teachers' Perception of educational software

To identify the Arabic teachers' perception of the educational software, teachers were asked to fill out a self-made questionnaire on their perception and Educational Software. The questionnaire comprised 15 statements and the teachers rated each of them based on a five-point Likert scale where 5 = Strongly Agree, 4 = Agree, 3 = Uncertain, 2 = Disagree 1 = Strongly Disagree. Table 3 presents the results of the questionnaire.

Table 3
Teachers' perception of the effectiveness of educational software

Item	Strongly Disagree		Disagree		Uncertain		Agree		Strongly Agree		Mean
	F	%	F	%	F	%	F	%	F	%	
1 Educational Software leads us to achieve our educational goals.	1	5%	1	5%	1	5%	8	40%	9	45%	16.6
2 These items attract learners' attention	1	5%	0	0%	1	5%	7	35%	11	55%	21.75
3 These Softwares are useful	0	0%	1	5%	1	5%	10	50%	8	40%	21.25
4 The Softwares provide interactive activities	1	5%	1	5%	2	10%	6	30%	10	50%	16.6
5 These Softwares connect learners' background knowledge and experience	1	5%	3	15%	7	35%	3	15%	6	30%	14
6 The Software is easy to operate	0	0%	0	0%	1	5%	9	45%	10	50%	29.66
7 The Softwares help learners focus and get involved in the lessons	1	5%	1	5%	1	5%	9	45%	8	40%	16.4
8 The Softwares relate completely to the materials in the official books	2	10%	2	10%	4	20%	6	30%	6	30%	14.4
9 The Software is up to date	2	10%	3	15%	4	20%	5	25%	6	30%	14
10 Softwares help improve pronunciation	0	0%	0	5%	1	5%	10	50%	8	40%	27.66
12 Softwares help improve learners' reading comprehension	4	20%	3	15%	6	30%	4	20%	3	15%	11.8
12 Softwares help improve learners' listening skills	0	0%	1	5%	1	5%	12	60%	6	30%	20.75
13 Softwares help improve learners' speaking skills	1	5%	1	5%	6	30%	4	20%	8	40%	15.4
14 Softwares help improve learners' writing skills	3	15%	5	25%	2	10%	5	25%	5	25%	12.8
15 Softwares help improve learners' knowledge of vocabulary	0	0%	0	0%	0	0%	11	55%	9	45%	44.5
Total	17	5.66%	17	7.6%	38	11%	109	36.3%	113	39.4%	

The purpose of the questionnaire was to assess the effectiveness of the educational CDs. Data analysis showed an obvious trend toward educational software. The high percentage of “agree” (36.3%) and “strongly agree” (39.4%) options shows that the CDs are overall favored by school teachers. These results suggest the effectiveness of the educational software. Although educational CDs are generally perceived well by teachers, a closer look at the data analysis reveals that there are also flaws to these CDs. 25% of the teachers believe that CDs are not up to date (M = 14), and 20% are uncertain about the up-to-datedness of the CDs. Similar opinions existed on whether these CDs help improve learners' writing abilities (M = 12.8).

According to the teacher's opinions educational CDs were scored higher regarding improving learners' knowledge of vocabulary (M = 44.5), learners listening skills (M = 20.75), pronunciation (M = 27.66), ease of operation (M = 29.66), usefulness (M = 21.25) and attracting learners' attention (M = 21.75).

The researcher also used informal narrative interviews to further gather information from participants. In the context of this study, narrative interviews were in the form of a discussion of the research questions. Each participant was encouraged to narrate, the story of his/her experience in classroom teaching and the multiplier effects it had on his/her perception of media role. This style of interview creates a conversational encounter that allows the interviewee to tell a story in his/her way and the interviewer the freedom to respond to new material raised during the interview. The interviews revealed the following:

The entire teacher had a passive positive attitude towards the application of such tools but a number of them were skeptical of their practicality. The researcher labeled their attitude as passive since their positive attitude was not the result of direct contact and use of the said material.

Five of the teachers expressed similar concerns about the availability of such tools. Their unanimous belief was that a single computer would not be a useful tool in language pedagogy through educational software and that to take real advantage of educational software; each learner needs access to a PC or laptop of his/her own.

