Mobile, L2 vocabulary learning, and fighting illiteracy: A case study of Iranian semi-illiterates beyond transition level

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Abstract
As mobile learning simultaneously employs both handheld computers and mobile telephones and other devices that draw on the same set of functionalities, it throws open the door for swift connection between learners and teachers. This study examined and articulated the impact of the application of mobile devices for teaching English vocabulary items to 123 Iranian semi-illiterates (70 female, and 53 male learners, aging 35-55) who passed the transition course, namely, the fifth grade in Iran's literacy movement organization centers of five counties around Isfahan. It was intended to see if the way of presenting materials and guidelines (formal vs. informal) through cell-phone would have any significant connection with their performance. To those ends, after five weeks learning of 36 new English vocabulary items in non-formal mode of delivery, they participated in a testing phase comprised of three sub-tests. The results showed that the succinct nature of today's short message service (SMS) texts allows for a more successful application of the informal style of language in the realm of teaching English to semi-illiterate citizens. It was also found that annotated materials led into the outperformance of the semi-illiterates.

Keywords: Annotated materials, formal and informal style of language teaching, semi-illiterates, SMS

Introduction
According to Traxler (2007), mobile learning (m-learning) currently exploits both handheld computers and mobile telephones and other devices that draw on the same set of functionalities. It seems necessary to recognize that personal mobile and wireless devices are now radically transforming societal notions of discourse and knowledge (Katz & Aakhus 2002). Baron (2000) argues that "what has led to the success of communication technology is its convenience, marginal cost, speed of transmission and flexibility" (p. 146). The new channels of communication tend to have more casual lexicon, to be less carefully edited, and to assume a greater degree of familiarity with the interlocutor." Such facilities enrich a mutual experience, communication with absent teachers or families, and personal reflection or

reminiscing (Kindberg, Spasojevic, Fleck & Sellen, 2005).

The value and even the relevance of training illiterate populations to use new information and communication technologies are often questioned or dismissed as unwarranted optimism (Carney & Firpo, 2002). The demystification of new mobile technologies is supporting corporate training (Gayeski, 2002; Lundin & Magnusson, 2003; Pasanen, 2003); thus, employing them in spreading knowledge to make the opportunities for illiterates and semi-illiterates to access learning contents can result in more effective functioning in society and a better quality of life. In this way, even individuals who have never learned to read can attain an acceptable level of literacy with the one-on-one help of a caring volunteer tutor (Bynum, 2011).

Informal style of language occurs in a wide variety of situations in the speech of illiterates. On the whole, the three pillars of connectivity, mobility and productivity, as driving features of wireless technology (Althaus, 2011), pave the way for scaffolds to support the adult learners in the process of learning foreign language vocabulary items, as activities provided in scaffolding instruction are usually just beyond the level of what the learner can do alone (Olson & Pratt, 2000). The more capable other provides the scaffolds so that the learner can accomplish (with assistance) the tasks that he or she could otherwise not complete. Nevertheless, cell-phone, with pragmatic (e.g., academic environments) and social functions (e.g., interaction), is still a novelty that has not, from the users' perspective, become an everyday device with common uses and functions (Salovaara, Helfenstein, & Oulasvirta, 2011). Although mobile technology is employed to address the

challenges in didactic material delivery and supporting education where traditional pedagogy would fail, how to develop learning materials seems to be the issue of the least importance.

Each language, on its forward movement undergoes a process of change or metamorphosis. Although not a linear process -as many political, religious, social and economic criteria may affect the process- it can be claimed that it is a movement toward simplification. For example when one comes to English language and looks at Shakespeare's texts (1564-1616), he would face a lofty language full of puns and metaphors, in which reference to different referents are intentionally postponed through a net of dense images. This would automatically enhance the illocutionary quality and results in a poetic language which was hard to digest even for ordinary people of his time. But when he goes to Joseph Addison (1672-1719), he finds that Addison, as an essayist, has got a style which is so "polished and easy", that is able to catch ordinary people (Abjadian, 2002). This shows a change in the language style in less than a century. As time passes, more simplicity in written language is to come and the late 18th and 19th centuries' texts are known for the insertion of much more subjectivity – personal I is used – and a more fluid and simple style that is very spontaneous, less mechanical and to some extent loose is to appear. Twentieth century language style also becomes simpler and the communicative and discoursal aspects will come in center.

