

**FUTURE DIGITAL TOUCH-BASED CURRICULA: TOUCH SCREEN-BASED  
INTERACTION AND ITS EDUCATIONAL IMPACT ON DEVELOPING EFL  
LEARNERS' LINGUISTIC COMPETENCE**

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**ABSTRACT:** *Mobile aided language learning and have replaced the traditional teaching and learning and began to become a unique tool that give students a chance to take place in the educational process. This paper tries to show the impacts of Ipod touch-Based screen interaction on developing learners' linguistic competence. 48 undergraduate students were randomly selected from at Al-alBayt University in the summer semester during the academic year 2014-2015. Those students were divided into control and experimental groups. The grammar test showed that two groups were identical in terms of their linguistic aspects at the entry level before starting the experiment. While both groups had the same instructor, material, and conditions during 24 lectures. The difference was in the teaching way when the experimental group received the materials by using touch-based screen. The performance of the experimental group on grammar test held at the end of the course showed that the mean score of this group was significantly higher than the control group. Hence, the students' linguistic performance based on touch screen was increased and interest of learning via Ipod among the learners have a deep impact on the students' learning.*

**KEYWORDS:** Touch screen, Linguistic aspects of language, EFL learners.

## **INTRODUCTION**

With the rapid development of technology, foreign language classes are in need for adopting and utilizing different kinds of technology, in other words, technology should be brought into our classes as effective tools for second language learning and acquisition. Interactive touch screen technology is very much in demand by teachers wishing to incorporate technology into their teaching practice. The development of this technology and its accompanying software has the potential to transform teaching and learning. The touch screen is a multifunctional tool that provides an enhanced instructional capability for sharing digital information and it creates a compelling medium that engages students. There are economic challenges that may restrict the widespread use of this tool, however, many teachers and their administrators are finding creative ways to locate resources for interactive (Lenchner, 2009).

Although many researchers and educators have advocated for the importance of young children's learning with technology and devoted themselves to investigating and implementing technology-related practices, the influence of young children's use of technologies on their development is still controversial. Some researchers believe that the use of technologies may impede these children's social, emotional, physical, and cognitive development (e.g., Armstrong & Casement, 2000; Cordes & Miller, 2000). Technology changed the way teachers teach and the learners learn English language. Instructional technologies opened a wide gate and many ways of learning. For example, learners who use ipad application can develop their mechanics of writing better than those who use paper-pencil approach.

Cox et al. (1999) show that many educators perceive technology as a tool for improving the presentation of material for making lessons more fun for the learners and for making administration more efficient. According to the Association for Educational Communications and Technology (AECT) (2004), Educational Technology can be defined as "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources".

The study done by Razavi and Ketabi (2011) set out to investigate the differences between 2 types of instruction materials- websites vs. textbooks- and their effects on the learners' knowledge of certain grammatical rules. To reach their aims, the researcher chose 120 Iranian intermediate EFL learners and put them into 3 groups: text-book group, website group, and control group. After giving a pre-test to all learners, the instructor used two grammar teaching text-books to teach learners in text-book group. While, for those in website group the same grammatical rules were taught on line via teaching websites. After the treatment phase, a post-test was administered to measure the gains. On the whole the findings of this study manifested that websites, as a new medium for instruction, can increase learners' motivation and improve their performance. In other words, the integration of web-based materials in language learning classrooms can enhance learners' mastery of English grammar.

Furthermore, Hegelheimor and Tower (2004) investigated the relationship between CALL and non-CALL environments to find what the learners do through CALL activities and explore their reactions in a CALL program in an authentic setting. Data collected from 94 university students manifested positive effect on the students' proficiency through using CALL and various options provided by the software.

Touch is a primary form of interaction for very young children, and forms part of our multimodal sensory systems (Smith & Gasser, 2005), which provide an interrelated experience of vision, hearing, touch, and action (Titzer, Thelen & Smith, 2003). Research examining the role of multitouch technologies in educational contexts is beginning to flourish. In particular, studies have explored the value of iPads as a teaching and learning tool in higher education contexts (e.g. Oldfield & Herrington, 2012).

Technology creates an educational environment since it helps learners to use it whenever they want, provide them with e-books, e-libraries, authentic materials, audio-video and audio-visual lessons, videoconferencing and computerized exams and lectures. Different types of instructional technologies and according to literature review improved to be effective tools for teaching foreign language, four language skills, and grammar development (linguistic competence).