However, the above-said comments were provided before the study, and after completing the course of the treatment the teachers had a more active perception of the educational software and available tools. The beliefs experienced a slight change in that they now believed that even utilizing a single computer for teaching an entire class without providing each student with their PC has its own positive merits.

3.3 Purpose of Applying Educational Software

To find out how much and for what purposes the teachers employ such software in their classes 20 teachers were asked to fill out a self-made questionnaire containing 5-point Likert scale statements where 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very Often. Table 4 presents the results of the questionnaire analysis.

Table 4
Sections of educational software used by the teachers

Item	Never		Rarely		Sometimes		Often		Very Often		Mean
	F	%	F	%	F	%	F	%	F	%	
1 Writing	6	30%	4	20%	7	35%	2	10%	1	5%	9.6

2	Pronunciation	0	0%	4	20%	8	40%	7	35%	1	5%	16.25
3	Speaking	2	10%	7	35%	7	35%	2	10%	2	10%	11
4	Grammar	0	0%	5	25%	10	50%	3	15%	2	10%	15.5
5	Reading	2	10%	5	25%	6	30%	6	30%	1	5%	11.8
6	Culture	1	5%	6	30%	9	45%	3	15%	1	5%	11.4
7	Listening	1	5%	5	25%	8	40%	4	20%	2	10%	12.2
8	Vocabulary	5	25%	6	30%	6	30%	2	10%	1	5%	9.6

As seen in Table 4 for teaching writing $M = 9.6$, for teaching vocabulary $M = 9.6$, for teaching reading $M = 11.8$, Speaking $M = 11$, and for teaching culture $M = 11.4$ indicating that teachers rarely use educational software for teaching writing, reading, and vocabulary. For teaching Listening $M = 12.2$ which shows that teachers sometimes use such software for teaching listening. For teaching Pronunciation $M = 16.25$ and for teaching Grammar $M = 15.5$ indicating that teachers often use such software to teach Pronunciation and Grammar.

4. Discussion

Regarding the teachers' perception of such software, the researcher observed a positive trend toward educational software. The high percentage of "agree" (36.3%) and "strongly agree" (39.4%) options showed that educational software is overall favored by school teachers. From the existing sample, more than half have asserted that they apply educational software for teaching Arabic which shows that Arabic teachers are generally applying educational software in their classes.

Regarding the equipment available for the teacher to benefit from, it was observed that most of the schools had the basic required equipment, a PC and a video projector, in one of the school classes which even though not enough, made it possible for the teachers to employ the educational software in their classes. The findings of the present study regarding the teachers' perception of educational software products are in line with the previous study such as Al-Busaidi et al. (2016), Al Omari (2015), and Gharawi and Bidin (2016). Interviews with the teachers show that they believe such technology makes learning available and possible everywhere. Therefore, students can turn to these products even when they are far from the classroom and teacher.

In addition to such a feature, teachers mostly believe that learners' problems with reading and pronunciation could be solved by such products. The reason for this may come from the fact that educational software products have usually standard sounds, pronunciation, and grammar which make them more comprehensible for learners (Al-Busaidi et al., 2016). Teachers find explaining grammar easier when they apply educational software. Arabic grammar rules are complicated and require a lot of explanation which can be easily demonstrated through the multimedia presentation.

Although Al-busaidi (2016) reported that teachers use it for vocabulary teaching, the present study found that teachers mostly benefit from the pronunciation and grammar sections of such products. In addition, teachers believe that these products require revisions and up-to-dating. Teachers mentioned that the available CDs and software do have not the latest multimedia technology and this is in line with Al Omar (2015) who has already mentioned the problem of out-dating technology in Arabic educational software.

5. Conclusion

Computer-assisted language learning (Call), educational technology, E-learning, equational software, and multimedia presentation are all terms developed based on the arrival of technology in education. Without any doubt, these contents facilitate learning through the presentation of material via different channels of audio, visual, and textual aids. Individuals might find various channels suitable for learning based on their learning preferences.

