The Effects of Iranian EFL Learners' Individual Characteristics on Their Perceptions Toward Mobile Affordances

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Abstract

The present investigation aimed at studying the impacts of Iranian EFL learners' gender, age, field, and degree of study on their perceptions of mobile affordances. To this end, 159 Iranian EFL students studying at university were asked to fill Mobile Affordance Inventory (Rostami, 2021). To analyze the data, the Kolmogorov-Smirnov test, independent sample t-test, one-way ANOVA, and Pearson's correlation were run. The findings of the study indicated that no differences were found among EFL learners in using mobile learning affordances regarding their gender, degree, and field of study. Additionally, no significant relationship was found between the participants' age and their mobile affordances. The results also showed that different affordances of mobile devices can provide new and important information for educators. They become more familiar with different mobile phone capabilities to use, and it makes their teaching more effective. Becoming familiar with affordances provides a situation for improving students' learning as well as their self-control.

Keywords: Affordance; MALL; Mobile Device; Mobile Learning; Online Learning

1. Introduction

In the new millennium, technology has changed the traditional and face-to-face educational system. The Internet and the Web have caused changes to all aspects of human lives, and many researchers and educators believe that compared to traditional or face-to-face learning, online learning has proved to be more effective in education generally and in language teaching particularly. For several years, online and distance learning programs (ODL) have been offered in different educational systems. Although they suffered from some

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disadvantages, they allowed students to be more flexible and caused remarkable growth in this innovative form of learning (Laprade et al., 2014).

Several factors caused the shift to electronic and distance learning and education; one of them can be that in modern society we have a movement toward globalization. It means that education, as well as art, music, and business, hire different aspects of globalization in its development. The next factor can be "access to education" (Charlene, 2015). Distance learning allows learners to be flexible without any limitations in time and place. It means that one of the most important features of online learning can be preparing a world-class education for all people which has no border for learners around the world (Brittany, 2015). This new educational trend helps students to become autonomous and the result is the provision of self-controlled learning (Sun& Ting Wu, 2016). Kuzu (2014) and Middleton (2015) indicate that tablets and smartphones change teaching and learning ways innovatively.

People have different reactions toward new technology and tools. These opportunities can change human life and needs (Abbasi & Tabatabaee- Yazdi, 2021). Among many different technological developments, mobile devices can be considered more beneficial in attracting the learners' attention, because, in the modern educational system, we have students who are digital natives (Momeni, 2022). Mobile phones have some characteristics which should be welcome in language learning, such as providing both learnings as well as teaching whenever and wherever is needed. Moreover, other characteristics include conversational learning, and learning through communication (Jalilifar & Mashhadi, 2014). Paredes et al. (2019) state that we live in a world that is surrounded by different digital devices and learning tools. They also believe that in mobile learning the essential components include mobile devices and learning tools. Cheka (2008) states that several years ago, teachers and students knew about mobile technologies, but they could integrate them into the process of their teaching and learning just a few years ago. According to Kukulska and Shield (2008), mobiles can be useful for many disciplines as well as language learning. One usage of mobiles in language learning is improving language learning proficiency through mobiles. Parsons, et al. (2016) indicate that enabling place-sensitive data, that may change from one context to another, is one significant feature of m-learning. Mobile devices provide wireless communication networks which make teachers and their students more interested in this kind of educational system and learning. Kargozari and Tafazoli (2012) indicate that mobile learning provides situations for learners to learn on their own. This kind of support is considered a type of scaffolding.

According to Harwood and Hafezieh (2017), the term affordances emphasize possible actions and the performativity of different devices. Affordances are not only related to the quality and property of the objects, but also, they are related to how they can be used based on their capabilities and possibilities for use. On the other hand, affordances are the actual and perceived properties. These properties tell users how to use an object. Usability and affordances studies are related together. It means that different types of affordances are in relation to different levels of usability (Raudaskoski, 2003). According to Kukulska and Shield (2008), mobiles can be useful for many disciplines as well as language learning; they can improve language learning proficiency (as cited in Kargozari & Tafazoli, 2012). There are very limited investigations about mobile learning affordances, and no other researchers have not conducted research like this model which focuses on six affordances of mobile devices. In addition, Iranian

EFL teachers and learners are also not sufficiently aware of mobile affordances. So, the present investigation is a new study that aims to explore the usefulness of mobile affordances regarding the learners' field and degree of study, age, and gender. The findings of this study can be used to challenge the Iranian EFL educational system to use mobile learning affordances more effectively. The present study tried to answer the following questions:

Q1. Is there any significant difference between Iranian EFL learners' perceived mobile affordances regarding their gender?