Teaching-based technology encourages learners and helps them take responsibility for their own learning, and make them main parts of the learning circle. One of these technology-based approaches is touch screen which is a favorable approach for learners. It is a flexible, easy to use, creates motivation, enable them to record their speech, correct mistakes, vocabulary acquisition and retention, animations, and so forth. This study focused on touch screen technology and its effect on linguistic competence. Education with technology is the favorable trends of this generation. In other words, the digital education is the only suitable way of education for the digital generations. Accordingly, the researcher encouraged to use digital

touch screen to show its usefulness in education in general and in developing learners' linguistic competence in particular.

Touch has become of interest to sensory anthropologists and ethnographers (e.g. Howes, 2013; Pink, 2009) who explore the 'multisensoriality of experience, perception, knowing and practice' (Pink, 2009, p. 1). The mainstream advent of touchscreen tablet computers (Apple iPad, Samsung Galaxy Tab) has provided a unique opportunity for older adults to become engaged with computer technology whilst addressing the usability issues (e.g. difficulties in using a mouse or touchpad; Hertzum & Hornbaek, 2010 and confidence issues; Prensky, 2001) of 'traditional' computers. A touch screen tends to be very intuitive and saves space as no keyboard or mouse is required, which also tends to make for easier hand-eye coordination than a mouse or keyboard. All tablets (iPad, Android, Blackberry, etc.) are operated through a touch screen interface ( Siegenthaler, Bochud, Wurtz, Schmid, and Bergamin, 2012).

Learning with touch screen technology has many benefits. For instance, through using internet, the learners can be provided with up-to-date data and huge amount of information easily and quickly without using papers, pencils, and mouse, just one touch will do everything. In addition, touch screens, also, can serve as a potential tool for reading, writing, and practicing different drills and skills. More importantly, integration of touch-based screen into the educational as a healthy environment, changes the students' role from passive recipients and listeners only into active participants.

The term "touch technology" refers to the development of digitalized interfaces that are able to detect the presence and location of a touch within a display area; examples of such interfaces are touch pads, touch screens, and Interactive White Boards (IWBs). Touch screens enable people to interact directly with what is displayed rather than indirectly with a mouse or touchpad ( Hwang, Wu, and Kuo, 2013). Accordingly, touch technologies provide flexible ways for learners to interact with instructional contents, and thus support free and enjoyable interactions that contrast with the well-established practices of paper-and-pen-based interaction (Hollan & Hutchins, 2010).

Those new technologies have the potential of benefiting learners in allowing them to discuss, annotate, and manipulate shared digital artifacts in a more direct and enjoyable way.

Linguistic competence is often interchangeably called grammatical competence and is characterized as a social, tacit, restricted, formal, innate, and standard. On the other hand, communicative competence, expressed as "spontaneous expression" (Rivers, 1973, p. 26) or "social rules of language use" (Paulston, 1974, p. 347), is featured as a dynamic, context specific, and relative concept dependent on the participants in the communication system and manifested through written and spoken language and other non-verbal sign systems (Savignon, 1983).

The current study emphasized on the importance of teaching linguistic competences in our foreign classes, because they qualified them to communicate with English language community just in the way it is used by its native speakers. More importantly, being linguistically competent does not guarantee successful learning. Accordingly, learners should be linguistically, pragmatically, socio-culturally, non-verbally, aesthetically, paralinguistic, and psycho linguistically competent.

Communication is a requisite to discuss, discover, and learn about all other concepts. Communicative competence is comprised of grammatical competence, discourse competence, sociolinguistic competence, and strategic competence (Canale & Swain, 1980; Canale, 1983 & Savignon, 1997). Grammatical competence is the knowledge of the structure and form of a language; some of which include its morphologic, syntactic, phonemic and graphemic features.

Developing learners' grammatical knowledge is one of this study, because semantic is so important as syntax, ignorance one of them will effect on the meaning of another. For example, saying "The hamburger ate the man" (Yule, 1998), this sentence is structurally right but semantically wrong. Accordingly, learners should have an idea about the structures and meanings of the target language.

