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The Impact of Podcasts on English Vocabulary Development in a Blended Educational Model

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Abstract: This experimental study attempts to see whether incorporating supplemental podcasts into the blended module of second language (L2) vocabulary teaching and learning leads to better learning outcomes in comparison with other common teaching and learning methods as self-study and conventional. To that end, undergraduate students from *Ahvaz Jundishapur University of Medical Sciences* were summoned up via an announcement to take part in the study. Volunteers were homogenized via Vocabulary Levels Test (VLT) and were then randomly divided into three groups to learn English vocabulary items via three different ccaaariss rrr igg 22 eessio... Tee oollcctdd aata from tee rrr ticinnnts. sss wers to tee attituee questionnaire and interview as well as the data from assessing their performance throughout the course were analyzed both descriptively and inferentially. The analysis of the data revealed that the podcast-mediated blended L2 learning scenario appeared as the most successful scenario in L2 vocabulary learning. Consequently, it could be concluded that providing miscellaneous practicing opportunities for students would facilitate learning process and contribute to learning improvement.

Keywords: Learning scenarios, L2 vocabulary, Learning Management System, podcast.

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1. Introduction

The widespread availability of mobile wireless technologies and associated infrastructure across nearly all sectors of education has led to a fertile proliferation of views and perspectives for the implementation of these innovations to continuously revaluate the approaches to pedagogy, both in the physical and virtual classroom settings (Cobcroft, Towers, Smith, & Bruns, 2006). This trend has actually provided a unique platform to design aaannng fffeerelll y add to eaaance 0000000Kargggg exeeeeeccce, allowing a flexible access to education on a ubiquitous basis (Sharples, 2006). This shift in learning locations and student access to information has thus enabled educators to incorporate the Information and Communication Technology (ICT) in their syllabi to enhance learning adapted to the needs of learners of the 21st century or *digital natives* as Prensky (2001) defines. In recent years, we have witnessed a rapid increase in the number of educational institutions turning to ICT-mediated instruction to offer courses using ICT tools as supplementary or alternative teaching and learning aids. (e.g., Crompton & Traxler, 2015; Hayati, Jalilifar, & Mashhadi, 2013, Hegelheimer & Lee, 2012; McCrea, 2011; Pellerin, 2012; Taylor, 2013; Traxler & Kukulska-Hulme, 2016; Viana, 2015).

Among various forms of ICT tools, podcast- a portmanteau of the words *iPod* and *broadcast*- as a series of multimedia files that allow broadcasting of multimedia files in ggg tal rrr ttt nn iiee ii hh tttt tt BByan & ee eerrrrrrr r)))))) nn ,,,,, vies for a place in ICT undertakings in the field of teaching and learning. As one of the distinctive features of podcasts containing a Real Simple Syndication (RSS) feeds, podcast episodes containing content materials, among others, may be automatically pushed or downloaded (rather than ,,,, a)))) oo rrrrrr rrr ss eeaaaaaa cttttt t ss rr any rrrrr llllll l). ii ttt . l aoooo ooo ye... freeing users from the need to check and manually download newly available content.

With their unique features of convenience, simplicity, and accessibility combined with their affordances to deliver audio as well as text, images, and video files, regardless of their usual applications as entertainment tools, podcasts have been exploited in several administrative as well as pedagogical practices (e.g., Kennedy et al, 2014; Lazzari, 2009; Long & Fabry, 2011; Malushko, 2015; Popova & Edirisingha, 2010; Taylor & Clark, 2010; Viana, 2015; Zelin & Baird, 2012)

For language learning and teaching, among other disciplines, this realization also holds true. Language educators now have more options for teaching language to L2 learners. Concrete examples show the globalized tendencies of the educators and practitioners around

the world and the power they exercise in utilizing new (mobile) technology in the framework of L2 teaching (e.g., Daccord, 2013; Driscoll, 2011; Gawlik-bbb y00aaaa & Pcczeaawwxzz, 2011). Meanwhile, the use of podcasts, among other ICT-tools, to disseminate instructional language materials has elicited considerable attention among colleges and universities, too (e.g., Duke University, Middlebury College, & the University of Wisconsin). Among different language skills and components, podcasting has been mainly exploited by a number of scholars in training specific language skills, such as pronunciation (Knight, 2010; Lord, 2008; Powell, 2006), oral and aural skills (Abdous, Camarena, & Facer, 2009; Chan, Chi, Chin, & Lin, 2011; Hawke, 2010; Hoven & Palalas, 2011), speaking and listening strategy training (Ashton-Hay & Brookes, 2011; Cross, 2014; Li, 2012; Rahimi & Katal, 2012), and eerrrrr rnng vccarrrrr r eeannng (Borg,,, ;;;;; ; mmann & ggggeeey,)))))) Moreover, diverse affordances of podcasting have paved the way for its application for the purpose of increasing student ttt .... lll ggr, Saaaaa,,,,, & Bogg,, ;;;;; ; eeeee, 2006), promoting intercultural exchanges and listening comprehension (Lee, 2009; McBride, 2009), developing pragmatic competence/awareness (Guikema, 2009), and supporting learners with learning disabilities, and non-native learners in distance learning or blended programs (Sloan, 2005; Walls, et al., 2010).