The current process of simplification parallels such a trend of simplicity in languages. With analysis of Iranian SMS texts from 2002 onward, it could be noticed that they get through the process of

simplification, that is the succinct feature of today's SMS texts in comparison with their old counterparts (with the average of 14 words in 2002, and average of six words in 2012) (Dahgan SMS System, 2012). The trend indicates that citizens tend to favor succinct messages by which is meant a more complete entailment of the gist (i.e., simplicity orientation being in the ascendancy). The pattern of changes is depicted in Figure 1.

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2002-2006   2006-2012
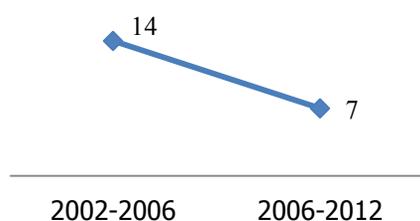
Figure 1: Descending trend in the number of word items in Iranian SMS.

As pedagogical science seeks out iconic representations to lend a sense of the concrete to new concepts, using multimedia technology, mobile learning makes it easier to carry non-verbal elements to interweave verbal mode; hence, academic discourse is increasingly multi-modal, incorporating various visual as well as verbal texts, including photographs, diagrams, outputs of imaging devices, and even cartoons (Myers, 2003).

Although especially in the case of elementary learners applications of images is nonetheless effective and can proliferate in the context in relaying the information more concisely, sometimes it can eliminate a significant issue (i.e., communication of the message) and endanger the task of carrying over the notions to learners and distract their attentions in the way that images concentrate upon other issues pictured, the gist taking the second place.

Preventing such heterogeneity, an image must be designed in such a way that makes it possible for learners to connect them easily to the text. Rose (2001) introduces such salient issues as technological, compositional, and social which he believes that taking them into consideration in the production and distribution of images is inevitable.

On the other hand, though different styles of language can be used to communicate the same idea, McCarthy (1991) points out that clear understanding of writing is reliant on not only what the author puts in it, but also on what a reader brings to this process. In this way, while thinking about the purpose of pedagogy, material generators should consider whether the language required in didactic guidelines for addressing learners during the course of teaching a new language should be of a formal or informal style.

Because the language of academic subjects requires a high degree of reading and writing ability that elementary learners of English do not have, they experience immense difficulties reading their textbooks and understanding the vocabulary unique to particular subjects. In this context, scaffolding can facilitate the organization and focus of students' research (McKenzie, 1999). Therefore, the question is how it is possible to make it easy for foreign language semi-illiterates to understand the content out-and-out.

It is believed that the desire to communicate in text is a vital step toward literacy, and researchers have observed that young people with poor literacy who would not normally write messages are often enthusiastic texters (Plant, 2001). Likewise, Klas and Zaharieva (2004) suggest that "the approach (an open approach for structuring

content for m-learning environments) realized in joint Mobi-Learn project of several institutes in Austria shows high acceptance by students during an initial pilot application" (p. 12). Attewell, Savill-Smith, and Douch (2009) after conducting the MoleNET (contribution to m-learning via mobile devices) project reported that comparison of the retention data for nearly 5000 learners suggested an improvement in retention rate of eight percent. Hashemi and Azizinezhad (2012) reported that mobile technology via integration of a learner-centered method contributed a great deal in the success of Iranian learners in the process of learning English as a foreign language. As a consequence, this study dealt with the way of applying the formal and informal style guidelines on the contents for teaching English vocabulary items to convey the message to Iranian adult learners. In fact, sentence-level linguistic forms and vocabulary items of guidelines on the contents or smaller scale recourses for discourse, as Johnstone (2008) defines, were investigated to see if accommodating the language style of the guidelines to learners' prior speech style (formal vs. informal) as discourse strategy can change them more sociable. Therefore, glossing the materials, using informal instruction, is the issue which is to be pursued. Likewise, due to the importance of reader's knowledge for clear comprehension of the text, it seems indispensable to link old information or familiar situations with new knowledge through verbal and nonverbal communication. As the scaffolds facilitate a student's ability to build on prior knowledge and internalize new information (Van Der Stuyf, 2002), it is suitable to design activities which offer just enough of a scaffold for semi-illiterates to overcome the gap in knowledge and skills (Ngeow & Yoon, 2001).