According to Light (1989), the adequacy of functioning required to attain communicative competence is predicated upon sufficient knowledge, judgment, and skills in four interrelated domains: linguistic, operational, social, and strategic. Linguistic and operational competencies reflect knowledge, judgment, and skills in the tools of communication whereas social and strategic competencies reflect knowledge, judgment, and skills in the use of these tools in daily interactions.

If individuals with complex communication needs are to develop communicative competence, they must develop sufficient knowledge, judgment, and skills in the linguistic code of the language(s) spoken and written in the individual's family and broader social community, including receptive skills and as many expressive skills in these languages as possible (Mollica, 2003).

They are essentially semantic systems that include sets of symbols to convey concepts, but have no inherent syntax or morphology. Developing competence with the language code of the AAC systems is further complicated for there is an asymmetry (Smith & Grove, 2003) between the language code through which individuals who require AAC receive their input (i.e., the spoken language of their families and broader social community) and the language code through which they must express themselves (i.e., the form and content of multimodal expression that may include use of some speech or speech approximations, use of gestures or signs, and use of aided AAC symbols).

Crescenzi, Jewitt, and Price(2014) pointed out that touch-based interaction is increasingly a key feature of digital learning environments, yet we know little about the specific ways in which digitally mediated touch reshapes interaction for very young children. Findings indicate both quantitative and qualitative differences in types of touch across these two environments; and suggest that individual children demonstrate different repertoires of interaction, which may be linked to family practices and familiarity with technologies, such as touch screen and handheld devices. Findings are discussed in terms of the implications for learning and children's mark making development, future research directions, and methodological implications for multimodal research approaches.

In similar vein, Hwang, Wu, and Kuo (2013) investigated the effects of two different touch technology-based concept mapping interaction modes on students' learning achievements and learning attitudes in a natural science course, as well as their degree of acceptance of using

concept maps to learn. The experimental results show that, in terms of learning attitudes toward the natural science course and the degree of acceptance of using concept maps to learn, the students were significantly more positive about the two touch technology-based interaction modes than they were about the traditional paper-and-pencil mode.

Zack, Barr, Gerhardstein, Dickerson, and Meltzoff (2009) adopted a study entitled " Infant imitation from television using novel touch screen technology" to improve that Infants learn less from a televised demonstration than from a live demonstration, the video deficit effect. These findings have important implications for infants' understanding and learning from 2D images and for their using 2D media as the basis of actions in the real world.

Siegenthaler, Bochud, Wurtz, Schmid, and Bergamin (2012) asserted that although reading is the main function of electronic reading devices (e-readers), previous studies demonstrated that a critical factor for perceived legibility is the usability of the device. If users have problems with the handling of a device, they will not like using the device for reading. The results show that e-reading devices with touch screens correlate with better navigation ratings. Participants rated the navigation significantly better for the devices with a touch screen compared to a device without a touch screen. Overall results suggest that a touch screen allows for an easier and more intuitive interaction. Nonetheless, participants were not able to solve all tasks without problems, and significant differences were found between the devices. In conclusion there is still room for improvement, for the devices tested, in regards to usability aspects.

To sum up, touch screen technology has a great effect on educational applications; therefore, it is worth studying the effects of different forms of touch screen technology used as educational tools on the learning linguistic competence of EFL students. Touch screen has changed the way students learn and communicate. It is used by learners, instructors, and researches as a learning tool all over the world, as well as by individuals to study, work and do homework.

Accordingly, this paper aimed to highlight the role of using modern technology in teaching English as a second language that is touch screen technology. It discussed the usefulness of touch screens which can assist English language students to improve their learning of linguistic competence.

### **The problem of the study**

In a study adopted by Razavi and Ketabi (2011) , it was found that most of the Arab learners who are non-native speakers of English have difficulties in learning pronunciation. In another study done by Hegelheimor and Tower (2004), it was found that most mistakes of learners are in proficiency. Based on this assumption, the researcher looks for a suitable tool to develop learners' grammar, syntax, semantics, phonology, and morphology which is called today the linguistic competence. The researcher had chosen Ipod for its familiarity among other tools.

