

## PODCAST ACCEPTANCE TO ENHANCE LEARNING SCIENCE VOCABULARY AMONG IRANIAN ELEMENTARY STUDENTS

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**Abstract:** Although using technology tools is not new trend in education, still unavailability of some IT infrastructures may led to less use of educational tools and rollback to traditional teaching style. On the other hand access to cheap technology devices and internet provided a better chance for teachers and students to have wider access to educational resources. However podcasting is not a new brand technology but it has a potential to enhance teaching and learning process. This paper prepared an overview report of previous studies conducted on using podcast in learning and investigated challenges and difficulties of using podcast in teaching and learning science vocabulary among Iranian primary students.

**Key Words** – Instructional design , Podcast- - learning science- learning vocabulary

### 1. INTRODUCTION

The rapid development of technology has touched almost all aspects of life such as education. “It is almost impossible to think of education without also thinking about the many different kinds of technology used to support education” (Spector, 2012). Learner's acceptance as a receiver of knowledge which is assisted by technology can contribute to usage of specific technology as main or supplementary tool in educational. In contrast, absence of learner's adoption can present a barrier on motivation and engagement to technology (Ajjan & Hartshorne, 2008).

Iran has introduced the use of technology in teaching and learning since 1972. According to Bingimlas (2009), there were many barriers during the implementation on the use of information, communication and technology (ICT) in Iranian education system. After the Iranian revolution, 10 universities are delivering all their instruction using electronic learning (E-Learning) system (Farajolahi & Dehbashi, 2009). The emergence use of technology in education system has growth, however the use of ICT in Iran higher education still considered as a new method for teaching and learning process. On the other hand regarding to Iran Ministry of Education ICT integration's instruction, technology should be blended in K-12 school's curriculum to enhance teaching and learning process specifically on important subjects. One of the main subjects is science which is taught from first grade in schools. Although importance of science subject is over emphasized, but according to Iran Ministry of Education Iranian students' achievement in Math and Science are lower than the global average (Hamshahri Online, 2014). One of the reasons that students have low achievement in science, might be they don't have clear comprehension of the context and content. Understanding the contents is effected by learner's vocabulary mastery. Glen and Dotger, 2009; Goldschmidt and Jung, 2011; Lee et al.1995 argued that “Science vocabulary knowledge plays a role in understanding science concepts, and science knowledge is measured in part by correct use of science vocabulary ” (Carrier,2013; P1). Due to fast development of technology their might be an open space to use technology to enhance teaching and learning science vocabulary in schools.

Many studies and researches (Bagozzi Warshaw, 1989; Okazaki & Renda dos Santos, 2012; Holden & Rada, 2011; Merhi, 2015; Ely, Pullen, Kennedy, Hirsch & Williams, 2014) are conducted by experts and scholars to evaluate user acceptance of new technology to improve, modify or localize products. In other words, user acceptance can determine the efficiency of new technological tools. On the other hand, many factors effect on user adoption of new technology. But two particular concepts of behavior as perceived usefulness and perceived ease-of-use have more influence on user acceptance (Davis, 1989).

Technology acceptance can be affected by using educational technology tools such as web-based tools (Marin, 2005) or Internet-based tools (Martínez, 2008) which are widely used in education. Although there are varieties of teaching tools in web-based or Internet based form, Podcast is considered one of the teaching aids which can be used as web or Internet- based tools. “Podcasting involves downloading a series of audio or video broadcasts (files) onto a digital media player, via a computer, over a period of weeks. These can be watched or listened to when, where and as often as students choose.” (Evans, 2008, p.1)

### 2. USING ICT IN IRANIAN EDUCATIONAL SYSTEM

The first sign of using ICT in teaching and learning in the Iran education system can be traced back to 1972. Iran Azad University started educating more people in the form of distance learning system and using audio, video tapes, educational films and providing face to face classes. It had a capacity of 6000 students. After the Iranian

revolution, more development of information technology infrastructure in higher education led to the growth of virtual universities. Nowadays around 10 universities are delivering all their instruction as electronic learning (E-Learning) System. Besides that, other universities have their own platform for administering some their instruction (Farajolahi & Dehbashi, 2009). Integration of ICT in the curriculum seems a complex process and some barriers such as educators' information technology skills which is led to diffident and incompetence feeling, lack training instruction to compile new method for lesson plan has negative influence on this area (Bingimlas, 2009).