Research questions
Systematic thinking about the effects of the processes through which learning contents are built and made accessible to learners resulted in the following questions:

1) Does presenting guideline on learning contents in informal or formal style of language through cell-phone have any significant effect on semi-illiterates' vocabulary learning?
2) What effects does embedding image within learning materials have on the kind of vocabulary learning performance that semi-illiterates do?

Method
Participants
As this study developed a training program specifically adapted to the needs of the Iranian adult semi-illiterate population, the sample of the study consisted of 123 Iranian semi-illiterates, adults (70 female, and 53 male learners) who passed the transition course, that is, the fifth grade learners who were able to read and write Persian sentences, and had already been enrolled as the guidance course learners. It is noteworthy that the ABC's had been gone over with them and they were able to recognize the alphabet easily. Guidance course was offered by Iran's literacy movement organization (ILMO). This organization was established in 1978 for coping with literacy problems in Iran. The population selection was done through convenient sampling procedure. The participants' age range was 35-55. The selected sample took part in a test of proficiency comprised of alphabet and English vocabulary questions.

Table 1: Participants' characteristics

Gender	Number	Average Age
Male	50	48.2
Female	73	41.8
Total	123	45

Materials

Questionnaire. The questionnaire was designed in a way that permits semi-illiterates not only to acquire insight into what the new information technologies can offer, but also give them the opportunity to inform the researcher about their point of view. To be understandable for the participants making their marks, the questionnaire was the Persian Likert type. The majority of the questions included in the questionnaire sought the background information on learners' experience with using mobile-phone, that is, ease of use, ease of learning that makes a product effective, as well as their opinions on the frequency and the timing of the learning content, namely, new English vocabulary items, and asked perception questions on their interests on m-learning; led to the devise of a course syllabus for conducting the study in a semester.

English Alphabet and Vocabulary Test (pencil-and-paper test). This test was conducted to document that adult semi-illiterates were familiar with English key words (e.g., read, write, listen, word, etc.) and they were able to go from one stage to a higher stage of L2 learning. The test consisted of 26 English alphabet letters, and 12 English key words being dictated to the participants to write them down. Those who showed at least the knowledge of 20 letters and English word items were selected as the target group. Its validity was confirmed by three university instructors specialized in teaching English as a foreign language (TEFL). The test reliability was calculated as 0.79.

Vocabulary Items. Words to be taught were selected from English Time Two (level two Rivers, Graham, Toyama & Procter, 2008). It must be borne in mind that using different modalities in the process of teaching new vocabulary items establishes both native and foreign language concepts consequently, for each word item, the following four types of representation were fabricated:

I.   *First type*: At the top, an informal style guideline was provided and at the bottom was the new English vocabulary item with its Persian equivalent without any image, that is, pre-modified input as Pica, Young, and Doughty (1987) defined.

II.   *Second type:* In the middle, a visual image was presented, at the top an informal style guideline was provided, and at the bottom was the English and Persian equivalent of the existing image, that is, pre-modified input.

III. *Third type*: At the top, formal style guideline was provided and at the bottom was the new English vocabulary item with its Persian equivalent and without any image.

IV.   *Fourth type*: The middle contained a visual image, at the top formal style guideline was provided, and at the bottom were the English and Persian equivalents of the existing image, namely, baseline input (ibid). Elliptical structures often create a sense of informality (Jalilifar, 2010); thus, this type of structure was employed in preprint informal directions on learning materials.

The apparent characteristics of each type of learning materials are depicted in Table 2.