### **The purpose of the study**

This study aimed at investigating the purposes that follow:

1. Find out whether using touch screen can serve as a new method of teaching the linguistic competence of EFL learners.
2. Find out the effect of using touch screen technology on learners' linguistic competence

### **The significance of the study**

The importance of this study stems from two main points:

First, students nowadays like using technology in learning, they became digital learners, and they cannot do any task without the help of technology. Ipad technology is one of their concerns. It helps them to develop their linguistic competence. Second, learners academic performance in the linguistic competence which includes (grammar, syntax, semantics, phonology, and morphology) is not proficient, because they do not like to learn traditionally without using any kind of technology. Accordingly, the researcher make use of their needs, eagerness, and attitudes towards using technology in learning to increase their keenness to learn the linguistic competence via using touch screen-based Ipad. It suggested that touch screen might be one of the practical techniques to improve the teaching of the grammar, phonology, morphology, semantic, and syntax.

### **Questions of the study**

**The present study addresses the following question:**

Q1: Are there any statistically significant differences between the mean scores of the experimental and control groups in the linguistic competence of language due to the method of teaching (touch screen versus regular communicative method)?

Q2: Are there any statistically significant differences between the mean scores of the experimental group's learning of each linguistic aspects of language (grammatical, phonology, morphology, syntax, and semantic) as a result of using touch screen?

### **Hypothesis of the study**

**In view of the above question, the present study provided empirical supports for the following hypothesis:**

H1: There are no statistically significant differences between the experimental and control groups' mean scores in the measure of linguistic competence due to the method of teaching (touch screen versus regular communicative method) at  $\alpha \leq 0.05$ .

H2: There are no statistically significant differences between the mean scores of the experimental group's learning of each linguistic aspect of language (grammatical, phonology, morphology, syntax, and semantic) as a result of using touch screen at  $\alpha \leq 0.05$ .

## **METHODOLOGY**

### **Participants**

The sample of the study which consisted of 48 were selected of 60 population of undergraduate EFL students at Al-alBayt University during the summer semester of the academic year 2015/2016. The average age of students was between 21.23 years old. The participants were randomly divided into two groups: Experimental and control groups. Group one was consisted of 30 students and was assigned as an experimental group. Group two consisted of 18 students which were assigned as a control group. Their mother tongue was Arabic.

### **Instrument**

In order to address the research question the researcher utilizes the following instrument:

### Grammar Test

To achieve this purpose, students of both groups sat for a grammar test at the beginning and end of the experiment. The test was based on the prescribed syllabus. It consisted of four parts that tests learners' sounds (vowel and consonant), language structures (phonemes, morphemes), a vocabulary test, and a structures test (noun phrase NP, verb phrase VP, and concordance between the subject and the verb).

### Procedures

The process of data collection started in September, 15 (2015) and continued until November, 15 (2016). At the first step, the researcher assigned the participants into experimental and control groups. The grammar test as a pretest was administered and all the participants were interviewed individually to ensure that there was no significant difference between two groups in linguistics aspects. During two-month course, participants in the experimental group took part in 24 sessions in which they utilize linguistic aspects through Ipad-touch-based screen. Concurrently, the participants in the control group taught using the traditional method for learning the linguistic aspects without using any technology. Each instructional session lasted for 60 minutes for both the experimental and control groups in the morning on Sundays, Mondays, and Tuesday. At the end of the course, both groups were interviewed again and their grammar was measured through grammar test as a posttest.

### Variables of the Study

The study has the following variables:

1. The independent variable of this study is the teaching method which included:  
(a) teaching the linguistic aspects by using touch screen, and  
(b) teaching the linguistic aspects by using the regular communicative method.
2. The dependent variables were both groups' scores on the posttest and in each linguistic aspect of language (grammatical, phonology, morphology, syntax, and semantic).

### RESULTS

Table 1, shows there was no significant difference between the experimental and control groups at the beginning of the study. In other words, it can be seen from table one that the mean scores of the experimental group (44.20) whereas the mean scores of the control group (43.90). The independent sample t-test does not show any significant difference in the mean scores of the control and experimental groups on the grammar. Both experimental and control groups are equivalent and have the same level in linguistic aspects of language before applying the experiment.

