Attitude and Cognitive Specificity of Second Language Learning: A Study of Mobile-Assisted Islamic Culture-based Vocabulary Learning

Alireza Jalilifar[1], Zohre Gouniband Shooshtari[2], Saeed Khazaie[*3]

[1] English Department, Chamran University, Iran

[2] English Department, Chamran University, Iran

[3] English Department, Chamran University, Iran

Abstract

This study attempted to address the issue of how to incorporate formulaic sequences into English forms of Islamic instructions through the medium of high-tech media. To this end, formulaic representation of Islamic culture-based materials, consisting of 90 vocabulary items similar to the words and phrases used in Islamic cultural settings. They were integrated with multimodal cell-phone delivery of cued and non-cued content accessed by 218 Iranian male and female high-school juniors at a pre-intermediary level of English language proficiency. The participants were placed into four different working memory (WM) ability groups, using visual and verbal WM tests, via the short message service (SMS) and multimedia messaging service (MMS) in 18 virtual didactic sessions. Upon treatment, after the end of each virtual session, they were formatively evaluated on their recognition and recall of L2 vocabulary through the mobile-assisted testing module (MATM). The results indicated that except for learners of low-visual and low-verbal abilities the other three groups treated with content containing pictorial or formulaic representations performed significantly better on the tests. The study concluded that written and pictorial cues could provide useful complementary information.

*Keywords:* culture-based materials, cued- or non-cued-content, formulaic sequence, mobile-learning.

* Corresponding Author's Tel. : +98 9166014378

E-mail address: Saeed.Khazaie@gmail.com

Introduction

It is a long established theory that learners enjoy and utilize their cognitive information processing power as an important mediator to acquire knowledge. As Atkinson and Shiffrin (1968) maintained, human beings initiate learning through a multi-stage memory model. Their model begins with sensory memory whereby the input is captured through the dual conjunctive or single unilateral functioning of the ears and eyes (Mayer, & Sims, 1994; Sweller, 1994). The short-term memory (STM), then, works out a verbal or pictorial organization of the received input; this is further integrated into the prior knowledge and retained in the long-term memory (LTM). More recently, Baddeley (2003) has expanded the idea of STM, calling it the working memory model (WMM). He contends that external information is processed in three different segments of STM after it is captured via sensory memory (Figure 1).
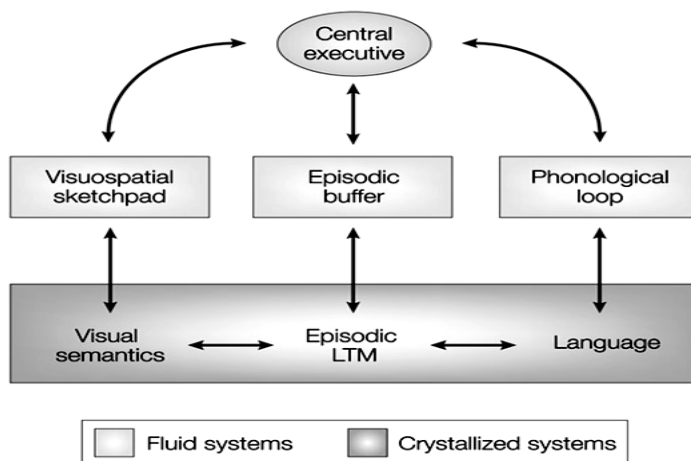
Figure 1. **Working memory model (Baddely, 2003)**

Baddeley (2003) says that WM acts both as storage and as a system with different kinds of processing power. This implies that different learners have different STM processing capacities and in case they are provided with different types of instructional materials favoring their different cognitive modules (Courtney, 1998), their learning can be enhanced. In this vein, the levels of processing theory states that a memory trace can persist in LTM if it involves a deeper level of processing (Cermak, & Craik, 1979; Craik, 2002).

Research on children has demonstrated that the ability to learn new words is greatly affected by working memory span (Reiterer, Erb, Grodd, & Wildgruber, 2008). However, the individuals' WM capacity differs (Machizawa & Vogel, 2004; Sugiura & Moriya, 2012). N. Ellis (2001) notes that though distinguishing and

connecting speech sounds and recognizing speech and letter correspondence are central in vocabulary learning tasks, individuals differ in their ability to repeat phonological sequences.

N. Ellis (1996) believes that much of language acquisition is really acquisition of memorized sequences. As short-term repetition and rehearsal permits the development of long-term sequence information for language acquisition, this in turn allows chunking of working memory contents to these established patterns.

Formulaic language units or ready-made chunks and sequences of words as Wood (2002) defines are integral to first- and second-language acquisition, as they are segmented from input and stored as wholes in long-term memory. These units, at least two morphemes long and phonologically coherent (Coulmas, 1979), capture a great deal of the individuals' attention in the process of first- and second-language acquisition which contributes to a greater facility and efficiency in language learning and use (Bolander, 1989). Nattinger and DeCarrico (1992, as cited in Ellis, 2008) suggest that formulaic speech is commonly used by native speakers, reflecting the ritualization of language behavior. Likewise, Ädel and Erman (2012) report that "research in second language acquisition (SLA) shows that native speakers rely more on formulaic language, especially collocations, than non-native users" (p. 81). In a study of formulaic sequence use in L2 academic writing, Byrd, and Coxhead (2008) report that while her participants expressed a desire to use phrases in their writing, not all previously learned phrases were accurately recalled. In this respect and in an investigation into the effects of focused instruction of formulaic sequences and fluency on the performance of a Japanese learner of English in spontaneous narratives in English, Wood (2009) found some trends in the development of speech rate and mean length of runs, the nature of learner use of formulaic sequences, and the efficacy of focused instruction in formulaic sequences.

In cognitive terms, learner-centered contents can provide them not only with a chance to develop their linguistic and communicative competence, but also with an awareness of conventions of communication, which will enable them to use appropriate styles in different communicative contexts (Bacon & Finnenman, 1990; Lee, 1995; Mc Coy, 2009).

Despite the uncertainty of the application of such processes as segmentation, analysis, and fusion to them to further development in other aspects of language is unclear in the picture of learners' language acquisition (Schmidt, 1983), in the realm of technology-mediated pedagogical environment educators believe that digital contents can enhance the outcomes of learning if they are integrated with prevailing learning strategies and with prevailing psychological theories of learning (Wiredu, 2005).