Table 2: Characteristics of different types of materials

Type	Informal Style Guideline	Formal Style Guideline	Image
1	✓	-	-
2	✓	-	✓
3	-	✓	-
4	-	✓	✓

Different representation types of the English word "kite" are displayed in Figure 2.
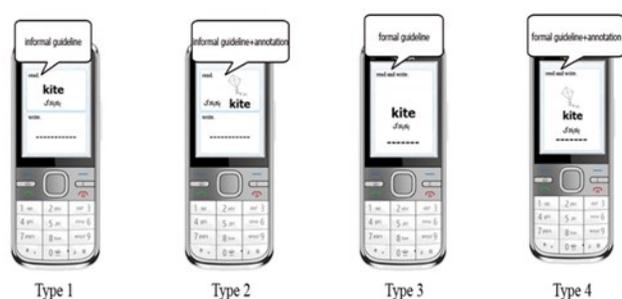
Figure 2: Different representation types of the English word "kite".

Illiterates and semi-illiterates are citizens who express themselves through informal style of language when addressing different audiences. In reality, they attempt to further the learning by imitating an informal oral style; so the features which characterize their oral discourse were tried to be used in preparing informal guidelines on the contents to compare their effects on learning new English vocabulary items with formal style guidelines. Although familiar words and grammars were used in fabricating the informal style guidelines, on the whole it is noteworthy to point out that for composing both formal and informal rubrics, the format was adjusted to the English proficiency levels of adult learners. In terms of case, all the informal guidelines were prepared with lower case, as Crystal (2001) puts forward that in informal style of language there is "a strong tendency to use lower-case everywhere" (p. 87).

Software Package- This software designed in a way that first the contents were selected for delivery, and then a new album was created for the selected contents and the album was named. In the end, the pictures were optimized and uploaded to the data bank for subsequent applications. Also, the software has the functionality for transferring and sharing contents and makes it possible for other researchers to edit, create, view and discuss the contents and share albums. Through the medium of the software, a researcher has full control over who has access to the pictures. Furthermore, the possibility to invite learners with different levels of language proficiency from every time is an aspect of openness as it allows researchers to accommodate application of the cell-phone in the realm of pedagogy.

Test- A test should not be the sole criterion on which the effectiveness of anything is measured, but it is also an important one to assess accomplishment of the objectives of study on the part of the learners (Tabarrok, 2011). Also, the more elementary the level of the testees, the greater the number of lexical items that are associated with the spoken modality (Jafarpur, 2002). On this account, in this study testees were provided with spoken directions. Using spoken modality, 36 questions comprised of 12 multiple-choice questions (sub-test 2) and 24 recall questions in written and pictorial formats (subtest 1, and subtest 3) were prepared (Select the English equivalent for the written Persian word, and select the English equivalent for the displayed picture). Within each subtest, all the questions contributed equally to the final score and the raw score was the number of questions participants answered correctly.

The final scores on the subtests averaged and rounded to the interval on the 0–36 score scale. Pearson correlation coefficient was computed to obtain the reliability of the sub-tests ratings for the two raters, namely, the researchers. The intra-rater reliability indices were 0.74, 0.82 and 0.84 respectively. Also, software designed in a way that four types of materials were included in each section. Test reliability was calculated as 0.79. The validity was also confirmed by three competent TEFL experts (See Appendix A).

A sample consisting of different subtests for the word item (ice-cream: بستنی) is displayed in Figure 3. Subtest one comprised a written Persian word and a question in the spoken modality format. Semi-illiterates would write the English equivalent of the Persian word item and would send it to the server through the short message service (SMS), where all the answers were saved. Subtest two consisted of the same written Persian word and a question in the spoken modality format with multiple-choice answers. Semi-illiterates would select the correct answer and would send it to the server via SMS. Employing a picture instead of the written form of the vocabulary was the distinguished feature of subtest 3.
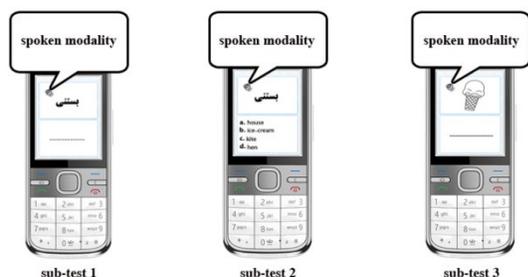
Figurer 3: Sample of subtests for the word item (ice-cream: بستنی)