Although there is increasing progress of ICT utilization in higher education and due to usage of ICT is considered as new method for teaching and learning, still many factors should be weighed in implementation level. "Important facilitating factors such as providing training programs, keeping academics informed on new developments in ICT, improving faculty members' belief on effectiveness of ICT and other factors imply on "ICT literacy" of academics in Iranian higher education community as a real and urgent need" (Vajargah, Jahani, & Azadmanesh, 2010, p.6). Moreover the Iran Ministry of Education demanded K-12 schools to use ICT in their curriculum and compiled instructions and guidelines to define ICT- based schools as smart schools in 2011 and required schools to start implementation of the guideline. "Smart school is the place which implementation of the entire process, including teaching and learning, educational materials and teaching aids is designed based on ICT" (Smart school instruction, 2011, p. 6).

Available studies indicated the improvement of teaching and learning process by using ICT. Based on one of the research studies in this area, technology helps students to organize their plan which is leads to higher motivation. "The evaluation of students of normal and smart high schools in Tehran show that there is meaningful difference between the educational self- image & the rate of learning in the students of normal and smart high schools such that these factors are high in the smart school students." (Hosseinpour, Allahviridiyani, Nejad, & Mohammadjami, 2011, p. 3). Also, similar experiences with smart schools in other countries showed enhancement of learning and teaching in the K-12 education system mainly in science and mathematics. Harrison (2002, 2004) found statistically significant associations between higher level ICT use and pupil achievement in Maths, Science, English, Modern Languages and Design Technology (Hamzah, Embi & Ismail, 2010). Nevertheless, accomplishment of ICT in schools, as in higher education, has similar barriers and need economic, social, cultural and government policy steadiness. (Zamani, 2010). However, some studies showed smart school positive impact in Iran educational system, some researches indicated that students and teachers did not show positive attitude in term of ICT utilization (Attaran, Alias & Siraj, 2012). According to this research, while providing ICT infrastructure is important, increasing motivation and paying attention to individual and cultural differences is important too.

### 3. PODCAST IN EDUCATION

Since 1990 with podcast innovation and public access to Internet and cheaper technical devices, podcast popularity statistically raised. Podcast features count as portability, interactivity, simple and easy to use so based on its characteristics. Podcast can provide a good educational condition for institutions and schools in K-12 and higher education to fulfilled students need such as reviewing the contents as much as they need or if students are not able to attend classes. According to Hew & Cheung (2013), the use of podcast does appear to have a general positive impact on student achievement.

Conducting researches on advantages of podcasting on teaching and learning process and students achievements were on researcher's spotlight. According to podcast availability over Internet or through portable devices, some studies suggested that podcasting can help development of mobile learning in education. Research in University of Minnesota podcast technology used as a tool to "To shift from e-learning to m-learning" (Ng'ambi & Lombe, 2012, p. 2). Moreover, podcast can be used as the main or supplementary tool. Based on podcast features students can listen or watch (in case of video podcast) the content as much as they need. So it can be a powerful tool for revising the lectures they did not understand or could not attend in the class (Hew & Cheung, 2013).

However, some experts have doubt about podcast efficacy on teaching and learning and podcasting can have some limitation such as technical problem or podcast irrelevancy (O'Bannon, Lubke, Beard, & Britt, 2011). Still podcasting creates opportunity for better understanding of courses as teaching aid. "Supplemental podcasting appears to serve as a valuable resource for students in the college classroom, which could provide enrichment to students beyond what a typical course and instructor can bring" (Walls et al., 2010, p.6). Fernandez, Simo & Sallan (2009) carried out a research on podcast and its impact on higher education. Based on their finding podcast is an influential tool which it's better to be used as supplementary teaching aids.

Although there is lack of research about podcast usage in the Iranian educational system, studies done in this area reported the Iranian students are ready to use podcast in 3 sub-scales "Through three sub-scales: access, familiarity, and experience" (Rahimi & Asadollahi, 2011, p. 3). The studies indicated that although students

rarely have podcast experience as educational tools they have high familiarity with podcast. The researchers mentioned that the main reason for not using podcast as an educational tool in Iran universities is that lecturers do not deliver their instruction by podcast.