Based on the previous analyses, one can be concluded that the weakening of traditional teacher dominance, fundamentally characteristic of classroom

learning, is paralleled by high-intensity social communication, whose tools and technological base are potentially created by mobile communication techniques (Benedek, 2009). Other researchers have theorized that mobile-mediated learning as an artificial community can provide some unexpected benefits for language and culture learning (Traxler, 2007; Ally, 2009). In particular, they hypothesize that the non-formal way of teaching content may be seen as a protective environment where students can feel free to make mistakes without any lasting repercussions, in contrast to a student who is studying in the formal setting and makes a mistake which can have enduring consequences.

Ellis (1992) argues that although there are many differences between learning environments, the produced discourse and the learning that takes place depends on the roles employed by the teacher and the learner, the tasks that are utilized in the classroom, and the purpose (i.e. outcome or process) of the learning. Paige, Jorstad, Siaya, Klein, Colby (2003) quoting Freed (1991) reiterate this by noting that the crucial variables do not seem to be the external environment, but the internal one created by factors such as the type of instruction, the level of the class, and the individual differences associated with the teacher and the students. This does not mean that the external context is unimportant, as each type brings different potentials and problems, but it is the interaction between external and internal context that dictates the type of learning that will occur (Freed, 1991).

Learning English has evolved beyond writing the five-paragraph essay to also include multiple modes of creation and expression using visual and collaborative components. Thinking creatively and imaginatively becomes even more important as learners must not only devise thesis statements, but must decide first on a form to best reflect their argument and then frame this argument to take advantage of the conventions of the chosen form. While technology has expanded the modes of composition, it has also dramatically changed the rhetorical context for writing in classroom contexts. Students now have access to many global audiences through web publishing, increasing their value for revision and quality compositions far beyond the assignment context and single teacher audience (National Councils of Teachers of English, 2007). Cultural differences have also been noted in the ways in which language is used pragmatically (Slobin, 1985).

After the introduction of the Direct Method into the English Language teaching, cultural elements began to be considered as an important aspect of learning the language, in the post method era, cultural background knowledge is accepted as an inseparable part of language teaching. In fact, societies have initial conditions and it is most useful to respect them when defining didactic material (Lazear, 1997).

However, the principles for living sustainably that flow from cultural and religious beliefs vary between groups and countries. Despite this diversity, many principles for living sustainably are shared, not only among indigenous

peoples, but also between religion-influenced traditions (World Culture Report, 1999). Since language is a human means of communication, achieving the universality of Islam enjoins Muslims to have good command over different world languages. In other words, those that wish to spread Islam around the world cannot do so without knowledge of the languages of those whom are being invited to Muslim teachings. Thus, learning languages becomes somewhat of an obligation to the Muslim nation. The benefits of representing L2 learning materials through accommodating Islamic instructions with the diversity of the technological features has raised cultural awareness in non-native learners of English concerning both native and target societies.

The present study investigated the visual and verbal features that contribute to the construction of new mode of mobile-enhanced materials representations in L2 pedagogy. To work out strategies for narrowing the gap between authentic mobile-enhanced contents and cliché materials, through merging formulaic-type materials (Coulmas, 1979), as a major element in embodying societal knowledge of a speech community, with pictorial cues and via multimedia application the EFL learning process crafted into a religious perspective.

Research Questions

The evidence that formulaic sequences are of great importance in accomplishing pragmatic goals as well as with the production of fluent language leads us to set the scene to exploit the ubiquitous nature of mobile-enhanced environment to see if exposure to formulaic types of material has any significant effect in learning English didactic content. Prompted by the theoretical and methodological problems in the particular context of developing proper type of didactic materials to be represented via high-tech medium, the present study is expected to cast further light over the issue of employing formulaic-based presentation of Islamic culture-based materials in the mobile-enhanced environment, in this case cell-phone. Also, due to the recognition of the role WM can play in information processing and thus learning (visual and verbal WM), the study also tried to illuminate the moderating effect of WM. Thus, the following main questions can be raised:

1. Do learners of different verbal and visual abilities (high vs. low) learn Islamic culture-based English content differently through different delivery modes of materials (formulaic, and cued)?

It must be noted that this question can be broken down to a number of corollaries in order to capture the following interactional effects:

A. Low-verbal vs. high-verbal in relation to formulaic vs. non-formulaic type of Islamic culture-based materials adapted to be represented via cell-phone delivery;

B. Low-visual vs. high visual in relation to picture-annotated vs. no-annotated cell-phone materials delivery

2. Is there any relationship between students' attitude towards application of multimodal Islamic culture-based digital L2 materials and their performance in mobile-enhanced settings?

Method

Participants

Knowing the degree to which the learners are familiar with the text format or background information will suggest material developers in text selection, how to exploit them, and the nature of possible preparatory work (Breen, 1985). The participants in this experiment were selected from among Iranian junior high-school students. Their age range was 15-17. Although the minimum large sample size criterion was 25, and thus for the present study the minimum sample size of 100 (25×4=100) was sufficient, in order to complete the groups as many as 228 out of 258 male and female learners were selected. Also, they were homogenized as upper-intermediate through conducting Nelson English language proficiency test (Coe, & Fowler, 1976) '100 A' which seemed suitable for confirming the learners' pre-intermediary level of language proficiency. This process led to omission of 23 participants with low language proficiency level. The Nelson English language test is a battery consisting of 40 separate tests for each of ten levels from beginners to advanced. Each test consists of 50 items. The tests are designed for a 30 (60%) pass mark. Its reliability was calculated through KR-21 in the pilot study, and it was 0.84. In addition, seven learners were reluctant to learn English language through the medium of high-tech media, so their data were removed from the study leaving a total of 228. Details about the participants are displayed in Table 1.

Table 1. *Details About the Participants*

Gender	Age Range	Number
Male	16.77	175
Female	16.01	43

Then, through conducting WM ability tests (Chen, Hsieh, & Kinshuk, 2008) (see section 3.2., Materials, WM Tests), which are used to distinguish participants of different processing visual or verbal abilities, the selected participants were divided into four groups. They are as follows:
Group 1 (G1): learners with high-visual and high-verbal abilities;
Group 2 (G2): learners with high-visual but low-verbal ability;
Group 3 (G3): learners with both low-visual and low-verbal abilities;
Group 4 (G4): learners with low-visual ability but high-verbal ability.

Due to highly variable nature of individuals' WM (Hollingworth, 2004; Chen, C.-M., Chen, & Lee, 2005; Chen et al., 2008), every virtual session learners' WM ability were assessed before delivery of new content. Analyzing logs of learners' WM ability tests in the software system throughout administrating 18 virtual sessions resulted in average number of learners in four groups. Details about the average number of participants in four groups during 18 sessions of conducting the study are displayed in Table 2.