Other studies have probed into the flexibility and ubiquity aspects of learning language via podcasts to integrate formal and extramural language resources providing learners with samples of real speech and other authentic materials (Chinnery, 2006; Thorne & Payne, 2005). In the same way, podcast-mediated teaching and learning has been employed to support course materials with supplemental podcasss oo eeeeppp eeeeeeeee ffff eeeeccy nn English (Istanto, 2011; Lee & Chan, 2007; Stanley, 2006).

Scch iiiii is aaee nnnnly aceeeeee eeed dddcasss ttttttttttt t oo eevelpp ggggguage llll ,,, eeeecyyyyyynn eeveiiii gg sssssssss s eeeagggg add iiggggggg skills. They have aooo ccc eeeeee e hhhh ecccccccc uuggeiiing tteee iiii iiee eercett ssss sdd attttteees towards using podcasts for language learning on desktop computers or portable mobile devices in intra- or extramural settings.

However, further research seems indispensable to ensure a viable model or conceptual framework for using ICT tools in teaching and learning practices on a large scale. In reality, the success of ICT devices as educational tools in the learning process is highly dependent on the extent to which it is incorporated into a pedagogically grounded theoretical framework. This study, thus, intended to investigate how didactic digital multimedia platform, namely

supplementary podcasts, among other ICT tools, is grounded in the theoretical underpinning of teaching and learning and how it comes into interaction with the learning of L2 skills and subskills, in general, and vocabulary development, in particular.

2. Theoretical Underpinnings of the Study

Any relevant theory of teaching and learning needs to embrace contemporary accounts of the practices and ontogeny of learning and also capture the dynamics of learning, especially the considerable learning that is personally directed and happens outside the classroom, under ICT-mediated environments. The efficacy of podcasting, among other ICT tools, in language education has been acknowledged in both theory and practice (Rosell-Aguilar, 2007). A range of theoretical perspectives addressing the use of educational podcasts as one of several digital multimedia formats in language education is elaborated below.

2.1. Cognitive Theory of Multimodal Learning (CTML)

cc cnnnnm oo eee Mayer s 555555 Cggttt eee hh eory of tttt mmaa l Leaiii gg MMMM cccc h examines how students manage different routes for processing multimodal didactic contents, namely dual-channels assumption, each channel can deal with only a small amount of content materials at a time; that is, limited capacity assumption, and meaning learning in turn involves engaging in relevant cognitive processing.

Despite the narrow capacity of each channel, Clark and Mayer (2008) believe that through providing diversified modalities, it is possible to establish new conditions for lodging more didactic routes; in this fashion, the likelihood of learning materials can be boosted. In addition, the cognitive theory of multimedia learning can explain how podcasts may serve as a better study aid than other learning resources. The use of podcasts is deemed to cater better to the needs of auditory learners, and also expose students with other learning style preferences (visual, tactile, and/or kinesthetic) to learning through the auditory mode. More precisely, the use of other sensory channels can avoid overloading of the visual channel (Engelkamp & Zimmer, 1994) and help students better process and understand complex materials (Paechter, 1993).

2.2. Cognitive Load Theory

Cognitive Load Theory (CLT) (Sweller, 1994) focuses on the interaction between information structure and Psychological Learning Process or PLP (Alavi & Leidner, 2001) in relation to aaannng. It uuggesss tttt an iiii rrrrr rr iinn ccccceiii gg symmmmiii sss ff tttt tttt cognitive channels to process visual and verbal stimuli. In this respect, learning is achieved

by integrating information between such channels (Mayer, 2001). In effect, CLT proposes tttt ttt oo eee aarrww capactty ff PLP, sssssss ss y be eeeeeeeæ by eee information and, if the bulk of materials is not accurately managed, this will lead into conditions where students are so encumbered by extra cognitive load. This cognitive overload accordingly hinders the schema acquisition, later leading to underperformance (Sweller, 1988). Podcasting, however, could provide a solution to this limitation. Through exploiting the potential didactic force of podcasts to provide opportunities to students so as to repeatedly access content and directly control the speed and pace of the verbal and visual stimuli being offered, students can adequately process content before subsequent information is presented and lost, and thereby, decrease cognitive overload. This way, the change in performance occurs because the content materials become gradually more familiar to students and the cognitive properties of the materials are adjusted to the effect that it can be dealt with more successfully by PLP.

An additional supporting point is the effect of repetitive situation feasible in podcast lessons in which students have the opportunity to review the learning materials, not only through written form (textbook), but via supplementary multimedia-based materials besides audio-visual basic materials either in class or at home. In practice, the high frequency of exposure can enhance the input and therefore facilitate learning (Richards, 2002).

2.3. Blended Teaching and Learning Method

The blended L2 teaching and learning method allows students to alternate between ICT-enhanced and printed experiences on the basis of their accessibility to make optimal use of the media (Neuman, 2005). This method, however, is not just about tossing any technology into the learning assortment, but about deciding on the preeminent learning supplying alternatives, both technology-enhanced and more conventional (Kitchenham, 2011). In practice, the blended method of teaching and learning is not an either-or conundrum, but a proper portion of various teaching modes for purpose issue. This way, it moves the debate away from false the dichotomy, that is, conventional versus ICT-enhanced learning method and classroom-based versus nonclassroom-based modes of delivery which are not beneficial. To be precise, in the blended teaching and learning the learning process is fueled by both classroom- and nonclassroom-based teaching and learning. In view of that, "blended learning promises to enhance student learning and provide teachers with unprecedented resources and support" (Germain & McIsaac, 2014, p. 1). "With blended learning, the [technology] may provide much of the learning fundamentals and students must be more self-regulated than in

a traditional model classroom, but the teacher still plays a vital [albeit different] role" (West, 2015, p. 1).