Q2. Is there any significant difference among Iranian EFL learners' perceived mobile affordances regarding their degree of study?

Q3. Is there any significant difference among Iranian EFL learners' perceived mobile affordances regarding their fields of study?

Q4. Is there any significant relationship between Iranian EFL learners' perceived mobile affordances and their age?

2. Review of Literature

2.1. Cognitivist theory

This theory is related to the different senses of the learners. According to Sweller (1994), Cognitive Load Theory (CLT) is related to the mental capabilities of learners. This theory can explore the learner's working memory capacity. In this case, effective learning includes cognitive processes. This belief is related to the use of video, audio, animations, text, or images to improve learning. Mobile technology by providing some opportunities to utilize podcasts, SMS, MMS, mobile TV, and e-mail influences the learning process and helps the users of the devices to learn easily (Keskin & Metcalf, 2011).

2.2. Socio-cultural theory

In view of Vygotsky (1934), social-mediated processes cause human development. He believes that social interaction enhances the development of cognition. Individual development is also related to the social and cultural context in which the learner is within. Vygotsky (1978) states that learning happens through interaction with society (as cited in Keskin & Metcalf, 2011). Mobile devices provide a situation to share conversational feedback between teachers and learners. It also can facilitate collaboration and connection between more knowledgeable persons or resources and learners (Kearney et al., 2012).

2.3. Life-long learning

Naismith et al. (2004) state that learning can happen all time of our life and this learning is influenced by many factors mainly the context or the environment we are in. Mobile phones support learning outside of the classroom and embed it all of the time in our life. Lifelong learning occurs through the use of mobile forums, blogs, podcasting, and Wikipedia through m-learning (Jinot, 2019).

2.4. Related Studies

Rostami (2021) provided a model which describes the affordances and properties of mobile devices. These affordances are connectivity, context sensitivity, outdoor learning,

mobility, interaction with the interface, and conversational learning. In Parsons et al.'s (2016) model portability, data gathering, communication, interaction with the interface, contextual active learning, and outdoor environment are introduced as affordances of mobile devices. Klopfer and Squire (2002) also proposed a model for mobile affordances consisting of five properties for these devices. These properties are portability, social interactivity, context sensitivity, connectivity, and individuality.

Alkhudair (2020) did an investigation on m-learning and mobile device applications. A positive relationship was found between hours of using educational applications (such as Skype and Twitter) and learners' performance because the students believed that those applications had good speaking activities and interesting content. Moreover, when students used their mobile devices, they became more motivated to learn.

Paredes et al. (2019) conducted a study in Spain, Belgium, and the UK (in the UK learners were foreign students who pursued a degree in English) with 130 participants. All undergraduate participants and masters in English learning registered for this online course voluntarily. Most of the subjects claimed that they had applied apps for language learning and most of them had used apps at home. They believed that the app provided an interactive and meaningful learning situation.

In addition, Demir and Akpinar (2018) investigated the academic achievement of learners by using mobile learning through quasi-experimental design and achievement tests. The student's attitude toward mobile learning was examined in an interview. Its finding indicated that the participants' attitudes were positive toward mobile learning and their motivation had increased. Therefore, their performance improved. The results of the study revealed that mobile learning had an effect on the academic achievement of learners and they learned better by using m-learning. The results of follow-up tests also proved that the experimental group had a positive attitude toward mobile learning due to being digitally literate. These learners were happy; they felt valuable and joyful when they used tablets or mobile devices. Also, they could fix their mistakes by using them rapidly. Using tablets and mobile phones provides them extra time, which is a good point for learners.