Table 2. *Details About Four Groups of Participants*

Group	WM		Gender		Total
	Verbal	visual	male	female	
1	High	High	59	9	68
2	Low	High	57	7	64
3	Low	Low	38	5	43
4	High	Low	21	22	43

Instruments

Attitude Questionnaire: Reliance on quantitative measures, such as test scores to assess benefits is considered a low point. As test scores were relied upon exclusively to measure language improvement, many critics charge that this does not provide a complete picture of the ability of the L2 learners in terms of verbal or cultural skills. Also, the rhetorical structure of materials must be appropriate to learner's needs and learning purposes (Widdowson, 1980). Furthermore, attitudes may play a very crucial role in language learning as they would appear to influence student success or failure in learning (Tamimi, & Shuib, 2009). The researchers concur with Spolsky (1989) in that "a language may be learned for anyone or any collection of practical reasons" (p. 160). On the other hand, in the high-tech-enhanced environment the reasons for the low usage of the technology platform may not necessarily be as obvious as they might seem (Stockwell, 2008). As such, in this study identifying the Muslim students' perspective will be related to the major reason for which they learn the English language, that is, interaction with their counterparts from other religions and cultures. To determine the type of attitude that Iranian Muslim learners have towards the application of cell-phones and to gather information about their perceptions of different aspects of mobile technology, a questionnaire, which was updated by the researchers, was used in collecting the data. It consisted of three sections: A, and B. In section A, two open-ended items were used to collect information regarding the students' attitudes towards the daily application of mobile technology, that is, to determine when and why learners prefer to use cell-phones for learning different skills of English. In

section B the students were asked to answer Likert-type questions on whether or not they are interested in employing mobile technology in the realm of learning language. In addition in this section the students were asked to answer a question on whether or not they are interested in attending more English language training courses to improve their English proficiency. Also, this section included questions to identify student attitudes toward the culture and the multimodal representation of English instructional material. In addition, the questionnaire gave learners the opportunity to express their interest in learning the target language (TL) through mobile devices, giving those uninterested the option to opt out of participating in the study. Furthermore, the questions were useful in determining which aspects of mobile technology were important to the learners. The questionnaires were distributed and collected via text messaging. The questionnaire comprised 15 items and the interviewees were asked to reply regarding their first language (L1). Its reliability was calculated through Cronbach's alpha and it was 0.91. Its validity was confirmed by three experts in the fields of teaching English as a foreign language (TEFL), sociology, and psychology. It was anonymous.

Vocabulary Level Test (VLT): The test was administered to assess the learners' original knowledge of words with a view on excluding the words with which learners were already familiar in the learning phase of the study. The word items for the VLT were selected from Bauman's General Service List (GSL) (1995) which consists of 2284 words. One word from every 40 word was selected, starting from the 40th word (40/2203 more) to 2000th word (2000/15 scenery).The Bauman's GSL is based on the Brown's corpus which contains 1000,000 words. In Bauman's GSL, beside every word there are two numbers: the first one indicates the order of the word items in the list and the other number indicates the frequency of occurrence of the word in Brown's corpus.

Learning Content: The interrelationship between the written text, painting, and mental organization of learners will build the schemata in their mind of a phenomenon within the old ones. It will build the blocks of cognition and make understanding of it easier.
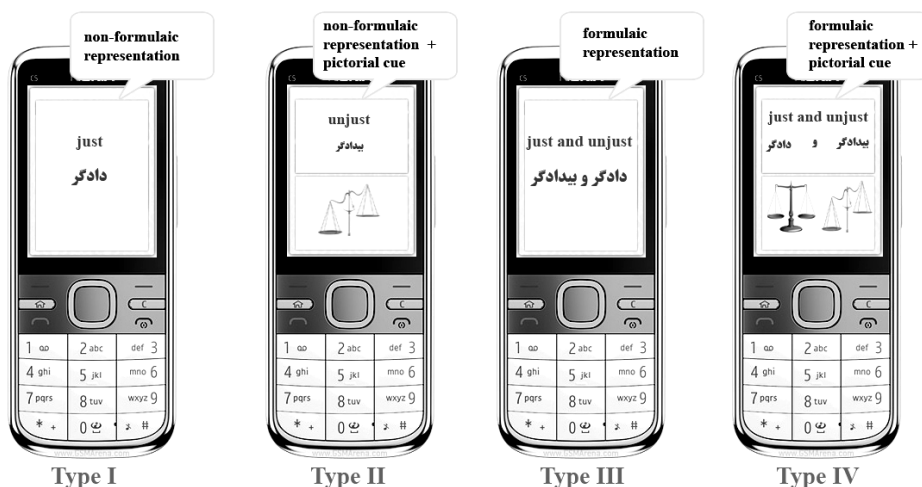
One advantage to using multimodal materials is that the students can collect a larger proportion of knowledge associated with represented materials than is the case with common ones. Further, learning anxiety may be reduced when a cue is annotated to learning content. They are likely to be more attractive than the materials as a whole designed for representation through the medium of conventional channels of delivery.

Sine exposure to written language that deals with particular learning content and in particular genres facilitate the process of learning them (Hasan, 1989; Swales, 1990), employing multimedia cell-phone based content delivery with pictorial annotations was adapted to the cell-phone screen to be accessed by

learners' via multimedia messaging service (MMS) and short texting (SMS). They were as follows:

Type 1: represented items in non-formulaic sequence without annotation;

Type 2: represented items in non-formulaic sequence with pictorial annotation;

Type 3: displayed formulaic representation of materials without pictorial annotation;

Type 4: displayed formulaic representation of item as a caption for pictorial

***Figure 2.*** **A sample of different types of representation for the word items**
'just and unjust : دادگر و بیدادگر

annotation. In Figure 2, a sample of different types of representation for the word items 'دادگر و بیدادگر: just and unjust' is displayed.

Software Package: Current and future teachers need familiarity with methods of obtaining opportunities for their students by finding and evaluating freeware, shareware and open source software and interfaces (The National Councils of Teachers of English, 2005). In order to make the application of media easier and to harness the enthusiasm of citizens and to encourage participation in foreign language education or training, a user-friendly software was designed, namely 'Didactic Garden' (http://www.amoozeshyar.net). Prominent attribute of the software system was that it was truly open towards applications, there being no difference between the phone's core applications.

The basis of the designing major core of the software was the model proposed by Chen, Lee, and Chen (2005). As they have reported, personalized service is important on the Internet, especially in mobile-mediated pedagogy. Generally, most personalized systems consider learner preferences, interests, and browsing behaviors in providing personalized services. However, learner ability is usually neglected as an important factor in implementing personalization mechanisms.