#### **4. ADVANTAGE AND DISADVANTAGE OF USING PODCAST**

There is need to understand how technology can assist students for better learning. One way to have full comprehension is to compare the advantages and disadvantages of the medium in education. Podcast as intervention has cons and pros as well; however some studies suggested that using podcast didn't bring complete or dramatic changes in education (Taylor, 2009).

##### **4.1 PODCAST ADVANTAGES**

In 2008 Evans conducted a study on podcasting to evaluate the efficiency of mobile learning among Business and Management higher education students. Based on the result which collected by survey, "students believe that podcasts are more effective revision tools than their textbooks and they are more efficient than their own notes in helping them to learn. They also indicate that they are more receptive to the learning material in the form of a podcast than a traditional lecture or textbook." (Evans, 2008, P.1) Podcast may effect on students' belief about learning as well. A study carried out in 2014 to investigate if using podcast can change student's assumption about learning foreigner language. The result indicated that however changing belief about learning language seems hard but applying innovation in decrease negative perception on learning second language. (Basaran & Cabaroglu, 2014)

Producing podcast doesn't need high ICT skills, regarding this point students can also start to create podcast. A study administrated in sixth grade Portuguese music class presented that students can produce podcast and it has positive effect on students' active learning. In this study teacher has a supervision role and students produced podcast by themselves. (Coutinho & Mota, 2011)

##### **4.2 PODCAST DISADVANTAGES**

There are some criticisms about blending podcast in teaching and learning process. One of the main concerns about podcast it may have negative effect on students' presentation in class (Heydarpour et al. 2013). In contract Boney, Cizadlo, & Kalnbach, 2006; Copley, 2007; Frydenberg, 2006; Lane, 2006) argued that using podcast didn't have negative effect on students' attendance in class (Walls et al, 2010). Furthermore some scholars discussed about pedagogical aspect of using podcast. Based on their research podcast may led to passive learning instead of active learning (Jham, Durae Strassler, Sensi, 2008).

#### **5. PODCAST IN LEARNING SCIENCE VOCABULARY**

Learning vocabulary of content of a course has big influence on deeper understanding of the content. According to Alvermann and Phelps, 2002, Ehri and Rosenthal, 2007, Stahl & Fairbanks, 1986, "Vocabulary knowledge is a critical factor in comprehension, fluency, and achievement".(Putman & Kingsley, 2009, p.3). Also, many studies show the effect of vocabulary knowledge on other skills. Strenburge, 1987; Termen 1916 argued that "The finding of more than 100 years of vocabulary research include that, vocabulary knowledge is one of the best indicators of verbal ability" (Graves & Watts-Taffe, S; 2002 ), "Vocabulary difficulty strongly influences the readability of text" (Klare, 1984). Beck et al., 1982 discussed that teaching the vocabulary of selection can improve student's comprehension of that section (Samuels & Farstrup, 2011, p. 141). Due to importance of science which is difficult even from primary school, mastery in science vocabulary can enhance students understanding of the concepts in their science book if teachers can localize the meaning and the concept of the words for students. According to science structure which is project-based class and need more time for discussion and do experimental test, podcasting can be effective teaching aid (Kurtz et al., 2007). Some studies show that using podcast can enhance students' science vocabulary. "Increase in scores on the vocabulary tests for the group given access to the podcasts was significantly greater than those in the group that received only classroom instruction." (Putman & Kingsley, 2009, P.7)

#### **6. POSCAST EQUIPMINT**

One of the advantages of podcasting is to producing podcast it needs simple, available and affordable equipment. However there are very professional and expensive equipment. The main equipments will categorize in 3 sections as follow:

### 6.1 HARDWARE

The first thing for producing podcast is a suitable hardware such as microphone. There are varieties in microphones and teachers don't need to provide the expensive of, just simple with good quality is enough to record their voices. However with development of good quality technology simple voice recorder such as MP3 player works fine as well. There are many types of recorders with special features. Moreover with better public access to cellphone or smart phone, people can record their voices via there cellphones. Most cellphones and smart phones have the recording feature and there is no need to buy other equipment. Furthermore many laptops and personal computers have the recording option and user just needs to enable this option. Figure 6.1, Figure 6.2, Figure 6.3 and Figure 6.4 shows the example of microphones, voice recorder, cell phone with voice recorder option and smart phone with voice recorder option.