In essence, the blended method of L2 teaching and learning goes beyond the assumption of complementarity of the nonformal manner of practicing and learning. The activities that take place after the learning has been blended should be linked deeply with the content materials that the students have been taught in the classroom, and success in these activities should build upon and reinforce the learning that students have done in classroom. Considering the distinctive features of formal and nonformal training, this method of teaching a.. aaannng eeeee eeetttt t a. h hhycca caaaacrrrttt ,,,, ,,,,, ,, ee,, add ddddddd dd eeeeeseiii gg ctttttt tt y add a eew appect oo eeeeee eee add eee aaa ss eeey sse oo achieve knowledge (Neuman, 2005).

Meanwhile, as far as the podcast-mediated instruction is concerned, despite the potential benefits and positive reactions supporting the use of multimodal podcasts for (language) teaching and learning, the majority of such studies, however, were mainly small-scale descriptive undertakings focusing on technical issues of creating and distributing podcasts, rather than adopting a methodical approach to understanding how the medium affects the teaching and learning (Rosell-Aguilar, 2007). As with any novel technology, including podcasts, educators need to evaluate the reasoning behind the use of it (Maag, 2006). The use of theoretical foundations will not only provide a rationale for using podcasts, but also helps inform the pedagogy of using them.

The study is, thus, motivated by the issue that this recent technologically-supported trend using educational podcasts, among other ICT affordances, can be adapted and integrated in a pedagogically sound theoretical model or conceptual framework to support teaching and learning English, in general, and teaching English vocabulary items, in particular.

More precisely, this study capitalizes on the variegated flexible modalities (vs. unimodality) and ubiquity aspects of podcasts to support language learning in tertiary education and supplement in-class language resources and activities with outdoor review podcasts providing students with supplementary and alternative perspectives on the contents eeesssss sy uuugtt iii ch, nn ,,,,, ,, y baaaeen rr eeepen eee ..... . eeee aaaannnng add exploration of topics and also further encourage students to develop autonomy or independent learning outside the classroom. The three scenarios considered to investigate the objectives of the present study are thus set as follows:

- Self-study learning approach (Scenario I),
- Conventional learning approach (Scenario II), and
- Podcast-mediated blended learning approach (Scenario III).

Employing triangulation, the following research questions are accordingly formulated to address the issue at hand:

1. What are the participants' general attitudes, experiences, and readiness towards ICT-based and blended L2 learning?
2. rr e rrrr e any ggg iii catt ffffeeence nn eeeeeeeee aaaggggg gg oocalll a.. aaa hhe podcast-mediated blended learning approach vis-à-vis the two other methods of delivery, namely, conventional learning, and self-study learning approaches?
3. How do the participants perceive the learning scenarios for L2 vocabulary learning?

3. Method

3.1. Participants

Four hundred and forty seven undergraduate male and female students at *Ahvaz Jundishapour University of Medical Sciences* were taken as population of the study. All the students had already taken *English for Students of Medicine* as an obligatory reading course at that juncture. To select the participants for the study, they were notified through an announcement issued by the researchers inviting them to participate in the study. After registering the volunteers, to account for their L2 vocabulary homogeneity, a Vocabulary Levels Test (VLT) was administered to select the participants through their performance on the test (See instrumentation, VLT). After scoring the test papers, 132 students who scored less than others were singled out as those needing special treatment. Indeed, their performance on the vocabulary test items which were sampled out from the collection of the teaching resources showed that they required further education on the subject materials given than those who outscored them. They were then randomly assigned to three groups to learn the intended materials containing the same vocabulary items and expressions through three different scenarios, namely the self-study, the–conventional learning, and the podcast-mediated learning during the hours the researchers announced. Formal arrangements regarding the eeeeacch cccaiisss add hhe eegnnnnnnnnn eee eeeee eeey s Reeeacch iiii cs Cmmmtteee nnrrrss of ethical considerations of researching with the human participants were also carefully sought for before embarking on the study.

3.2. Instrumentation

Vocabulary Levels Test (VLT): To set the seal on the homogeneity of the participants and to discern their current L2 vocabulary proficiency, a researcher-made VLT (see Appendix A) was developed via utilizing a frequency-based corpus assembled from the most frequent 23947 L2 vocabulary items which were sampled out by submitting the collection of the teaching resources, namely *englishpod* (©2008, Praxis Language Ltd.), intended to be taught in the major study to a frequency analysis via *Text Fixer Software* (2014). In doing so, a 40-minute paper-based VLT consisting of 100 randomly selected word items from the corpus with a total score of 100; that is, one score for each item, was prepared to be conducted in a pilot phase before running the major study. After piloting the test items on 60 students from the same population other than the major participants, item difficulty (ID) of each test item was calculated and those items whose difficulty levels were between 0.3 and 0.8 were considered appropriate as the ultimate VLT test items intended for the major phase of the study. Thus, the items whose difficulty levels were too low or too high were removed from the test. As far as content validity of the VLT was concerned, it was authenticated by four TEFL experts. The experts were asked to rate the items on a five-point rating scale ranging from 1-not important to 5-very important; to internally validate and examine the selected items and its relevance to the research literature. The criterion for keeping the items in the aaad eee iii aaaa eee aa s aaeed nn eee exee aaiigg; tttt ttt eeeee ee ss cccc h ee ee raddd below scale three by 50% of the experts were excluded. Criterion˚ related validity of the test was also investigated by calculating the correlation coefficient between the researcher-made VLT aaa a ddddddzzzzed VLT =))))))dd it was found to be r = 0.65.