So, they proposed a personalized e-learning system based on Item Response Theory (PEL-IRT), which considers both course material difficulty and learner ability to provide individual learning paths for learners. Figure 3 illustrates the proposed system architecture, which can be divided into two main parts according to system operation procedures, that is front-end and back-end parts. The front-end part manages communication with learners and records learner behavior. Meanwhile, the back-end part aims to analyze learner ability and select appropriate course materials for learners based on the estimated learner ability.
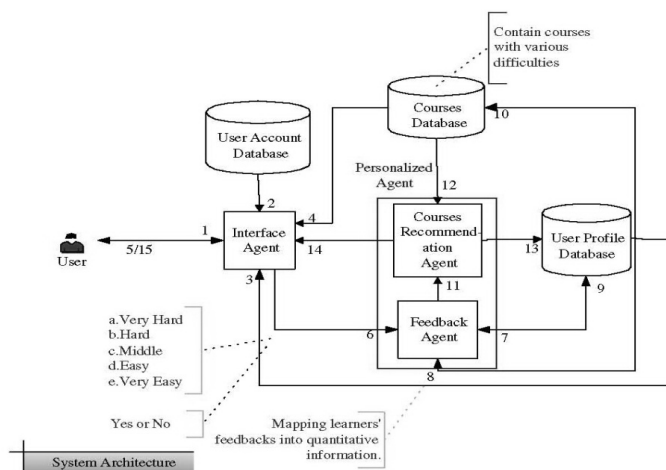

Figure 3. **System Architecture (Numbers 1; 2; . . . ; 15 indicate the procedure of system operation) (Chen, Lee, & Chen, 2005, p. 3)**

Accordingly, software system allowed students to replace the conventional materials with customized multimedia courses delivered to their cell-phone. It paved the way for combining the capabilities of a student response section with data bank, mobile interactive board, instructional materials, and assessment section to create a complete mobile formative instruction system. Teachers were able to use the content management to create new courses by mixing and matching items from the data bank with their own educational material.

On the other hand, high-stakes testing is about to change dramatically. As states and school districts strive to implement the common core standards and welcome more rigorous, online exams in 2014, school leaders are working to ensure that teachers have the tools they need to prepare students to succeed on these next-generation assessments (eSchool News, 2013). Therefore, in contrast to the observations that teachers do not usually follow up the works of their students, to check whether they have improved or not, 'Didactic Garden' was designed in the manner that had a capability of momentarily monitoring and recording of students' performance.

Visual and Verbal WM Tests: For every virtual instructional session two six item tests (four for visual ability and four for verbal ability test) assessed the learners' visual and verbal abilities. 18 series of visual and verbal WM tests consisted of picture and written materials, respectively alongside their related questions were already adapted to the cell-phone screen to be accessed by learners' via two different channels of SMS and MMS. Reliability of WM tests was calculated through Cronbach's Alpha and it was 0.89. Also, their validity was confirmed by five experts in psychologist and in TEFL. A sample of various types of WM tests on cell-phone based tests is displayed in Figure 4 (see 3.3. procedures, Phase II).
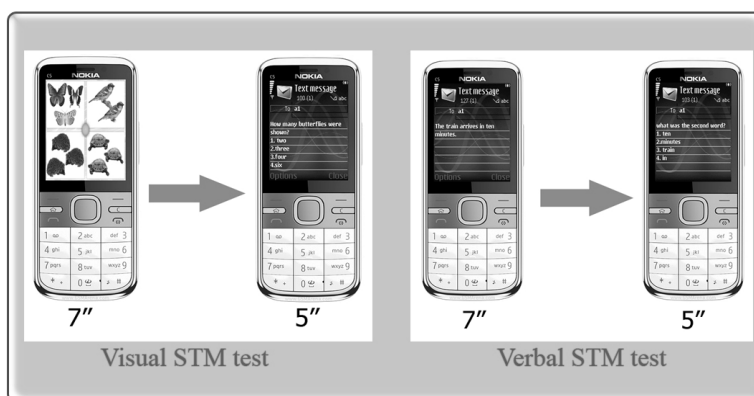
Figure 4. **A sample of various types of STM cell-phone based tests**

Mobile-Assisted Language Skills Assessment Battery (MALSAB): High-stakes testing is about to change dramatically. In reality, new generation of assessment through the medium of mobile technology and through application of measurable data provides the individualized education plan (IEP) to make informed decisions regarding an individual student's need, as well as the mode of delivery for the accommodation. The use of technology for these writing access accommodations will greatly assist schools with flexibility (Bowman, 2013). As states and school districts strive to implement the common core standards and welcome more rigorous, online exams in 2014, school leaders are working to ensure that teachers have the tools they need to prepare students to succeed on these next-generation assessments (eSchool News, 2013). Therefore, in contrast to the observations that teachers do not usually follow up the works of their students, to check whether they have improved or not, through exploiting the positive impact that one-to-one computing is having on learning outcomes 'Didactic Garden' was designed in the manner that had a capability of momentarily monitoring and recording of students' performance in embedded quizzes.

Although adapting pictorial and written cues can help the process of evaluating WM role in the time of foreign language learning, many of the benefits will not be realized immediately after the learning process. For instance, some students learn the more complex linguistic features of the English language while they are interacting during the course, but it is not until their return to educational environment that they begin to incorporate these more complex variables into their discourse. Accordingly, 18 test batteries each included 10 cloze test items in two formats of multiple-choice and recall was designed to take the advantage of both automated, instant measurement and short answer option and to ask more inquiry-based questions, respectively in assessing the learners during implementing 18 didactic sessions.

Procedure

In the present research, the researchers used the same methods and definitions and drew on an existing framework developed in previous research in investigation of STM effect on EFL learning thru mobile in Taiwan (Chen, et al., 2008), to examine the effect of formulaic vs. non-formulaic representation of L2 materials on Iranian juniors' L2 learning. The main procedure for this study consisting of four phases in each virtual session took place in the non-classroom settings through medium of cell-phone delivery. Before this main phase, learners sat for the vocabulary level tests and thus their levels were determined. Using software package, virtual course in this study was built. The researcher examined all types of learning content and test battery in their entirety before administering the major phases of the study.

Phase I- Introduction: In the first phase, all the details and objectives of the experiment were explained to the participants. After a brief instruction, they took part in a pilot virtual session for ensuring that learners understood how to complete the actual activities themselves.