The participants of the present study are all Arabic teachers and more than half apply educational software for teaching Arabic suggesting that the situation for Arabic teachers has improved compared to the past in Iran. This may be because of material developments, ease of access to the material, teachers' awareness about these products' usage and benefit, workshops, etc. However, evaluation of teachers' perceptions shows that teachers are not applying these products for every skill in the same way. For example, pronunciation and reading have more importance which is perhaps because of the significance of correct Quran reading aloud and reciting.

However, the fact is that compared to other foreign languages such as English which is funded by both international and national companies and publications, limited publications are developing Arabic content material in Iran. Thus, there is more need for support to make the products more up-to-date and more accessible than current time.

The present study was conducted in a small city with access to a sample of 29 Arabic teachers; however, the fact is that demographic conditions can affect the teachers' interest and access to technology. Therefore, it might be considered as a small number of samples compared to the bigger community of Arabic teachers in Iran.

The findings of the present study suggest that not many but some of the teachers deprive their learners of educational software used in class. The findings of the present study apply to Arabic language teachers and supervisor teachers. Introduction and providing teachers with enough material at school might also motivate them to apply such material in their classes. Thus, the findings are useful for an educationalist to plan and observe the lessons in the classes. Without any doubt, Arabic language learners are the biggest group of beneficiaries of educational software usage in the class.

Arabic as a language of the Holy Quran is specifically required for aloud reading and translating for its followers, and applying educational software for listening, pronunciation, and reading facilitates this demand. Thus, the application of educational software might lead to an easier understanding of correct pronunciation.

Progress in educational technology and the production of related material requires guidelines and observations for how to benefit from these products. In addition to what has been studied in the current study, the future focus can be on the learners' perception of the product's quality and their interest and their satisfaction with these products' usage in their classes. Therefore, future studies can investigate learners' opinions about the usage of educational software in their Arabic classes. In addition, experimental studies can be planned to investigate the effectiveness of such productions on learners' various aspects of learning.

References

- Abu-Hashem, M. A., Gutub, A., Salem, O., Shambour, M. K., Shambour, Q., Shehab, M., ... & Alrawashdeh, M. J. (2023). Discrepancies of remote techno-tolerance due to COVID-19 pandemic within Arab middle-east countries. *Journal of Umm Al-Qura University for Engineering and Architecture*, 1-15. <https://link.springer.com/article/10.1007/s43995-023-00026-0>
- Al Musawi, A., Kazem, A. M., Al Hashmi, A., & Al Busaidi, F. (2016). The effectiveness of instructional software in reading comprehension skills and reading aloud of Omani fourth basic schools' students. *Technology, Innovation and Education*, 2, 1-21. <https://link.springer.com/article/10.1186/s40660-016-0018-0>
- Al Omari, S. (2015). The effect of computer-assisted language learning on improving Arabic as a foreign language (AFL) in higher education in the United States. *Procedia - Social and Behavioral Sciences* 192 (2015) 621-628. <https://www.sciencedirect.com/science/article/pii/S1877042815035806>
- Al-Busaidi, F., Al Hashmi, A., Al Musawi, A., & Kazem, A. (2016). Teachers' perceptions on the effectiveness of using Arabic language teaching software in Omani basic education. *International Journal of Education and Development using ICT*, 12(2). <https://www.learntechlib.org/p/173449/>
- Alipour, S. (2018). The effect of lesson study on Iranian EFL teachers' perception of teaching speaking. *Language Teaching Research Quarterly*, 5, 45-58.
- Babović, Z., Bajat, B., Đokić, V., Đorđević, F., Drašković, D., Filipović, N., ... & Zak, S. (2023). Research in computing-intensive simulations for nature-oriented civil engineering and related scientific fields, using machine learning and big data: an overview of open problems. *Journal of Big Data*, 10(1), 1-21. <https://journalofbigdata.springeropen.com/articles/10.1186/s40537-023-00731-6>
- Chen, H., Islam, A. A., Gu, X., Teo, T., & Peng, Z. (2020). Technology-enhanced learning and research using databases in higher education: The application of the ODAS model. *Educational Psychology*, 40(9), 1056-1075. <https://www.tandfonline.com/doi/abs/10.1080/01443410.2019.1614149>
- Class, B., de Bruyne, M., Wullemin, C., Donzé, D., & Claivaz, J. B. (2021). Towards open science for the qualitative researcher: From a positivist to an open interpretation. *International Journal of Qualitative Methods*, 20, 16094069211034641. <https://journals.sagepub.com/doi/pdf/10.1177/16094069211034641>
- Decker-Woodrow, L. E., Mason, C. A., Lee, J. E., Chan, J. Y. C., Sales, A., Liu, A., & Tu, S. (2023). The impacts of three educational technologies on algebraic understanding in the context of COVID-19. *AERA open*, 9, 23328584231165919. <https://journals.sagepub.com/doi/abs/10.1177/23328584231165919>
- Dweik, B. S., & Awajan, N. W. (2013). Factors that enhance English language teachers' motivation in Jordanian secondary schools. *English Linguistics Research*, 2(1), 33-42. <https://tinyurl.com/yt24taj2>
- Gharawi, A.M. & Bidin, A. (2016). Computer Assisted Language Learning for Learning Arabic as a Second Language in Malaysia: Teacher Perceptions. *International Journal of Information and Education Technology*, 6(8), 633-637. <https://www.researchgate.net/profile/Gharawi-Mohammed->