Attitude Questionnaire: To ascertain the best comparability of the three groups of the participants in terms of their attitudes, experiences, and readiness towards taking part in an ICT-based L2 learning study, they were invited to complete an attitude and readiness questionnaire before conducting the major phase of the study. The survey consisted of 16 carefully prepared questions that were categorized into four sections. The first three sections, namely, section A (ICT-based L2 learning), section B (Podcast-based L2 learning), and section C (L2 learning in a blended scenario) included 14 items which were designed using the 5-point Likert scales ranging from 5 (strongly agree) to 1 (strongly disagree). In the forth section, another line of follow-up questioning (2 items) asked the participants in the third group about the descriptive aspects such as the partic aaage aattesss ff ICT llll ,, rrrrr preferences regarding the frequency of the podcasts and also their practicing time. The

reliability of the questionnaire was calculated via piloting the questionnaire items on 60 students from the same population other than the major participants using Cronbach's alpha and it was found to be 0.75. Its face validity was confirmed by four TEFL experts, as well.

Assessment (vocabulary tests): To eee ff eee aacccc aaannng nneer fff.. rett treatments had improved, their achievements were formatively assessed through utilizing two 20-scale vocabulary tests on a weekly basis. In practice, the data for the assessment were aeeeegated uuuuuh uuusssss ss pefforcccc e .. er iiee add acssss ssttng,, nn response to experimental treatments and manipulations, [and] didactic content relevance" (Gipps, 1994, p. 61). Overall, 32 formative assessments, namely, two rounds of assessment in each ee ek ee re eeee rrmm each pppppp ff aacccc eeffaaaa cce. hhe eeialll tty of the tests, though they were professionally designed by *www.englishpod.com* (©2008, Praxis Language Ltd), was computed through Cronbach's alpha and it was 0.78.

Interview Prompts: Finally, to answer the third research question regarding the aacccc wwwswnn add eeeeeeciiees atttt t ffeerett cceaassss ss ccc arrrrr r eeannng, participants from each group were invited via text messages to participate in an interview session which was conducted by one of the researchers. This bimodal interview, including face-to-face contact and multimedia messaging via *WhatsApp social networking*, was conducted in Persian. Below are the interview prompts in English:

1. What are your greatest strengths/weaknesses in learning L2 vocabulary via the particular learning scenario taken?
2. If you could alter one thing about the way the materials are taught, what would it be?
3. What instructional activities did you find useful?
4. Is there anything else educators need to do that would enrich the L2 learning process?

Also, to observe and judge how well podcast-mediated learning scenario fitted in the L2 learning processes, an extra item was merged into the interview items to debrief the participants in the third group (i.e., podcast-mediated scenario).

5. How will the podcast-mediated learning platform improve your L2 proficiency?

3.3. Materials

Podcast Lessons Package: The sample podcasts intended to be taught were selected from *englishpod* (©2008, Praxis Language Ltd), professionally designed to teach English lessons to language learners. It provided about 400 practical lessons which were organized thematically with mini-stories and dialogs contextualizing the vocabulary items in realistic

and interesting situations such as business meetings, travel, daily life, social relations and lifestyles, and so forth providing learners with cultural exposure to the target language. Each lesson consisted of a short dialog accompanied by key and supplemental vocabulary items along with their English definitions and sample sentences. Learning supports such as cccc a... aaaccccssssss sdd fffeerett execcssss sssss ss-Aguilar, 2007) were also incorporated in the podcast lesson package to enable learners to carry out different vocabulary activities in various task types that were not easily reproducible in a spoken form, as diverse as matching a list of words with their English definitions, sentence reordering, dictation as well as multiple choice items. The variety of task types and exercises were expected to provide students with elaborative rehearsal, probably leading to deeper processing. As an integral part of each podcast lesson package, three audio files which read and expanded on the written parts of the dialogues were also made available to students encouraging a multimodal elaboration of the lessons. In keeping with the length of the research and limited coverage of vocabularies in the specified time, namely, thirty-two 90-mintue sessions in an academic semester, a total number of 32 podcast lessons among others were selected for the study on the grounds of such factors as their relevance and appropriacy to the educational settings and teachability criteria. Indeed, attempt was made to accommodate those lessons including vocabulary items which were quite common in modern English, particularly in conversation and also included those vocabulary items which dealt with a particular theme or were in related functional areas.

Learning Management System (LMS): This system was commercially developed to host and distribute course materials to the participants in the third scenario and also managed what actually took place during the nonclassroom part of the blended module. More specifically, through application of the LMS, the participants in the podcast-mediated blended module were enabled to have access to the supplementary part of the teaching resources, namely, the Pdf version of the lessons along with the elaborative audio files, seamlessly integrated with the printed handouts of 32 English lessons in which vocabulary items were contextualized in different short passages and dialogues including their definitions and various sample sentences with a variety of exercises and task types. This management system was indeed based upon nonhierarchical, networked ways of managing the learning sessions enabling the students to access and download each podcast lesson at timed intervals, namely, two lessons each week **(**on Saturdays and Wednesdays for sixteen consecutive weeks) using the Real Simple Syndication (RSS) feed for its automatic downloading on their desired ICT

tools as diverse as their PCs or mobile devices such as cell phones or multimedia players like iPods.