Procedure
Introductory Session. Recognizing the difficulty that many semi-illiterates are likely to experience, a very simple introductory course was presented first in Persian explaining the purpose and the stages included in the study. Because adult learners did not have a clear picture of what they were supposed to learn, concrete examples of how they should use the learning content were provided and the expectations of the activity to be performed were clearly defined and modeled for them (Bransford, Brown & Cocking, 2000). Also, teaching word items commonly used in guidelines on practicing materials to novice learners of English is an inescapable issue. This was done through song, drawing, and writing during the first semester of teaching learners English alphabet.

To see if the communication of simple information in the guidelines was possible or not, their reading, comprehending and writing ability were assessed via conducting a pencil-and-paper test, and they were rated with a percentage of success in three areas (materials, English alphabet and vocabulary). On the basis of the results 36 English vocabulary items were selected to teach in five weeks. Since the one-way, unsolicited message from teachers to the learners or push model, as Mellow (2005) defines, was selected for deploying SMS, semi-illiterates' preferences concerning the time and the frequency of SMS texts were taken into consideration in designing the curriculum (See Appendix B).

Learning Phase. Sharing and annotating content happened automatically during the course; that is, transferring from data bank to other phones enables immediate sharing of pictures to practically anywhere the recipients happen to be with their phones without any disorder in their telecommunication. In addition to manual control of assigning the materials, the systems could manipulate the information

that was to be distributed over the course to learners.

In order to counterbalance the effect of the order of presentation, a 4×4 Latin Square (LS) design was employed. 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 four digits, that is 1, 2, 3, and 4, would appear just once in each row and column. Figure 4 shows a 4×4 Latin Square.

1	2	3	4
2	3	4	1
3	4	1	2
4	1	2	3

Figure 4: 4×4 Latin Square

In this research project, the first six words were thumbnailed to first participant in type1, six words in type 2, then six words in type 3, and finally six words in type 4. At the same time, the second participant received the first six words in type 2, six words in type 3, then six words in type 4 and the six last vocabulary items in type 1.

Testing Phase. The test was administered to assess learners' word recognition and production. After one month training, the semi-illiterate learners were put to the test. They were asked to fulfill the test, a mixture of three subtests, recognition (12 questions), written, and picture format test (24 questions).

Results
The first question of the study addressed the relationship between manner of presenting guideline styles on instructional materials (formal vs. informal style guideline) and the performance of Iranian semi-illiterates as L2 learners of English while learning English vocabularies. The results clearly

indicated differences between the semi-illiterates' performances; that is, they outperformed in the case of materials with the informal guidelines (r= 0.76, p< 0.005) glossed on them (Table 3).

Table 3: Relationship between guideline type and learners' performance

Guideline style	Pearson Correlation	Sig.
formal	0.53	0.000
Informal	0.76	0.000

$p< 0.005$

Though there was a significant relationship between semi-illiterates' performances and guidelines in formal styles (r= 0.53, p< 0.005), they did better on the parts of materials which were glossed with informal styles guidelines. As shown in Table 4, the shorter informal directions on learning contents carried the impression that they were easier to read and perceive for Iranian semi-illiterates. In other words, in more than (59.9% + 66.3% =126/2%/2= 63.1%) of the task, learners did not perform well as instructed formally. Such results report a relationship between application of informal and formal discourse features in directions and the performance of adult learners in the spelling test.

The second question sought the relationship between the use of pictorial modality in didactic materials and language learning. As Table 5 shows, annotating the contents with images contributes to making them more communicative. Iranian adult semi-illiterates provided correct responses to the questions directed to the materials delivered with pictorial annotations; however, correct answers oriented more towards the contents that images functioned a complementary role instead of duplicating the text; that is, ensuing the refining and complementary function of the image, difficulties of the texts were eliminated and learning was maximized.