[2/publication/279278991-Computer-Assisted-Language-Learning-for-Learning-Arabic-as-a-Second-Language-in-Malaysia-Teacher-Perceptions/links/5e79fd0a92851c3091392ce9/Computer-Assisted-Language-Learning-for-Learning-Arabic-as-a-Second-Language-in-Malaysia-Teacher-Perceptions.pdf](https://doi.org/10.18844/ijire.v10i1.8980)

- Grainger, R., & Tolhurst, D. (2005, October). Organisational factors affecting teachers' use and perception of information & communications technology. In *Proceedings of the 2005 South East Asia Regional Computer Science Confederation (SEARCC) Conference-Volume 46* (pp. 13-22). <https://crpit.scem.westernsydney.edu.au/confpapers/CRPITV46Grainger.pdf>
- Higgins, S. J. (2003). *Does ICT improve learning and teaching in schools?* BERA, British Educational Research Association. <https://www.researchgate.net/profile/Steven-Higgins-4/publication/232607668-Does-ICT-Improve-Learning-and-Teaching-in-Schools/links/0fcfd50b9fce9c3616000000/Does-ICT-Improve-Learning-and-Teaching-in-Schools.pdf>
- Ismail, S.M., Nikpoo, I. & Prasad, K.D.V. (2023). Promoting self-regulated learning, autonomy, and self-efficacy of EFL learners through authentic assessment in EFL classrooms. *Lang Test Asia* 13, 27 <https://doi.org/10.1186/s40468-023-00239-z>
- Knapp, P., Benhebil, N., Evans, E., & Moe-Byrne, T. (2022). The effectiveness of video animations in the education of healthcare practitioners and student practitioners: a systematic review of trials. *Perspectives on Medical Education*, 1-7. <https://link.springer.com/article/10.1007/s40037-022-00736-6>
- Koo A C (2008). Factors affecting teachers' perceived readiness for online collaborative learning: A case study in Malaysia. *Educational Technology & Society*, 11 (1), 266-278. <https://www.jstor.org/stable/pdf/jeductechsoci.11.1.266.pdf>
- Mumtaz S (2000). 'Factors affecting teachers use of information and communications technology': a review of the literature. *Technology, Pedagogy, and Education*, 9 (3), 319 – 342. <https://www.tandfonline.com/doi/abs/10.1080/1475939000200096>
- Rezaie rad, M&Naderi, Kh (2012). The investigation of the effectiveness of educational English language software in learning-teaching process of the students grade 1 Jouybar girls' high school, *Journal of social studies*, No 17. Winter.
- Wang, T. (2023). Effect of using 5G and cloud computing environment for independent college English vocabulary learning. *Journal of Cloud Computing*, 12(1), 70. <https://link.springer.com/article/10.1186/s13677-023-00447-1>
- Yazdanpanah Nozar, A. & Siamian, H. (2015). The effect of applying podcast multimedia teaching system on motivational achievement and learning among the boy students. *Acta Informatica Medica*, 23(1), 29–32. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4384874/>