3.4. Research Design and Procedure

3.4.1. Opening

In this step, the paper-based attitude and readiness questionnaire was given to the participants to complete as instructed. This survey approach has often been exploited in ICT-based projects by asking learners to provide information about how they know, like or use the learning platforms (e.g., Thornton & Houser, 2004, 2005; Fozar & Kumar, 2007; Stockwell, 2008).

3.4.2. Treatment

After 32 podcast lessons were selected from *englishpod*, three different learning scenarios were considered to teach L2 English vocabulary items to the participants in three different groups throughout the first semester of academic years of 2015-2016. The scenarios used are described as follows:

A. Scenario one (the self-study learning approach): As to the manner of teaching and practicing in the first scenario, a printed handout of intended educational materials for *each* lesson, including mini-stories and dialogs which was accompanied by key and supplemental vocabulary items along with their English definitions, sample sentences, and different vocabulary activities in various task types, was delivered to the participants urging them to study lesson by lesson and practice at their own pace without attending classroom. It is worth mentioning that the participants in this group attended two exam sessions weekly where they could also receive the intended materials of each next lesson. In doing so, their vocabulary learning progress was formatively assessed on two 20-scale tests in each week.

B. Scenario two (the conventional learning approach): In this scenario, teaching and learning process was mostly limited to the classroom lectures as the major mode of teaching, that is to say, the teaching sessions were conducted face-to-face, with the instructor teaching the printed handouts of the same instructional contents and exercises, given to other two gssssss sf ,,,,,,,,, ,,, ccœeeeœs add aacllttaiigg eee rrr k nn class by annnng eee participants to practice and complete the exercises and task types.

In essence, available dialogues and various exercises in each lesson were skillfully exploited in order to encourage contextual learning of the vocabulary items. Throughout the contextual learning of vocabularies, vocabulary learning strategies of using context clues to define words, defining words using synonyms or antonyms, examining shades of meaning of

words, creating a visual representation of a word, using affixes or roots to define word items, and making connections to new items allow the reader to repeatedly practice and retain new vocabulary (Cecil & Gipe, 2009).

To provide the participants with elaborative rehearsal, they were encouraged to complete various task types such as role play, matching a list of words with their English definitions, sentence re-ordering, dictation, and multiple-choice items. In addition, to nonformally assess the understanding of definitions and vocabulary-related content introduced in class and to supplement the contextual learning of definitions, each week the students were also expected to write vocabulary cards, which included definitions of vocabulary items in their own words and sentences that featured the word in context (Juel & Deffes, 2004). These vocabulary cards were maintained in individual student binders and used for review and reference within demonstrations and formative evaluations. Throughout the week, the students viewed and performed role play demonstrations of the ideas and concepts associated with the vocabulary items or with visual aids to provide interconnections between the concepts and vocabulary items. The ordering of these activities as well as the detail of each operation varied from one passage to another, both to avoid monotony and to facilitate assimilation of the word items (Hayati, Jalilifar & Mashhadi, 2013).

As far as assessment for this group is concerned, its participants took part in two exam sessions weekly which were administered at the beginning of each new teaching session typically held after finishing each previous lesson.

C. Scenario three (the podcast-mediated blended leaning approach)

In this blended scenario, each session was developed to have up to two rounds, namely classroom and nonclassroom. In other words, the blended scenario was partly classroom- and partly nonclassroom-based, partly a matter of teaching and practicing in the classroom and partly of conducting nonformal practicing and review outside of the classroom. For the first round in the classroom, the teacher taught participants the printed handouts of the instructional materials, similar to those of other two groups of students, lesson by lesson via face-to-face lecturing and then asked participants to practice the exercises and task types. In this round, using handouts in classroom along with the podcasts designed for outside classroom practice and review was actually intended to provide some form of scaffolding and differentiation for learners with other principal perceptual styles, particularly those with a preference for visual and text-based learning materials such as textbooks and worksheets (Chan, Chen, & Döpel, 2011).

On the other hand, the podcast-based practicing, as complementary to mainstream L2 English vocabulary instruction and practice in the classroom, was commonly employed at the second round of the blended course. In this round, which was implemented in the extramural situation, the students were indeed expected to register and log in to the LMS, where automatic download of each podcast lesson was provided in spaced intervals through RSS feed on their desired ICT-based tools, urging them to regular interval study (Thornton & Houser, 2001) of the supplementary part of the teaching resources closely integrated with the course content. That is, to supplement the limited input students typically receive in classroom hours, such listening activities via podcasts encouraged students not only to recapitulate the intended instructional contents, but also to commit them to memory by recurring exposure to the sound files intra- or extramurally in a more self-directed manner OOBryan & Hegerrrrrr r rr 09).

More precisely, students who have the technology at their disposal could independently study and review podcasts and supplementary materials to build on their classroom learning or catch up if they missed a lecture, whether at home, on the move, or in intramural settings. It is also worth mentioning that the LMS created a profile of each learner and automatically gathers all the students' login information and podcast access in the second round of the blended module to the very final stage for later analysis. Assessment for this group was similar to that of the other two groups of learners (i.e., one 20-scale assessment for each lesson which was carried out at the beginning of the next session for teaching the new lesson).