Figure 6.1 Example of microphones



Figure 6-2 Example of voice recorder



Figure 6-3 Example of cellphone with voice recorder option



Figure 6-4 Example of smart phone with voice recorder option

## 6.2 SOFTWARE

Perhaps while recording the podcast or after recording, teachers might need to edit the audio file to include other information or omit some part of the file. Although based on experience after a while there is no or less need for sound editing. There are many software to correct and modify the audio file. However some of them are complex and expensive software for sound editing but regarding to popularity of this type of software, most of them are free and easy to use. Furthermore, there are many online forums to help users to operate with sound editing software. In addition in most of the software there is Help for users.

Moreover, there are some mobile applications that enable user to edit the file on their smart phones. Figure 6.2.1 and figure 6.2.2 shows example of software for sound editing and example of mobile application for sound editing.



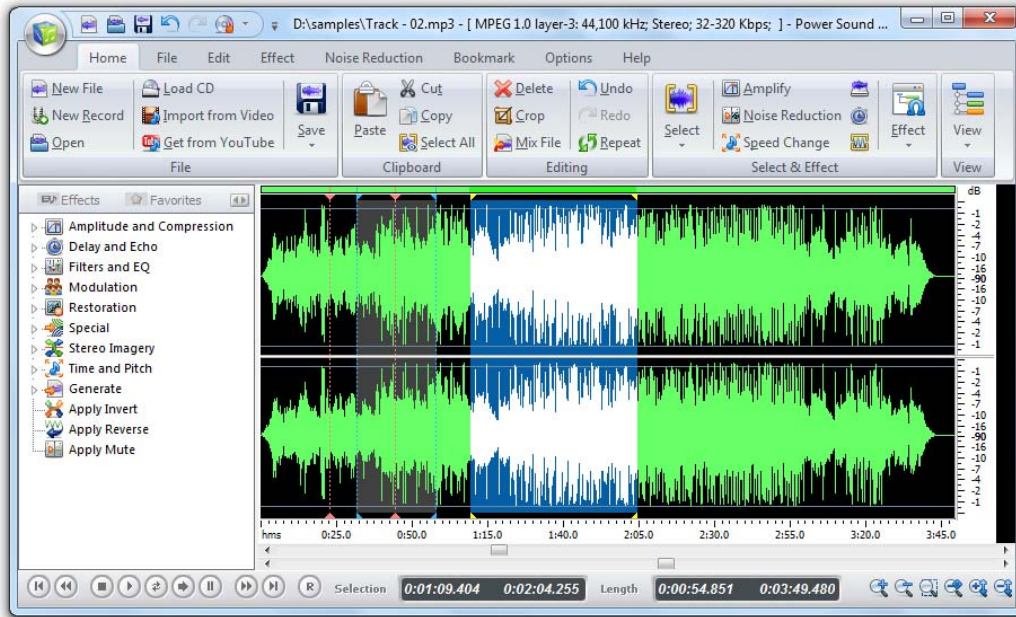


Figure 6.2.1 Example of software for sound editing

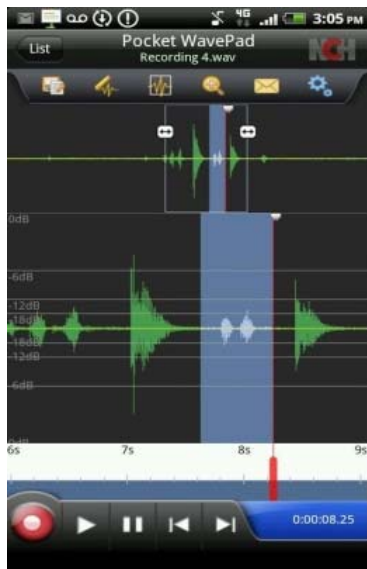


Figure 6.2.2 Example of mobile application for sound editing

## 7. DISTRIBUTION

Regarding to flexibility of podcast there are many ways to distribute podcast

### 7.1 DISTRIBUTION OVER INTERNET

On popular way to distribute podcast for learners is uploading the audio file on Internet. There are many sound distribution software such as cloud based software as free or with cheap subscription price for users. On the other nowadays many schools and educational institutions have their online platforms. They need to consult with IT team to enable this feature on their website. One of the benefits of podcast is for uploading and downloading the file there is no need for Internet fast connection. Figure 7.1 shows sound cloud base software to distribute podcast.