Table 4: Descriptive statistics: semi-illiterates' performance in different subtests

Type	score	Subtest 1		Subtest 2		Subtest 3	
		freq.	%	freq.	%	freq.	%
I	0	5	4.1	13	10.6	13	10.6
	1	67	54.5	19	15.4	45	36.6
	2	49	39.8	39	31.7	43	35.0
	3	2	1.6	52	42.3	22	17.9
II	0	4	3.3	0	0	0	0
	1	16	13.0	4	3.3	7	5.7
	2	66	53.7	24	19.5	67	54.5
	3	37	30.1	95	77.2	49	39.8
III	0	65	52.8	52	42.3	59	48.0
	1	53	43.1	63	51.2	59	48.0
	2	5	4.1	8	6.5	5	4.1
IV	0	24	19.5	21	17.1	33	26.8
	1	79	64.2	63	51.2	67	54.5
	2	17	13.8	35	28.5	22	17.9
	3	3	2.4	4	3.3	1	0.8

Notes. freq. = frequency. Values are mean score on 4-point scale (0-3); N=123. Type means four types of materials

Table 5: Relationship between learners' performance and using pictorial annotation

Test type	Guideline Style Annotated with Image	Pearson Correlation	Sig.
Multiple-choice	formal	0.56	0.000
	informal	0.43	0.000
Recall	formal	0.18	0.043
	informal	0.31	0.000
Cued recall	formal	0.33	0.000
	informal	0.49	0.000

However, deploying picture in providing instructional materials to the learners culminated into better results when they were accompanied with guidelines of formal styles (r= 0.67, p<0.005) rather than guidelines of informal styles (r= 0.55, p<0.005). In comparison with the effect of picture on didactic materials, guideline styles revealed a more important role in learning outcome. Regarding the results (Table 6) on deploying images- pictorial annotation-in learning contents, it could be inferred that to the extent that language elements (in this study, vocabulary items) are not comprehensible to the L2 learners, they could be understood in virtue of the attached pictures especially in the case of materials glossed with formal style guidelines.

Table 6: Relationship between picture application and learners' performance

Guideline style cued with picture	Pearson Correlation	Sig.
formal	0.67	0.000
informal	0.55	0.000

*p< 0.005

Although semi-illiterates demonstrated better performance in pictorial format test (cued recall) than the recall one, their performance on multiple-choice test was better than on either of the other two types. The result can be depicted as follows:

Recognition score > pictorial format score > rectification score (Table 7)

Table 7: Relationship between Test Type and Learners' Performance

Test type	Guideline style	Pearson correlation	Sig.
Multiple-choice	Formal	0.37	0.000
	Informal	0.56	0.000
Recall	Formal	0.26	0.003
	Informal	0.3	0.001
Cued recall	Formal	0.34	0.000
	Informal	0.45	0.000

*p< 0.005

Discussion and conclusion
Since most of the m-learning studies are provided as the supplementary activities (to what was taught to learners) and materials are usually delivered to learners out of educational settings, it is necessary to

design the materials in a way that they will be in congruence with what a learner can do independently, namely, mastery level (Ellis, 2008). In this way, learners are able to develop or construct new understandings by elaborating on their prior knowledge through the support provided by more capable others (e.g., teachers) via the medium of facilities that wireless technologies make accessible to them (e.g., short message services (SMS), multimedia messaging services (MMS), internet connection facilities, etc.).

In the present study, it was shown that displaying text with informal style of language and complementary image is a case of coupling reading and viewing, which supports the process of vocabulary learning in the case of semi-illiterates. Hence, it could be claimed that the degree of difficulty primarily depends on the extent to which the didactic materials style pattern was similar to or different from learners' daily communication style. Where the two were identical, learning could take place easily through concurrence of the styles, but where they were different, learning difficulty arose and errors resulting from style differences occurred. Such non-concurrence of styles refunds the process of foreign language learning.