In the end of the course, nine high-scoring as well as low- and medium-scoring students from the three groups were selected to be interviewed. This interview was conducted by one of the researchers in 20 minutes for each respondent (see Appendix B for the gist of the selected respondents' answers).

4. Results

aa aa clll ecddd fmmmeee aacccc eeffaaaa nce nn eee rrr eeeeee esssssssss sss r eee course period as well as their responses to the items of the attitude questionnaire and focus-group interview were analyzed as follows:

4.1 The analysis of the results from the attitude questionnaire

To answer the first research question, the participants' general attitudes, experience, and readiness towards taking part in an ICT-based L2 learning study were investigated before

embarking on the major phase of the study. The majority of the participants generally believed that diverse ICT affordances would help them learn L2 better (q. 1). In a similar vein, as regards the use of ICT technology for L2 learning, more than half (67%) of the participants gave the green light to its integration into the mainstream education (q. 2). Just the same number of participants (67%) reported that they are interested in using ICT-mediated instruction for the purpose of L2 vocabulary learning regularly (q. 3). However, a few participants (20.6%) were inclined to learn L2 only in the ICT-based scenario (q. 4). Seventy six participants were in agreement when it came to items 5 and 6 which inquired about using supplemental podcast for the purpose of L2 vocabulary learning, namely podcast-mediated learning, and its motivational aspects (q. 5 & q. 6). Sixty two percent of the favorable answers was observed for utilizing podcast-mediated practicing as a medium for reviewing instructional contents instead of employing conventional medium (e.g., paper & pencil) for this purpose (q. 7).

About 58 percent of the participants believed that integrating podcasts into the process of practicing L2 vocabulary items can encourage them to do more practice extramurally and help a better retrieval of already learned vocabulary (q. 8). As to the ninth question, more than half (61%) of the participants believed that podcast-mediated practicing can offer great lllllllll ll arrr ess a rr aaeer aanee ff L2 leannng eeeeeeeee Sixty xxxeeccett ff the participan aeeee rs ee re iiii iiee oo hhe hhhhhhhhiii nn ...))) tttt ttttt t rrrrr perception of the extent multimodal materials help them apply the learned contents to the real-world situation.

In items 11 and 12 where the participants were asked about using blended method of vocabulary teaching and learning, they were in the opinion that in the blended language learning scenarios, opportunities for language learning are supplemented with nonformal practices in extramural settings (q. 11 & q. 12). As to their answers to the thirteenth question (q. 13), they thought that the blended method of teaching and learning would endow students with more active role in different didactic circumstances carefully developed to support face-to-face instruction with nonformal practices. The participants who believed that establishing multimodal practicing and learning situations prevents the abrupt substitution of teachers with ICT-based instruction were in the majority; that is supplementary as well as complementary role of ICT in the blended module (q. 14). They maintained that blended L2 learning can provide a broader range of details about the instructional contents. Details about

eee aacccc attttteee aaaa sss eee ttess ff eee atttteee eee iii aaaa eeeare llllll yed nn eee first part of Table 1.

Table 1. Ovrr ll l Aaalyii o of thr rrr riii nnnt Attitddss twwrr dt t II I tmmf ff tuu uu uutiaaaa ire (continued)

Items	section	General Gist of the Items	Proportion of the agreed participants (%)
1	A	ubiquity of learning L2 via ICT	71
2		tendency for L2 learning through ICT	67.24
3		tendency for L2 learning via ICT regularly	67
4		propensity for learning L2 only in the ICT scenario	20.6
5	B	using supplemental podcasts for L2 learning	76
6		supplemental podcasts can increase motivation for L2 learning	74.77
7		using podcast for reviewing the content materials	62
8		integrating supplemental podcasts into the process of practicing L2 vocabulary can encourage students to further extramural practice and help a better retrieval	58
9		podcast has the potential to address a broader range of learning problems	61
10		podcast help apply the contents to the real-world situation	66
11	C	using the blended learning method for L2 learning	69.11
12		blended L2 learning helps students visualize the real world better	74.56
13		blended L2 learning endows students with more active role in different didactic circumstances	61.29
14		blended L2 learning can provide a broader range of details about the instructional contents	68.44

Note. agreed participants = participants who selected totally agree or agree.

To specify the time lag for practicing the extramural learning activities (q. 15 & q. 16) and integrating the pull mode of content delivery along with the push mode of delivery, there

was an approval among 87 percent of the participants on receiving the materials following a predefined time schedule. As to the (probable) practice of the materials in the extramural situations on the prespecified time lags, it was found that the number of the participants who gave consent for practicing the learning contents in the late afternoon was in great majority (i.e., 73.6) (Table 1, Continued).

Table 1. (Continued)

		Options	Frequency (%)
D. practicing the contents in the extramural situations	15. following a predefined time schedule	yes	86.45
		no	13.55
	16. time lag for practicing the contents (in the virtual extramural situation)	morning	0
		early afternoon	12.9
		late afternoon	73.6
		night	13.5

4.2 The analysis of the difference between the participants' performance in the instructional scenarios

To address the second research question regarding the comparative impact of employing fffeerett cceaassss ss aaacgggg add eeannng nn eee aacccc L2 ccc abrrrr y eeannng, eee second stage of data analysis was performed. For the analysis of the garnered data over 32 assessment sessions for each group of learners, the descriptive statistics (mean scores, and standard deviations), Analysis of Variance (ANOVA), and Scheffe Post-Hoc test were used.