Gunter (2018) also conducted another qualitative study of mobile learning. In this study, 12 graduated students participated and all of them had full-time jobs. All of the participants indicated that mobile phones were good mediators for learning and they had little complexity in the process of learning. Additionally, Hunaiyyan et al. (2017) conducted a study in private and public institutes in Kuwait. 110 male and female academic instructors participated in this quantitative study. The study's findings reported no significant differences between males and females in utilizing social media in the m-learning process. Also, the findings asserted no significant difference regarding the instructors' age. All participants agreed that m-learning provided a situation to be free in learning regardless of age and gender. And all participants believed that m-learning is beneficial and had a positive view of it. Likewise, Tan and So (2015) did a study to investigate the differences between school students and mobile affordances. The results of this study implied no difference among those students in using capabilities and affordances of mobile devices.

3. Method

3.1. Participants and Setting

To collect the required data, a random sampling process was applied. The main instrument of the study was sent to 500 Iranian EFL learners but only 159 filled out the questionnaire. To increase the generalizability of the findings, the subjects of the present study were selected from different universities in Iran such as Sabzevar, Mashhad, Neyshaboor, Tehran, Hamedan, etc. They were from both genders (Male= 16.8% and Female= 83.2%), different fields of study (TEFL= 59%, English Translation= 24.8%, English Literature= 1.9%, and Others= 14.3%), and with diverse degrees (BA= 31.1%, MA= 56.5%, and PhD= 12.4%). The participants in this study were not categorized by age. The process of data gathering, through spreading the questionnaire electronically, took place in July 2021.

3.2. Instrumentation

To fulfill the objectives of the study, Mobile Learning Affordance Inventory (Rostami, 2021) was implemented. The questionnaire (see Appendix A) consisted of two sections; in the first section, the participants were asked to give their socio-demographic data consisting of their age, gender, degree, and field of study. The second part consisted of six constructs including connectivity, context sensitivity, outdoor learning, mobility, interaction with the interface, and conversational learning. The inventory included 53 five-point Likert scale items from 1 to 5 (strongly disagree to strongly agree). The original reliability of the instrument was checked through Cronbach's alpha and it was .93. Furthermore, CFA-based model analysis was used to check the construct validity of the questionnaire.

3.3. Procedures

Mobile Affordances Inventory was distributed among Iranian EFL learners to gather data. Because of the coronavirus outbreak, the process of data gathering was done only electronically. To this end, the link of the instrument was distributed in What's App and Telegram groups. The subjects were asked to provide some information including gender, age, field of study, and level of education. All responses were completely anonymous and voluntary. Data analyses were done by applying SPSS software. To check the significant difference between the participants regarding their gender, an independent sample test was applied. Moreover, one-way ANOVA was used to determine the significant differences among the participants of the study regarding their degree and field of their study. In the last step, Pearson correlation was implemented to check the relationship between age and the abovementioned - sub-constructs of mobile affordances.

4. Results

4.1. Test of Normality

First of all, the Kolmogorov-Smirnov test was employed to guarantee the normal distribution of the data. Table (1) represents the obtained sig value for all sub-constructs of the Mobile Learning Affordances Inventory is higher than .05. Consequently, it is possible to conclude that the data is normally distributed across all the variables.

Table 1
The Results of the K-S Test

	Statistic	Df	Sig.
Connectivity	.07	158	.11
Context Sensitivity	.09	158	.10
Outdoor Learning	.10	158	.09
Mobility	.06	158	.08
Interaction with Interface	.05	158	.14
Conversational Learning	.07	158	.08

4.2. Descriptive Statistics

Descriptive statistics of sub-constructs of the questionnaire are presented in Table (2). This table represents the mean, standard deviation, maximum, and minimum of the data. Because the number of items was not the same in different subscales of this questionnaire, an average item score was computed for each sub-construct, ranging from 1 to 5 in the last column.