The result that adult learners outperformed in the case of new vocabularies on which informal style guidelines provided could be indicative of the homogeneity of this type of style with the type that this group of citizens applies in day-to-day communication. In fact, the more connections to the informal style make it easier for adult semi-illiterates to reinforce and orient greater meaning and understanding to what they have learnt. In other words, in this study, informal style established a type of scaffold to facilitate

the learner's development, as Van Der Stuyf (2002) defines. With such background, that is, using informal speech style in fabricating guidelines for semi-illiterates and illiterates, material generator are able to manipulate the content and make it easy to understand. This finding is in line with the results reported by Lehtonen, Koskinen and Kurvinen (2003) that content in SMS messages between friends is rarely independent from previous communication.

However, this finding sounds a bit counterproductive if compared with what Leow (1997a) reported. He found that text length but not text enhancement resulted in higher comprehension scores while neither type of input modification assisted acquisition. Such differences may be attributed to the low-ability of semi-illiterates in this study.

At first glance, presenting the material in an entirely visual and audio way seems the rational way in teaching semi-illiterates, The key, of course, was modifying contents so they will be of benefit to learners with almost zero reading and writing abilities or formal schooling who enter from the milieu of informal speech. However, despite the fact that images are found to play a positive and facilitative role in teaching new materials to novice learners, it is the complementary and not duplicated role of the images which helps the learners to grasp the gist of learning contents. Such result thus obtained seems to bear testimony to the claims that visual texts cannot be treated as the equivalent of verbal utterances. Most of us are better at analyzing verbal texts than visual, but that is no reason to expect them to conform to the terms and concepts we have developed for different purposes (Myers, 2003). Using such cues in incorporating images into the content prompts the learners to pursue the task of

learning English as a foreign language. As a consequence, it could be claimed that, semi-illiterates' outperformance in the case of spelling test related to the vocabulary items cued with images could be attributed presumably to the mnemonic power of the image that makes them more graspable (Sunga, 2011). Also, this result invokes dual coding theory (DCT) suggested by Paivio (1986), which upholds the idea that different modalities combined together present an optimal condition for accommodating more channels of learning simultaneously, thus increasing the likelihood of learning materials.

According to Ko (1996), speech-like features are typically claimed to result from the temporal constraints of the medium. Even though informal style directions simplify the task, make it more manageable, and let the teachers express a friendly orientation towards the learners they address (Pop, 2012), it is noteworthy to point out that the informal style of instruction is temporary, too. At the early stages of language learning, learners' interaction with more informal and familiar styles or environment significantly impacts their ways of thinking and interpreting situations; however, as the learner's abilities increase, the informal style guidelines provided in the content are progressively withdrawn. As a result, the learners are able to master the concepts apart from application of informal style of guidelines. On the whole, informal pictorial cued materials proved the best suggesting the picture semi-illiterates engaged in relating it to text might have contributed to their performance.

This study presents another general pattern emerging from the obtained data. The higher scores of the recognition test in almost all cases is also indicative of the fact that recall tests are more challenging as the learners need far more processing ability to tackle them compared with recognition tests representing receptive type of knowledge (Richards & Schmidt, 2002; Cousin, 2010).

This study focused on L2 vocabulary improvement by EFL semi-literate adult learners at elementary level via m-learning. Similar investigations may target the enhancement of other aspects of non-native language as well as different skills and sub-skills employing other modes of technology-based learning. A study of this kind could help L2 material designers to incorporate technology-enhanced content such as software album in devising more attractive and challenging instructional language materials.