Table 2 demonstrates the descriptive statistics, the mean scores, and the standard deviations of all three groups of learners. As Table 2 indicates, the mean score of the participants in the third group who received podcast-mediated blended instruction was higher than those of the other two groups.

Table 2. Descriptive Statistics of the Participants' Performance in all three Groups

Time	Group	N	*Mean*	*SD*
In the End	1	44	14.31	2.41
	2	44	14.59	2.36
	3	44	16.8	1.52

Note. 1 = Self-study group; 2 = Conventional group; 3 = Blended group. N = Number of the participants; SD = Standard Deviation.

To determine whether or not there were significant differences between the mean scores obtained from different instruction modes, which in turn can reveal if one type of instruction

resulted in different degrees of learning, analysis of variance was administered. As is shown in Table 3, the mean scores of three groups differed significantly from each other and, thus, the learning outcome was accordingly different in each group.

Table 3. The Analysis of Variance Results of the Three Instruction Modes in the Groups

	Sum of squares	**df**	**F**	**Sig.**
Between Groups	549.20	2	88.132	.000
Within Groups	210.186	129		.000
Total	**759.386**	**131**		**.000**

Note. df = degree of freedom.

Subsequently, a Scheffe test followed to make multiple comparisons between the three instructional modes offered so as to determine which of them appeared more effective. As depicted in Table 4, significant differences were identified between the mean scores of the podcast-mediated blended group and those of the conventional learning group (p = 0.017, mean difference = 2.27). When compared, the mean score of the podcast-mediated blended group also differed significantly from that of the self-study group (p = 0.001, mean difference = 4.45). Furthermore, significant differences were located between the mean score of the conventional learning group relative to that of the self-study group (p = 0.023, mean difference = 2.18). Thus, we reasonably decided that significant differences existed between the three instructional modes in terms of their efficacy for teaching English vocabulary items, i.e., the podcast-mediated blended platform was the most effective instruction mode. In the same way, the self-study group acquired the lowest degree of significance compared with the other two groups.

The results of the multiple comparisons of all the three groups in the Scheffe test are illustrated in Table 4.

Table 4. The Multiple Comparisons between the Strategies in the Scheffe Test

(I) scenario	**(J) scenario**	**Mean difference**	**Sig.**
Self-study	Conventional	- 2.18	0.023
	Blended	- 4.45	0.001
Conventional	Self-study	2.18	0.023
	Blended	- 2.27	0.017
Blended	Self-study	4.45	0.001
	Conventional	2.27	0.017

5. Discussion and Conclusion

This study attempted to discern how different instruction modes came into interaction with learning the L2 English vocabulary items in tertiary education for undergraduate students majoring in Medical Sciences at *Ahvaz Joundishapour University of Medical Sciences*. The eettttt s aceeeeee eged ooccasss ttttttttttt t ooeevepppaaaeee nnngaaee llll ,,, eeeeclllly L2 gggiihh ccc aaaaary eeannggge eeee aave aoooccc ueeeee e hhhh hccccccc sgggeiii ng aaanne positive attitudes towards using podcast, as a feasible and promising medium, in language teaching and learning practices on desktop computers or mobile devices in intra- or extramural settings, as it opened up possibilities of accessing the material on a ubiquitous basis. For the most part, comparison of the pacccicaa eeffoaaa cce nnhhe iii iial eeiii sss ff the course and their performance towards the end of the course as well as across the triple scenarios indicated that the participants in the third group outscored their counterparts in the other two groups after practicing the contents via blended method of L2 vocabulary learning, which, in turn, implies the facilitative role of extramural practicing in the blended module of L2 learning using the supplemental podcasts. Podcasting, as a multimodal delivery platform, provided learners in the third group simultaneously with audio stimuli (e.g., narration) and llllll l..... . aeed nn aa yer s 555555 Cggttt vve eee rr y ff tttt mmaaal Leannnng MMMMM and supporting evidence, the added interactive multimodal dimension of podcasts in the blended module allowed for a diverse range of learning skills and opportunities giving the students more contextual and linguistic information than common classroom practicing could provide. Therefore, it is deemed that it could improve student learning over other learning resources, such as textbooks, notes taken from class lectures, or even PowerPoint slides. This finding has already been affirmed by Dziuban, Hartman and Moskal (2004). They concluded that "blended learning should be viewed as a pedagogical approach that combines the effectiveness opportunities of the classroom with the technologically enhanced active learning possibilities of the [virtual] environment" (p. 3).