**Table 1: Means and Standard Deviation of the Experimental and Control Groups on the Pretest**

GROUP	N.	Mean	Std. Deviation	T	Df	Sig.
Experimental	30	44.20	13.33	0.25	34	0.74
Control	18	43.90	13.52			

Table 2 presents the descriptive statistics and independent sample t-test analysis of grammar test held as a posttest. The mean score of the experimental group (64.22) is higher than the control group (48.37). Also, the independent sample t-test indicated that the

experimental group performed better than the control group on the grammar test. This means that the impact of Ipod-touch-Based screen assisted the experimental group to develop their linguistic aspects better than the control group. Accordingly, the hypothesis that assumes "There are no statistically significant differences between the experimental and control groups' mean scores in the measure of linguistic competence due to the method of teaching (touch screen versus regular communicative method)" was rejected.

**Table 2: Means and Standard Deviation of the Experimental and Control Groups on the Pre- and Posttests**

Test	Group	N	Mean	Std. Deviation	T	Df	Sig.
Pre test	Experimental	30	44.20	13.33	0.25	34	0.74
	Control	18	43.90	13.52			
Post test	Experimental	30	64.22	14.55	3.32	35	0.00
	Control	18	48.37	13.85			

Table 3 presents the results of One-way ANOVA test run to compare the performance of the control and experimental groups separately on the linguistic aspects pretest and posttest. According to this table, there was a significant difference between the mean scores on linguistic aspects pretest and posttest of the experimental group, but there was no significant difference between the mean scores on linguistic aspects pretest and posttest of the control group. These results revealed that only participants in the experimental group taking part in Ipod-touch-Based screen course improved regarding their linguistic aspects of language. In other words, table three revealed that there were significant differences between the experimental and control groups' performance on the measure of linguistic aspects of language, where all the f values on the posttest are statistically significant in favor of the experimental group. Therefore, it can be concluded that touch screen has a positive effect on students' performance of the linguistic aspects of language. Accordingly, the hypotheses which assumes that "There are no statistically significant differences between the mean scores of the experimental group's learning of each linguistic aspect of language (grammatical, phonology, morphology, syntax, and semantic) as a result of using touch screen was rejected.

**Table 3: Pre- and-Posttest Results of Both Groups in Linguistic Aspects of Language.**

Linguistic Aspects	Test	Experimental group					Control group				
		Mean	Std. Deviation	ANOVA	df	Sig.	Mean	Std. Deviation	ANOVA	df	Sig.
Grammar	Pre	9.15	5.53	-7.70	18	0.00	8.87	6.00	-5.84	17	12
	Post	14.68	6.86				9.98	6.29			
Phonology	Pre	9.01	1.52	-7.34	18	0.00	8.86	1.64	-4.99	17	14
	Post	13.50	1.63				9.87	1.63			
Morphology	Pre	8.98	1.48	-6.14	18	0.01	8.70	1.44	-6.10	17	13
	Post	13.44	1.72				9.75	1.39			
Syntax	Pre	8.92	1.52	-17.78	18	0.00	8.72	1.41	-7.10	17	12
	Post	12.70	1.10				9.57	1.49			
Semantic	Pre	8.14	1.64	-11.16	18	0.00	8.69	1.62	-10.69	17	13
	Post	9.90	1.86				9.20	1.52			
Average scores	Pre	44.20	2.54	-5.76	18	0.000	43.90	2.54	-4.34	17	0.56
	Post	64.22	1.46				48.37	1.76			



## CONCLUSION

According to the findings of this study, touch screen was found to offer a good opportunity for teaching the linguistic aspects of language implicitly. Additionally, the results of this study showed that university EFL learners improved and developed their linguistic competence over 8 weeks of exposure to touch screen that included many and different linguistic aspects of language. The results of the study also showed that the experimental group achieved better than the control group, thus, using touch screen can be regarded as an effective technique to improve the EFL learners' linguistic competence. It was clear also that students' knowledge grammar, phonology, morphology, syntax, and semantic aspects developed a lot as a result of using touch screen technology. Touch screen was found to be a good tool for creating successful learning outcomes. This finding agreed with Crescenzi, Jewitt, and Price (2014) who pointed out that touch-based interaction is increasingly a key feature of digital learning environments, yet we know little about the specific ways in which digitally mediated touch reshapes interaction for very young children. Touch screen technology has positive outcomes not only on linguistic aspects of language, but also on skills and attitudes. Learning through technology facilitates and supports it. It is recommended to use other touches technologies to develop another competences and skills.

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