Table 2
Descriptive Statistics of Sub-Constructs of the Mobile Learning Affordances Inventory

	N	Minimum	Maximum	Mean	Std. Deviation	Mean per item
Connectivity	159	22.00	89.00	70.11	10.06	3.89
Context Sensitivity	159	16.00	65.00	49.31	7.89	3.79
Outdoor Learning	159	3.00	15.00	11.18	2.41	3.72
Mobility	159	3.00	15.00	11.98	2.30	3.99
Interaction with Interface	159	14.00	40.00	30.08	4.95	3.76
Conversational Learning	159	23.00	40.00	31.43	3.72	3.92
Overall	159	81.00	263.00	204.11	25.47	3.85

As can be seen in Table (2), among different constructs of the scale, mobility had the highest mean score (3.99) and Outdoor Learning had the lowest mean score (3.72). Moreover, the same table showed that the number of participants was 159 in this study.

The first research question aimed at examining whether learners' using mobile technology differs significantly between the male participants and the female ones. To this end, an independent samples t-test was performed. Table (3) showed the descriptive statistics of male and female learners in using mobile technology. As Table (3) shows the mean scores of female learners for connectivity, interaction, and conversation were higher than male learners.
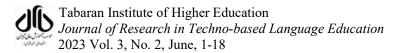
Table 3

The Descriptive Statistics of Male and Female Learners in Using Mobile Technology

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Connectivity	Female	132	70.46	10.48	.91
	Male	27	68.37	7.60	1.46
Sensitivity	Female	132	49.17	8.25	.71
	Male	27	150.00	5.91	1.13
Outdoor	Female	132	11.14	2.48	.21
	Male	27	11.37	2.07	.39
Mobility	Female	132	11.96	2.33	.20
	Male	27	12.07	2.18	.42
Interaction	Female	132	30.27	4.88	0.42
	Male	27	29.14	5.30	1.02
Conversational	Female	32	31.48	3.77	0.32
	Male	27	31.18	3.50	0.67
Overall	Female	132	204.51	26.38	2.29
	Male	27	202.14	20.76	3.99

To determine whether these differences were significant or not, an independent sample t-test was applied. Results showed that significant differences existed between male and female participants in their perceived mobile affordances (Table 4). This table indicated that there was no significant difference in six different sub-constructs of mobile technology and overall scale (t=.43, p=.66) between Iranian female and male EFL learners.

Table 4

Results of the Independent-Samples T-Test for Gender Difference

	t-test for Equality of Means				
	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Connectivity	.98	157	.32	2.09	2.12
Context Sensitivity	-.49	157	.62	-.82	1.67
Outdoor Learning	-.44	157	.65	-.22	.51
Mobility	-.21	157	.83	-.10	.48
Interaction with Interface	1.07	157	.28	1.12	1.04
Conversational Learning	.38	157	.70	.29	.78
Overall	.43	157	.66	2.36	5.39

The second question of the study aimed to determine whether Iranian EFL learners perceived mobile affordances significantly differently regarding their degree of study. Table, 5 showed the descriptive statistics of participants' different levels of study.

Table 5
Descriptive Statistics of Different Levels of Study

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum
					Lower Bound	Upper Bound	
BA	49	203.4082	20.83858	2.97694	197.4226	209.3937	154.00
MA	90	204.3667	24.12628	2.54313	199.3135	209.4198	153.00
PhD	20	204.7000	39.64461	8.86480	186.1458	223.2542	81.00
Total	159	204.1132	25.47622	2.02040	200.1227	208.1037	81.00

As Table (5) showed, among three levels of study, Ph.D. candidates experienced the highest mean score (204.7) but the participants with BA degrees had the lowest mean score (203.4). To recognize ether whether these differences are significant, a one-way ANOVA was run (Table 6). As can be seen, the differences among the means for all BA, MA, and Ph.D. participants were not significant ($F_{(2, 156)} = .02$, p=.97).

Table 6
Results of the One-Way ANOVA for Different Levels

	Sum of Squares	Df	Mean Square	F
Between Groups	37.02	2	18.51	.02
Within Groups	102510.93	156	657.12	
Total	102547.96	158		

The third research question tried to find out whether mobile affordances are perceived significantly differently by Iranian EFL learners who have different fields of study. Table (7) showed the descriptive statistics of different fields of study. The findings revealed that the means for all TEFL, translation, and literature students were different.