Phase II- Successive Assessment of Learners' WM: To answer the first major question of this study; that is, to see if multimodal representation of culture-based materials in English has any significant effect on Iranian juniors' performance and due to the unstable feature of learners' WM (Wang, 2003), at the beginning of each virtual session and before delivery of new English learning contents, their WM ability was assessed as follows:

WM ability this study refers to the Visual ability and Verbal WM ability. For the visual test, initially a picture was displayed for eight seconds; then, a question was asked about the picture. Learners were given six seconds to answer the question. Concerning the verbal test, first, a sentence was displayed for eight seconds, then a question addressing the sentence was asked; the learners had to answer in six seconds. Each learner's answers were recorded and the learners were assigned two types of score, namely, raw score and standard score with a mean of zero and standard deviation of one. On the basis

of their z scores of visual and verbal STM abilities, participants were divided into four groups in each virtual session (see 3. Method).

Phase III- Content Selection and Teaching Content Delivery: Before beginning the main phase of the study, learners completed the vocabulary level test. It became clear that nearly all the learners were familiar with words up to the word 'application' (1005/93 application). Therefore, 90 words (i.e., average of five words for cell-phone based delivery every virtual session) similar to the words and phrases used in the culture of Islam, for the third major phase or vocabulary learning phase, were selected from 1100th 'curious' (1100/80 curious) onward (e.g., 1140, 75 soul; 1141, 75 neighborhood; 1177, 71 appearance, …). On the basis of the frequency of use the first number displays the order of the word item in this list, and the other number represents the frequency of occurrence in the Brown Corpus with about one million word items.

A 4×4 Latin Square (LS) design was undertaken for conducting the major phase of this study which counterbalanced the effect of the order of representations. According to Montgomery (1991), one of the frequent uses of LS is to counterbalance the various sequences in which the level of an independent variable might take place. In LS, each of the two digits or letters (1, 2, 3, & 4 or A, B, C, & D) would appear just once in each row and column.

Phase IV- Testing: Immediately after ending each session learners sat for the EVRR tests and thus their levels were determined (See section 3.2. Instruments, Tests). Teachers must utilize more formative data from student assessments in an ongoing way to understand the abilities and learning style of individual students (Alliance for Excellent Education, 2012). Formative assessment can support students' sense of competence because it provides scaffolding throughout the learning process that promotes success (Hinton, Miyamoto, & della-Chisea, 2008). The frequent correspondence in L2 among dyads during the virtual course caused the two summative and 18 formative components to be included in the assessment design.

Teachers' and peers' immediate feedbacks, whether positive or negative, play a significant role in improving the English proficiency level of ESL and EFL students. Accordingly, it should be impressed first upon the students the importance of giving comments, whether positive or negative, to their works. Also, since EFL students have a very limited knowledge and comprehension of the English language, they need proper guidance and part of it is by giving feedbacks and comments on their output. EFL students need to know their mistakes and to learn how they are going to correct it (Bersamina, 2009). After conducting each virtual session, the results were posted on learners' cell-phones via application of short texting. In this respect and after ending the last virtual session (session 18), in addition to distributing the attitude questionnaire to all learners thru short texting, 120 juniors (63 male and 57 female) were selected to be interviewed on how they feel about multimodal delivery of L2 materials via mobile devices.

Interview

In the 18 didactic sessions in virtual environment that variety of materials in hands-on enhanced environment were displayed on our cell-phones, leading to a better understanding of ourselves better than ever before. We have found that the dynamics of mobile-enhanced materials has lowered anxiety level while increasing our performance. Moreover, employing multimedia in depicting instructional materials make the environment feel a little more like play. In fact, materials delivery in non-formal settings helps learners to free up classroom time for interactive discussion and problem solving and be more engaged with instructors and their peers. Moreover, application of multimedia in designing annotated and non-annotated learning contents helps teachers to identify learners' strengths and problem areas.

M-learning thru creating non-formal setting enables educators and learners to become strategic allies and participate in meaningful, two-way communication that supports learners learning anywhere and anytime. Promoting partnership between teachers and learners hands-on based learning content delivery can provide immediate feedback for educators and materials developers, which in turn benefits to advance our learning. Thus, this new mode of delivery has the potential to be far more transformational than conventional modes. In this respect, more than two-thirds of learners believe that they would perform better in learning L2 as they felt more involved in the process of foreign language learning and it isn't the only benefit for learners, 91.56% of materials developers say receiving instant feedback led to timely rectification and to adjust more easily to school and classroom expectations, which can translate into higher achievement. On the whole, they believe that the bottom line is that when non-formal delivery of materials is involved, students achieve more. In other words, m-learning can create an environment that encourages learning and causes learners become involved in education both in classroom and non-classroom settings.

Also, students suggested that learning L2 in technology-enhanced environments affects parents involvement in our educational programs as they provide a great opportunity for them to be more informed on a regular basis about our progress. In reality, when set goals are completed under supportive monitoring we feel increased confidence since it steers us in the right direction.

Furthermore, they reported that mobile representation of English Islamic culture-based materials could easily be used to help facilitate the communication and sharing of information between the Muslim students as members of Islamic communities.

Results

The data were collected at three phases using mobile-assisted language skills assessment battery (MALSAB), oral interview and attitude questionnaire composed of open-ended and Likert-type questions.

As Table 3 shows with regard to learners with high visual and/or verbal WM abilities variegated content, in which the flow of materials from diverse media accrues to more rapid learning rate than the manner that favors any one particular medium. However, this was not the case with respect to learners with low visual and/or low verbal ability as they did less well in learning formulaic or cued types of materials.

Table 3. *Descriptive Analysis of Learners' Performance in Recognition and Recall Tests*

Group	Materials Type	Recognition Score		Recall Score		Average Score	
	1	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
		3.89	0.89	3.3	0.92	3.5	0.90
Group 1	2	11.00	0.98	9.8	0.90	10.4	0.94
	3	12.28	0.90	8.6	0.82	10.44	0.86
	4	16.61	0.47	13.50	0.57	15.05	0.57
	1	1.7	0.55	1.78	0.66	1.74	0.6
Group 2	2	15.11	1.2	12.44	1.04	13.67	1.12
	3	6.28	0.83	2.7	0.62	4.49	0.72
	4	8.72	0.75	5.5	0.98	7.11	0.86
	1	10.00	0.53	7.00	0.54	8.5	0.53
Group 3	2	3.56	0.57	1.83	0.46	2.56	0.51
	3	2.50	1.14	1.00	0.51	1.75	0.82
	4	1.61	0.45	0.5	0.2	1.05	0.32
	1	4.33	1.3	3.06	0.79	3.6	1.04
Group 4	2	5.67	1.02	1.67	0.51	3.67	0.76
	3	12.56	1.2	9.44	1.2	11	1.2
	4	10.06	0.92	5.33	0.95	7.69	0.93

To determine whether or not there are significant differences in the learners' score obtained with respect to different types of content representation on their cell-phone analysis of variance was performed. Results unveiled while Persian learners with low verbal abilities outperformed in learning non-formulaic Islamic culture-based contents ($F= 33.08$, $P=0.000$, & $F= 33.17$, $p= 0.000$, for group 2 and group 3, respectively), their counterparts with high verbal ability did better in learning formulaic L2 content, namely, significant differences were found between different types of content delivery in scores of two tests of recognition and recall tests (Table 4). Also, underachievement of learners with high verbal WM ability (from first and fourth groups) in learning non-formulaic type of materials; that is, first and second types of materials here in this study, showed that complicacy of learners' performance was closely related to broadness of experience with coherently pronounced formulaic sequences.