Along these lines, the gathered data corroborated the roles that the supplemental podcasts played in the blended module of L2 vocabulary learning as they enhanced the rate and ease of L2 vocabulary learning. The findings revealed that those students who were receiving the podcasts on spaced intervals were prodded to study the materials more often than their counterparts on the other two groups. Such multimodal activities via supplemental podcasts encouraged students not only to recapitulate the intended instructional contents, but

also to commit them to memory by recurring exposure to the sound files intra- or extramurally in a more self-eeeecmmmmeeer OOBryan & Hegeeeeeeee0 000000

This is, in turn, a testimony to the fact that positive relationships can be identified between the uses of instructional technology and the participants' engagement and learning outcomes as it forged close bond between the classroom and nonclassroom activities. The result is congruent with the Ellis' (2008) opinion regarding application of ICT for the purpose of teaching and learning L2. Ellis (2008) gives special importance to the need for employing variegated tools to motivate learners in the learning process. He emphasized that "providing learners with incentive may aid learning by increasing the time learners spend [practicing]" (p. ..... oo eeeeer, eee eettt s aa y acctttt ttt eee aacccc eeee ppeffaaaa nce nn eee self-study and conventional groups, where practicing was done through only one medium. In fact, in such unimodal learning situations, students are often inundated by large amount of information to the effect that they are often overwhelmed by the presence of a huge bulk of new information. This result is also in line with the Dual Coding Theory (DCT) proposed by Paivio (1986). According to this theory, employing diversified modalities blended together presents a situation for housing more routes of learning concurrently, thus increasing the chance of learning multimodal instructional materials. In turn, the blended teaching and learning method emerged as a suitable platform for using podcasts for the purpose of L2 pedagogy. Along these lines, the most important findings in this study bear similarity to the eeeeaccee ooooooonnn tttt ttttttt txxxxxx ff aaaciicnng, aalll y exaaaaaaa l aaaciicnng, should be intimately related to instructional contents taught in classroom settings.

In conclusion, the findings also revealed that the favorable effect of podcasting on the aacccc eeffaaaa nce ss ttt tttt eee oo eee eeeeeeeee ff cccc att eer ee; rrr tttt acce, examining the questnnnaaeee add ttt eeeeew sssddddddddddddd aacccppa aaaaaa rrr dd expertise, in turn, made their engagement easier. In other words, the results disclosed that eeeee e ff rr aciicnng, yypes ff paaciice,, add tee aacccc eerceiii nn ff eee aaannng ctttttt ttt eear rrr eclly nn eee aacccppa eeffaaaa cce. nn eee eeeee e eee aaaa of ICT-mediated instruction is a multidimensional issue and despite the growing interest in the application of digital technology and its affordances in education, there are still some technical as well as administrative difficulties for their true integration into educational mainstream. More qualitative studies would not only verify the themes noted in this research but also could reveal emerging themes not present or not adequately touched in our study. It would be also advisable to devote more research and study to such issues as individual

differences like gender, class standing and prior experience with blended courses so as to establish a purposeful match of strategy and technology and also to ensure more viable research-based strategies across different types of instruction in blended models.

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Appendix A: Vocabulary Level Test

Name: …….. **Date: ……**

English Vocabulary Test					
Write down the Persian meaning if you know this word	**Mark 'X' if you don't know the meaning of this word**	**English words**	**Write down the Persian meaning if you know this word**	**Mark 'X' if you don't know the meaning of this word**	**English words**
		transaction			take up
		access			anesthetic
		overdraft			weigh
		browse			forwarder
		vehicle			fragile
		sedan			priority
		discount			rip off
		approximately			absurd
		assets			trustworthy
		financially independent			wire transfer
		withdrawal			ignition
		authority			accelerator
		brag			tow truck
		inquiry			seat belt
		come on in			basketball sneakers
		tenant			construction boots
		appliance			cross trainers
		attic			pinch
		scale			strappy sandals
		layover			snug
		boarding pass			jealous
		throw in			envy
		compatible with			crisis
		charge			pollen
		contraption			desensitize
		laundromat			quarantine
		starch			contagious
		lean			craving
		boneless			remedy
		sirloin			appetizing
		sarcastic			adaptation
		unbearable			take-out
		criticize			catch up
		intolerable			reminisce
		chauvinist			nerd
		fragrance			stereotype
		vase			likewise
		centerpiece			sharp
		challenging			preferably
		simulation			dry-clean
		hardcore			herringbone
		starve			impression
		intake			urgent
		obese			overdue
		anorexia			vault
		smart phone			withdrawal
		hotspot			molar
		surf the web			swollen
		accidentally			wisdom tooth
		cummerbund			concussion

Appendix B: Gist of the Selected Participants' Responses to the Items of the Interview

Students	Transcriptions
H-G-1	I liked the topics covered in each lesson. But I liked it better if there were audio files for each lesson as well.
L-G-1	I geeerally llll d t meet tee aaadlinss to oo the eeerii ees ss I wss ttt ii gll y mtt ivtt dd enough at home.
M-G-1	I think the teacher should have included more examples to support learning process in the self-study scenario better.
H-G-2	I think exploiting the conventional method for teaching L2 vocabulary is a good idea seeing that most of its facets are familiar to students, and also teacher is always there to help them out.
L-G-2	We had to do weekly exercises and take exams at the end of each week and it was too bulky for me to keep up with demand.
M-G-2	The class environment was friendly and I liked the role plays and discussions. It helped me to have a more active role in the learning process.
H-G-3	I am willing to learn more L2 skills and language components through the podcast-mediated scenario.
L-G-3	I liked the idea of using podcasts for vocabulary learning. However, I am not very accustomed to using my cell phone for learning proposes. I just like to play music and watch music video clips with my cell phone.
M-G-3	Using podcasts at home to rehearse and build on what was taught in the class was just like having the teacher always at home! Through the podcast-mediated scenario, I learned language more efficiently.

Note. H= high-scoring students, L= low-scoring students and M= medium scoring students. G1, 2, 3 = Group 1, 2, and 3, respectively.