Table 7
Descriptive Statistics of Different Fields of Study

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
TEFL	93	208.44	23.32	2.41	203.63	213.24	153.00	263.00
Translation	40	199.55	30.01	4.74	189.95	209.14	81.00	257.00
Literature	3	207.66	20.74	11.97	156.13	259.19	189.00	230.00
Others	23	194.08	22.96	4.78	184.15	204.01	154.00	251.00

To find out whether these differences were significant, a one-way ANOVA was calculated. Table (8)showed the results of the one-way ANOVA for different fields of study. It revealed that there was no statistically significant difference among the means of the learners' different fields of study (F (3,155) =1.99, p=.06).

Table 8
Results of the One-Way ANOVA for Different Fields of Study

	Sum of Squares	DF	Mean Square	F
Between Groups	4924.64	3	1641.54	1.99
Within Groups	97623.31	155	629.82	
Total	102547.96	158		

Pearson correlation was used to find any probable relationship between Iranian EFL learners' perceived mobile affordances and their age in the fourth research question. The results of this correlation calculation were represented in Table (9).

Table 9
Results of Pearson Correlation

	Connectivity	Context Sensitivity	Outdoor Learning	Mobility	Interaction with Interface	Conversational Learning	Overall
Age Pearson Correlation	-.03	-.02	-.07	-.01	.04	.10	.01
Sig. (2-tailed)	.63	.80	.33	.89	.56	.19	.81
N	159	159	159	159	159	159	159

As Table 9 shows, no significant relationship was found between the overall scale and age (r=.01, p=.81). Moreover, there was no significant relationship between none of the six different sub-scales and age.

5. Discussion

The findings of the present research asserted that there was no significant difference among learners and users of mobile affordances regarding their gender. Hunaiyyan et al. (2017) found no difference among instructors who participated in their study regarding their age. Also, Tan and So (2015) investigated the probable differences in mobile affordances of male and female school students. The results of the study indicated no difference among them in using affordances of mobile devices.

The subjects of the study were chosen among BA, MA, and Ph.D. EFL students. The results reported no significant difference among participants' perceived mobile affordances regarding their degree of study. Paredes et al. (2019) also did not find any difference among

English learners who were graduates or undergraduates in view of using mobile technology and affordances.

Moreover, the participants of the present study were selected from different majors in literature, translation, and TEFL. The results reported that there was no significant difference among learners regarding their field of study. The findings of the present study were in line with Alkhudair's (2020) research where the participants were studying the different fields of English including translation and literature. In addition, Demir and Akpinar (2018) indicated that mobile learning is suitable for academic learning in different fields of study such as English learning as well as ICT-Information Computer Technology. Furthermore, the results asserted no significant relationship between the users' age and using mobile affordances. Hunaiyyan et al. (2017) did a study to find the effect of age and gender on using m-learning. Their findings showed that there was not any significant difference among users in using mobile technology regarding their age.

5. Conclusion

The findings of the present research revealed that there was not any significant difference among Iranian EFL learners' perceived mobile affordances regarding their gender, degree, and field of study. Furthermore, no significant relationship was found between the participants' perceived mobile affordances and their age. The findings of this study provide the conceptual framework for learners to enhance learning effectiveness. When learners become familiar with the affordances of mobile devices, step by step, they become autonomous and independent in the process of learning; it makes learning more enjoyable. The results of the present study indicate that in the age of technology, education is going toward becoming more learner-centered, and learners' familiarity with technology devices such as mobile devices and their affordances is increasing. It means that personalized learning is becoming essential. As a result, this important issue must be seriously considered in educational systems.

The findings of this study are useful for learners to be aware of mobile learning affordances and use them to enhance their learning. When they become familiar with these affordances and apply them through their devices, their motivation increases and the learning process becomes more enjoyable. Learners who are motivated can learn better in personalized learning. Teachers and trainers can use the results of this study in two ways: they can use the findings to change their method of teaching and make it updated based on the capabilities of mobile technology. The other implication of this research is that they can be familiar with some affordances of mobile learning to design a plan for applying mobile devices in their teaching.