Table 4. *The Analysis of Variance Results of the four Types of Content Representation in the Four Groups*

Group		Sum of squares	Mean square	F	Sig.
	Between groups	957.04	319.01	25.15	0.000
1	Within groups	862.27	12.68		
	Total	181.31			
	Between groups	1241.26	413.75	33.08	0.000
2	Within groups	832.05	12.23		
	Total	2073.31			
	Between groups	484.500	161.500	33.17	0.000
3	Within groups	331.00	4.86		
	Total	815.500			
	Between groups	624.48	208	13.59	0.000
4	Within groups	1041.38	15.31		
	Total	1665.8			

Furthermore, the results unveiled that participants in all groups did better in recognition tests than recall ones (Table 3).

A total of 680 questionnaires were distributed to Iranian students speaking EFL through text messaging and they were returned at a response rate of 97.68%. Among the things revealed by questionnaire responses was the fact that many survey participants were interested in English learning via high-tech media. Analysis of the learners' response to questionnaire unveiled that majority of the learners believed that m-learning provides the situation in which a learner from a non-English speaking family is immersed in the target language in the school and in the non-classroom environment, that is to say, it refers to learning an L2 in a natural setting. In sum, the idea about the way in which L2 learners learn languages through the medium of mobile technology corresponds to naturalistic language learning; that is, to learning that takes place in a context with unlimited access to quality input. Moreover, the general consensus in the answers was that m-learning needs to establish arena to bring together areas in practice in order to illuminate existing or possible interconnections between them. A few of the learners (18%) preferred to receive new L2 content, in this case English vocabulary items, in formulaic type, while a great many juniors were in agreement to receive pictorial annotated didactic content through the medium of their cell-phones. However, in explaining this incongruence between participants' attitudes towards application of cue (written vs. pictorial), it is argued that the majority of participants in this study were Iranian male juniors (80%), the results thus obtained seem to bear testimony to the claims that the female learners have better verbal processing capabilities in comparison with their male counterparts (Wallentin, 2009).

Table 5. *The Mean Score and Standard Deviation of the Items in Attitude Questionnaire*

Female			Male			Items (n=15)
p	SD	Mean	p	SD	Mean	
0.89	0.91	4.28	0.91	0.83	4.35	**1.** I find the benefits of non-formal education outside of the classroom very useful.
0.83	0.96	3.88	0.8	1.11	3.76	**2.** Having a cell-phone allows me to stay informed about my pedagogical affairs when I am not at school.
0.86	0.91	3.92	0.6	1.22	3.21	**3.** I feel my daily didactic affairs can be managed with cell-phones.
0.52	1.38	3.03	0.9	0.79	4.32	**4.** I enjoy that I can use my phone to call, text messages, play games and take photos. In turn, they help me to do better in learning.
0.74	1.22	3.39	0.69	0.98	3.57	**5.** Learning English thru mobile communications can be an alternative to traditional education.
0.66	1.28	3.35	0.7	1.04	3.48	**6.** Teaching English as a foreign language thru the mobile communication is effective for people having different linguistic levels.
0.53	1.31	3.08	0.61	1.2	3.24	**7.** Learners' gender in learning English as a foreign language is important.
0.52	1.29	3.02	0.53	1.3	3.08	**8.** The age of learners learning English as a foreign language is important.
0.7	0.81	2.63	0.94	0.77	4.52	**9.** Annotating materials with pictorial cue is useful.
0.8	1.2	3.76	0.06	0.78	2.11	**10.** Formulaic representation of didactic content thru high-tech media is useful.
0.65	1.03	3.35	0.66	0.99	3.37	**11.** The similarity of the mother language to the English language helps in learning English.
0.72	0.95	3.42	0.61	1.18	3.26	**12.** Having a cell phone is part of my social character led to my outperformance.
0.9	0.78	4.33	0.72	1.25	3.38	**13.** I feel pedagogically safe having a cell phone.
0.73	1.25	3.56	0.11	0.78	2.82	**14.** Can the phone every time I'm in touch with my friends.
0.53	1.25	3.03	0.77	0.98	3.67	**15.** Teaching English as a foreign language thru the mobile communication is effective in spreading and promoting Islam.

Note. Scoring: 5= *strongly agree*, 1= *strongly disagree*. Also, *p* indicates the participants who answered more than no opinion (i.e., more than three).

As far as the application of Islamic culture-based materials was concerned, a great majority of juniors (86%) valued the interdependency between language and culture. They believed that promotion of language proficiency level helps the L2 learners to understand behavior from the perspective of the members of a culture, and thus behave in a way that would be understood by members of the culture in the intended way. However, from a qualitative perspective, the researchers revealed that though the students felt secure about their ability to use EFL in the Islamic world, they voiced their concern regarding the sense of insecurity about their knowledge of how to participate in the different discourse environments due to cultural factors, such as when it is appropriate to ask questions or how to interrupt someone's speech.

On the whole and according to the results, though WM and attitude are interdependent elements, the former played a greater role than the latter. This might be due to the fact that most learners have a positive view pertaining to learning language through mobile technology. Interview results can also be used to prove such an opinion. The abundance of different software applications with regard to mobile communication can also be used as evidence of the popularity of this kind of technology, especially regarding its appeal to the younger, technologically more up-to-date generation; without any users there would be a lack of inspiration to create such applications.

Discussion and Conclusions

Results reached in this study have repeatedly shown that educational system's investment in the form of non-formal learning facilities is associated with learners' linguistic and cognitive development and emergent literacy. Accordingly, results revealed that ignoring learners' characteristic in the time of developing materials accrues more difficult, unsimplified, more complex syntactic patterns and vocabulary contents. The conclusions drawn from such results suggest that English language learners exposed to different learning settings acquire English vocabulary items on Islamic instructions variably and more efficiently if multiple manners are integrated together.