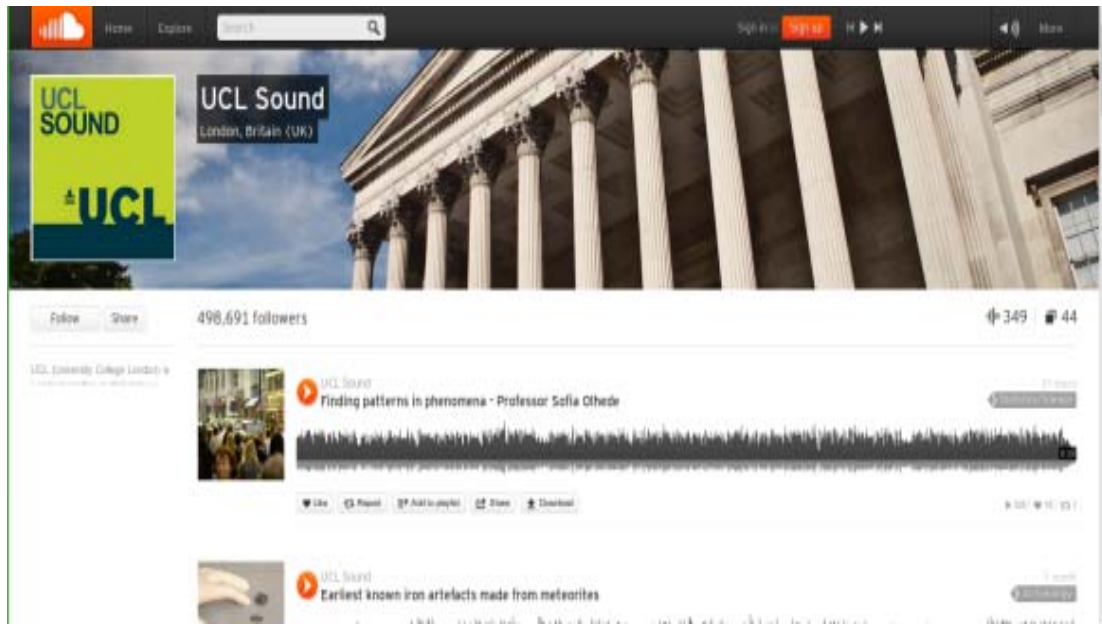


Figure 7.1 Sound cloud base software to distribute podcast

## 7.2 OFFLINE DISTRIBUTION

Another way to provide access to podcast for learners is distributing the files on CD and DVD. Almost all cheap computers, laptops have the CD player option and also there is possibility that learner can use cheap CD players. Moreover with technology development most of the electronics devices such as cellphone, smartphone, tablets, MP3 players, MP4 players and so on that have the ability to play the audio files. Figure 7.2 and figure 7.3 shows the example of portable CD player.



Figure 7.2 Example of portable CD player



Figure 7.3 Example of CD player

If there is no access to Internet, CD or DVD player teacher can use flash memory or stick memory to transfer the podcast to their students. Although mostly podcast don't need high capacity, there are many range of flash memory with high capacity. But teacher should give students instruction about taking care of flash regarding to sensitivity and small size. Figure 7.4 shows the example of flash memory.



Figure 7.4 Example of flash memory



Figure 7.5 Example of stick memory

However should be recommended before starting implementing podcast in class it's better that teacher evaluate if there students access to technology. Sometimes teachers need to use mix strategy if their students don't have equal access to technology. Therefore students can benefit technology in their learning process even with limited access to technology. (Bergmann & Sams, 2014).



## 8. CONCLUSION AND FUTURE STUDY

There are two major factors that influence on media usage in education, firstly its usability and the second one is personalization (Shim et al., 2007). Regarding to flexibility of producing of podcast such as recording, editing and delivering and because mostly teachers personalized the content based on their lesson plans, podcast can be one of the educational aid tool can be used in curriculum.

By using podcast students have the possibility to replay and pause their teacher as much as they need. They don't feel shame if they don't understand the lesson. They don't need others to explain to concepts for them. They can play and replay the podcast regarding to their paste. Furthermore podcast doesn't need high ICT skills for usage; with simple instruction students can use podcast on their personal devices or on available devices independently. Moreover podcast needs very basic equipment to record and to listen also it can be distributed easily on CD or cellphone or slow Internet connection. According to technology availability there is higher chance that students can benefit technology in their studying. This paper suggested the future study should focus on if podcast can improve student-teacher relationship.

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