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Appendix A

Mobile Learning Affordances Inventory

Dear English learners;

The following questionnaire asks for information regarding your experience with mobile affordances. Please take a few minutes to respond to the items. Please indicate how strongly you agree or disagree with the following statements by selecting the appropriate answer following the statement.

1. Strongly Disagree   2. Disagree   3. Neutral   4. Agree   5. Strongly Agree

Thank you for your cooperation.

Name (optional)   ……………….   City   ……………….

Age   ……………….   Gender   ……………….

Degree of the study   ……………….   Field of study   ……………....

N	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I can use my mobile devices to access online libraries.					
2	Course materials can be distributed through mobile devices easily.					
3	I usually use my mobile phone to check cultural events and news of the institution.					
4	I usually use my mobile phone to check my portal.					
5	Mobile devices are suitable to check emails.					
6	I use mobile technology to send homework assignments to my teacher.					
7	I share my mobile screen while presenting.					
8	Mobile devices are good facilities to share our beliefs, ideas, and viewpoints					
9	Mobile phones can improve our language knowledge to a great extent.					
10	The best way to be entertained happens by mobile devices.					

11	I prefer to read electronic books on my mobile phone rather than paper books.					
12	Mobile devices are good facilities to share our experiences.					
13	Mobile phones are suitable devices to search for information.					
14	I usually use my mobile phone to do my term projects.					
15	I prefer mobile devices to surf the internet.					
16	I prefer mobile devices to other technologies- such as computers and laptops- to ask questions.					
17	I usually use my cell phone to send posts to Instagram or Facebook.					
18	I usually watch, download, and send movies to YouTube on my mobile phone.					
19	I usually use my mobile phone to gather data.					
20	I prefer my mobile phone to use search engines such as Google, yahoo, …..					
21	For a better understanding, I prefer to record classes to review in the future.					
22	I usually take photos of class presentations and slides.					
23	I would rather answer my teacher's questions by sending voice or video files.					
24	I usually save different course contents on my cell phone to use in the future.					
25	I use my cell phone or tablet to take notes in my classes.					
26	I prefer to use mobile devices to fill out questionnaires.					
27	It is a good idea to use mobile devices to design and develop online questionnaires.					
28	Mobile technology allows its users to save/ create manageable amounts of data.					

29	I would rather use mobile phones to access Learning Management System (LMS).					
30	I prefer to use mobile devices to collect data by using google docs forms.					
31	I prefer to use mobile technology to take tests and quizzes with google docs.					
32	I use my mobile phone when I am waiting for an appointment to learn or review my lessons.					
33	I usually wear my mobile's headphones to listen to English podcasts (audio files) while driving.					
34	I use my mobile phone to have a virtual trip to become familiar with other cultures.					
35	Mobile technology allows us to present our lectures wherever we are.					
36	Tablets and mobile phones allow users to attend online classes without any time and place restrictions.					
37	Mobile Wi-Fi removes any location limitations in learning.					
38	I usually have contact with my teacher and classmates through sending SMS or messages on Telegram or WhatsApp groups.					
39	I usually ask my questions by sending SMS or messages on Telegram or WhatsApp groups.					
40	I attend my online classes on different platforms (Adobe Connect, Sky Room, or Big Blue Button) through mobile technology.					
41	I prefer my mobile phone to other devices to have lectures or present in online classes.					
42	Using webcams on mobile phones causes better interaction between teachers and students.					
43	It is possible to improve our vocabulary knowledge by					

	sending and receiving short English messages.					
44	It is possible to improve our grammatical knowledge by sending and receiving short English messages.					
45	Teachers can facilitate vocabulary learning by sending new words through SMS or message on Telegram or WhatsApp groups.					
46	Mobile learning happens in an informal context and causes a better understanding.					
47	It is effective to use mobile phone calls for language learning.					
48	Sharing ideas with other classmates in social network groups causes effective learning.					
49	Playing video games through mobile devices can facilitate language learning.					
50	Teachers can send videos or pictures to help the initiation of a discussion.					
51	Teachers' feedback on our assignments can be more effective if they are sent through a voice file or SMS.					
52	I prefer to receive teachers' error corrections via mobile devices.					
53	Mobile devices provide a good opportunity to do course projects collaboratively.					