An important finding in the present study is that the low verbal and low visual learners can take advantage of the basic materials. This surprising result has already been explained by Sweller (1994) to this effect that such learners are likely to get overwhelmed in the presence of multimodal representations of contents. This explanation, referred to as Cognitive Load Theory (Sweller, 1994), maintains that some learners with limited processing capacity tend to skip the information overload by relying on the basic and single dimension of the content. However, this finding sounds a bit counterproductive if evaluated against the Dual-Coding theory suggested by Paivio (1986). This latter theory upholds the idea that different modalities combined together present a condition for accommodating more channels of learning simultaneously, thus increasing the likelihood of learning such materials, that is, Impoverished learning environments are likely to impact on learners' cognitive skills and language (Feinstein, 2003). As a result, instead of rejecting one type of material in favor of other, the results of this study indicated that the process of preparing the didactic materials should be accounted for learners' psychological learning features.

Congruency in the phonological forms of some formulaic constructions culminated into the success of learners with different cognitive inclinations. This implies that learners can be more likely to succeed in the storage and retrieval of formulas as wholes when the phonological coherence is the characteristic of the formulaic sequence. This surprising result has already been explained by Ladefoged (1993) to this effect that the process of storage and

retrieval of sequences of small muscle movements provide a chance for the learners benefit more from learning language in high-tech enhanced environment. This explanation, referred to as chunk processing (Ladefoged, 1993) maintains that "muscular movements are organized in terms of complex, unalterable chunks of at least a quarter of a second in duration (and often much longer) and nothing to indicate organization in terms of short simultaneous segments which require processing with context-restricted rules" (p. 85).

This study presents another general pattern emerging in the obtained data. The higher scores of the EVRR tests in the case of almost all L2 items involved in formulaic type of delivery is indicative of the similarity of this type to the native-like discourse which drives learners to achieve a certain level of comfort with natural expression in English (Wood, 2002).

On the other hand, Peltzman (2013) asserts that mere adoption of these new standards will be insufficient. Success in each state will hinge on implementation: the strategies used to improve instruction in every situation, the tiered supports provided to all learners, policy changes to promote coherence and alignment and a commitment to building and maintaining widespread understanding of and support for the new standards. New studies should leave behind the features of the assessment that are irrelevant to what is being measured, so that all students can more accurately demonstrate their knowledge and skills.

In the non-formal session classes, taken outside of the regular school context, students reported that they felt reduced anxiety about the target language and less competitiveness towards their counterparts. In addition, students' perception of the foreign language showed a positive increase, they developed more effective learning strategies, and they were more focused on their course. Van Lier (1988) argues that there may be little difference between learning in the classroom versus learning in a natural setting because introductory level students cannot communicate sufficiently well to take advantage of the naturalistic environment; however, in this study teaching English to Persian juniors with elementary level of English language proficiency unfolded that designing user-friendly software with providing protective setting outmatches the boundaries enables students to safely experiment with the language and thus encourages them to make sense of the language and culture for themselves.

Learning English form of Islamic instructions can be considered a type of immersion program through which L2 learners by using the target language across the curriculum in courses other than language will have real experiences with the language (Ellis, 2008).

The results suggested that to meet the needs of the diverse student population, the education system must provide a more personalized, rigorous, and collaborative learning environment that moves from teacher-directed, one-size-fits-all instructional strategies toward a learner-centered model (Alliance

for Excellent Education, 2012). These vignettes together demonstrate how different approaches in the areas of exploiting mobile technology and instructional materials can be effectively employed to support implementation and tackle the learners' needs in the technology-mediated learning era. Accordingly, didactic materials developers need to smooth the way to assess and compare formulaic sequences to balance them by incorporating voice or picture as the prominent features of multimodal delivery.

References

About the GSL. Retrieved March 20, 2009 from http://www.jbauman.com/ aboutgsl.html

Ädel, A, & Erman B. (2012). Recurrent word combinations in academic writing by native and non-native speakers of English: A lexical bundles approach. *English for Specific Purposes, 31*, 81-92.

Alliance for Excellent Education. (2012). *Cultural shift: Teaching in a learner-centered environment powered by digital learning.* Retrieved from http://www.all4ed.org/files/CultureShift.pdf

Ally, M. (2009). *Mobile learning: Transforming the delivery of education and training.* Athabasca: AU Press.

Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K.W. Spence & J.T. Spence (Eds.), *The Psychology of Learning and Motivation*, *2*, 89-195.

Bacon, S. M. & Finnemann, M. D. (1990). A Study of the Attitudes, Motives, and Strategies of University Foreign language students and their disposition to authentic oral and written input. *Modern Language Journal, 74* (4), 459-73.

Baddeley, A. (2003). Working memory and language: An overview. *Journal of Communication Disorders*, *36*(3), 189-206.

Benedek, A. (2009). Mobile learning: New horizons and unstable summits. Mobile communication and the ethics of social networking. communications in the 21st century. Engagement and exposure. In Kristóf Nyiri, (Ed.), *Mobil communication and ethics of social networking* (pp. 247-253). Vienna: Passagen Verlag.

Bersamina, F. V. (2009). English as Second Language (ESL) Learners in Saudi Arabia. [Online forum comment]. Retrieved from httP://www.contributor. Yahoo.com

Bolander, M. (1989). Prefabs, patterns and rules in interaction? Formulaic speech in adult learners' L2 Swedish. In K. Hyltenstam, & L. K. Obler (Eds.), *Bilingualism across the lifespan: Aspects of acquisition, maturity, and loss* (pp. 73-86). Cambridge: Cambridge University Press.

Bowman, T. (2013). *New online assessments to include accommodations for students with disabilities*. Retrieved from eSchool News website: http://www.eschoolnews.com

Breen, M. (1985). The social context for language learning- a neglected situation? *Studies in second language acquisition, 7*, 135-158.

Byrd, P., & Coxhead, A. (2008). On the other hand: Lexical bundles in academic writing and in the teaching of EAP. *University of Sydney Papers in TESOL*, 5, 31-64.

Cermak, L. & Craik, F. (1979). *Levels of processing in human memory*. Hillsdale, NJ: Erlbaum

Chen, C. M., Lee, H. M., & Chen, Y. (2005).Personalized e-learning system using item response theory. *Computers and Education*, *44*(3), 237-255.

Chen, N.-S., Hsieh, sh.-W., & Kinshuk. (2008). The effects of short-term memory and content representation type on mobile language learning. *Journal of Learning and Technology, 12*, 93-113.

Coe, N., & Fowler, W. S. (1976). *Nelson English language tests.* London: Butler and Tanner Ltd.

Coulmas, F. (1979). On the sociolinguistic relevance of routine formulae. *Journal of Pragmatics, 3*, 239-266.

Courtney, M. S. (1998). An area specialized for spatial working memory in human frontal cortex. *Science*, 279(5355), 1347-1351.

Craik, F. I. M. (2002). Levels of processing: Past, present ... and future? *Memory,* 10(5/6), 305-318.

Ellis, N. (1996). Sequencing in SLA: Phonological memory, chunking, and points of order. *Studies in second language acquisition, 18*, 91-126.

Ellis, N. (2001). Memory for language. In P. Robinson (Ed.): *Cognition and second language instruction*. CUP.

Ellis, N. C. Simpson-Vlach, R., & Maynard, C. (2008). Formulaic language in native and second-language speakers: Psycholinguistics, corpus linguistics, and TESOL. *TESOL Quarterly, 41*(3*)*, 375-396.

Ellis, R. (1992). Learning to communication in the classroom. *Studies in Second Language Acquisition, 14*, 1-23.

Ellis, R. (2008). *The study of second language acquisition*.

eSchool News. (2013). Preparing for Common Core Assessments. Retrieved from http://www.eschoolnews.com/2013/02/28/preparing-for-common-core-assessments

Feinstein, L. (2003). Inequality in the early cognitive development of British children in the 1970s cohort. *Economica*, *70*, 73-97.

Freed, B. F. (Ed.). (1991). *Foreign language acquisition research and the classroom. Lexington,* MA: D.C. Heath and Company.

Hasan, R. (1989). The structure of a text. In M. A. K. Halliday, & R. Hasan (Eds.), *Language, context, and text: Aspects of language in a social semiotic perspective* (pp. 56-69). Oxford University Press.

Hinton, C., Miyamoto, K. & della-Chisea, B. (2008). Brain research, learning and emotions, implications for and practice education research policy. *European Journal of Education, 2* (4), 157-160.

Hollingworth, A. (2004). Constructing visual representations of natural scenes: The roles of short- and long-term visual memory. *Journal of Experimental Psychology: Human Perception and Performance, 30*(3), 519-537.

Ladefoged, P. (1993). *A course in phonetics*. Jovanovich College Publishers.

Lazear, E. P. (1997). Incentives in basic research. *Journal of Labor Economics, 15*(1), 167-197.

Lee, W. Y. (1995). Authenticity Revisited: Text Authenticity and Learner Authenticity. *ELT Journal, 49* (4), 323-328.

Mayer, R. E. & Sims, K. (1994). For whom is a picture worth a thousand words? Extensions of a dual-coding theory of multimedia learning. *Journal of Educational Psychology, 86*(3), 389-401.

Mc Coy, P. (2009). *Using authentic materials: Keeping it real*. Paper presented at Conference on Teachers Helping Teachers (THT) conference, February, Philippines.

Montgomery, D.C. (1991). *Design and analysis of the experiments*. NY: John Wiley & Sons.

Moriya, J., & Sugiura, Y. (2012). High visual working memory capacity in trait social anxiety. *PLoS ONE, 7*(4): e34244.

Nattinger, J. R., & DeCarrico, J. S. (1992). *Lexical phrases and language teaching.* Oxford University Press.

Paige, R. M., Jorstad, H., Siaya, L., Klein, F., & Colby, J. (2003). *In culture as the core: Perspectives on culture in second language learning*. Scottsdale: Information Age Publishing.

Paivio, A. (1986). *Mental representations: A dual coding approach.* UK: Oxford University Press.

Peltzman, A. (2013). Achieve and education first release common core state standards tool to assist states in implementing the CCSS. *PARCC.* Retrieved from http://www.parcconline.org

Reiterer, S., Erb, M., Grodd, W., & Wildgruber, D. (2008). Cerebral processing of timbre and loudness: FMRI Evidence for a contribution of Broca's area to basic auditory discrimination. *Brain Imaging and Behavior*, *2*(1), 1-10.

Schmidt, R. (1983). Interaction, acculturation and the acquisition of communicative competence. In N. Wolfson, & E. Judd (Eds.): *Sociolinguistics and Language Acquisition.* Rowley, Mass.: Newbury House.

Slobin, D. (1985). Crosslinguistic evidence for the language-making capacity. In D. Slobin (Ed.): *The Crosslinguistic Study of Language Acquisition, 2: Theoretical Issues.* Hillsdale, NJ: Lawrence Erlbaum.

Spolsky, B. (1989). *Conditions for second language learning*. Oxford University Press.

Stockwell, G. (2008). Investigating learner preparedness for and usage patterns of mobile learning. *ReCALL, 20*(3), 253-270.

Swales, J. (1990). *Genre analysis: English in academic and research settings.* Cambridge University Press.

Sweller, J. (1994). Cognitive load theory, learning difficulty and instructional design. *Learning and Instruction, 4*(3), 295-312.

Tamimi, A. A., Shuib, M. (2009). GEM*A Online Journal of Language Studies, 9*(2), 29-55.

The National Council of Teachers of English. (2005). *English language learners.* Retrieved from http://www.ncte.org/library/nctefiles/resources/ policyresearch /ellresearchbrief

The National Council of Teachers of English. (2007). *21st-Century literacies.* Retrieved from http://www.ncte.org/library/nctefiles/resources/ policyresearch/21stcenturyresearchbrief

Traxler, J. (2007). Defining, Discussing, and Evaluating Mobile Learning. *International Review of Research in Open and Distance Learning, 8*(2), 1-12.

UNESCO World Culture Report. (1999). *Measuring culture and development: Prospects and limits of constructing cultural indicators*. Available from UNESCO website, http://www.unesco.org

Van Lier. L. (1988). The classroom and the language learner. *Studies in Second Language Acquisition, 11*, 349-350.

Vogel, E. K., & Machizawa, M. G. (2004). Neural activity predicts individual differences in visual working memory capacity. *Nature, 428*, 784-751.

Wallentin, M. (2008). Putative sex differences in verbal abilities and language cortex: A critical review. *Brain Lang, 108*(3), 175-83.

Wang, L. (2003). Switching to first language among writers with differing second-language proficiency. *Journal of Second Language Writing*, *12*, 347–375.

Widdowson, H. G. (1980). The authenticity of language data. In H. G. Widdowson *Explorations in applied linguistics*. Oxford University Press.

Wiredu, G. (2005, August). *The Reconstruction of Portable Computers: On the Flexibility of Mobile Computing in Mobile Activities.* Paper presented at IFIP 8.2 Conference on Designing Ubiquitous Information Environments, Cleveland, OH.

Wood, D. (2002). Formulaic language in thought and word: Vygotskian perspectives. *TESL Canada Journal, 20* (1), 1-15.

Wood, D. (2009). Effects of focused instruction of formulaic sequences on fluent expression in second language narratives: A case study. *RCLA, 12* (1), 39-57.