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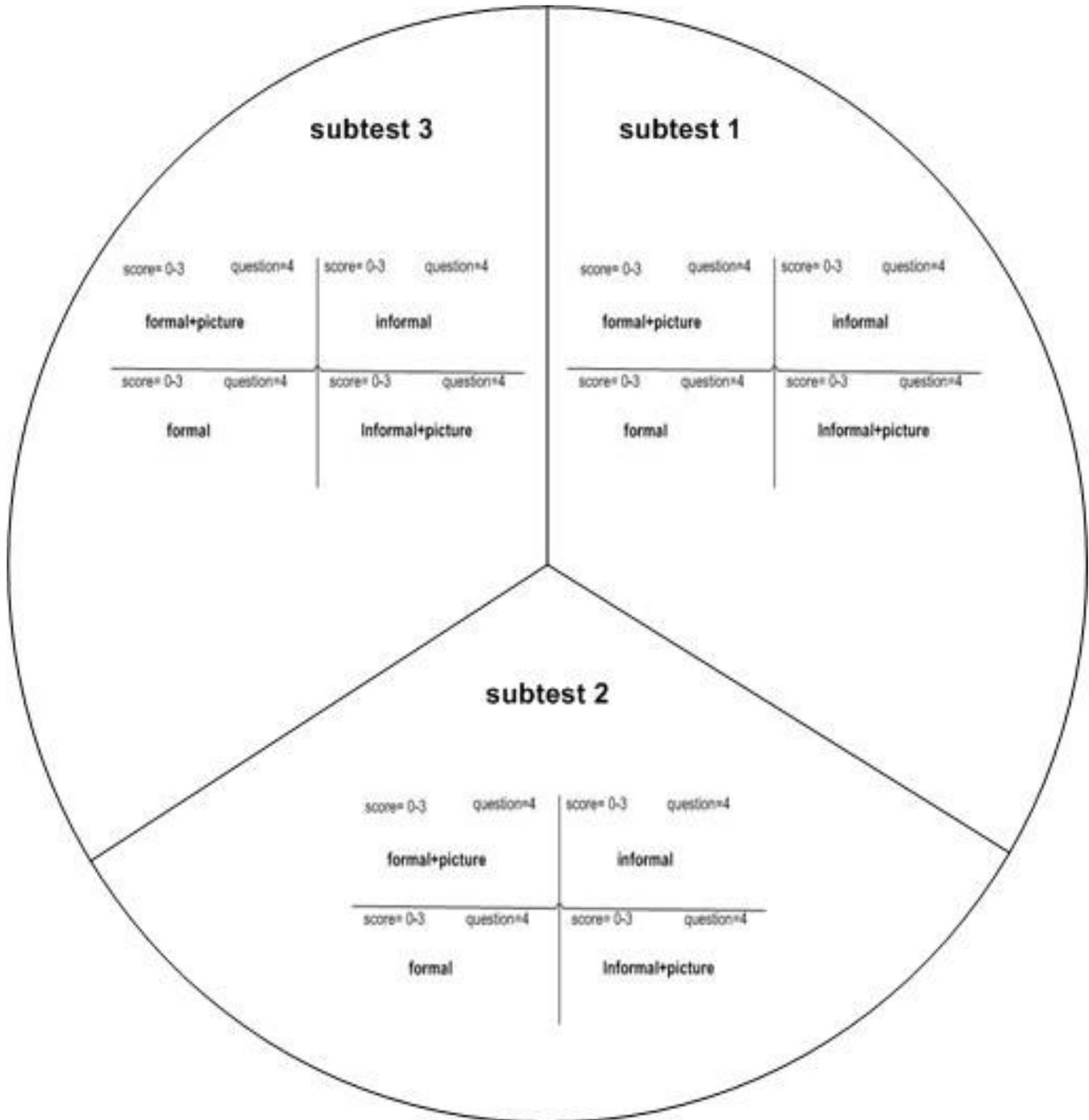
Appendix A

Figure 5: Details about Test Battery.

Appendix B

To establish criteria for the frequency and timing of sending vocabulary via SMS, a pilot study was conducted in favor of proper completion of the major phase of the study. The semi-illiterates were 25. The learning content, namely, new English vocabulary items, was sent to their cell-phones via SMS in higher frequency manner (more than two per day) as Kennedy and Levy (2008) define in seven successive weeks. At the end of this trial study, they participated in an interview. The goal was mainly focused on such matters as their preferences about timing and frequency of the messages (Figure 6, below).
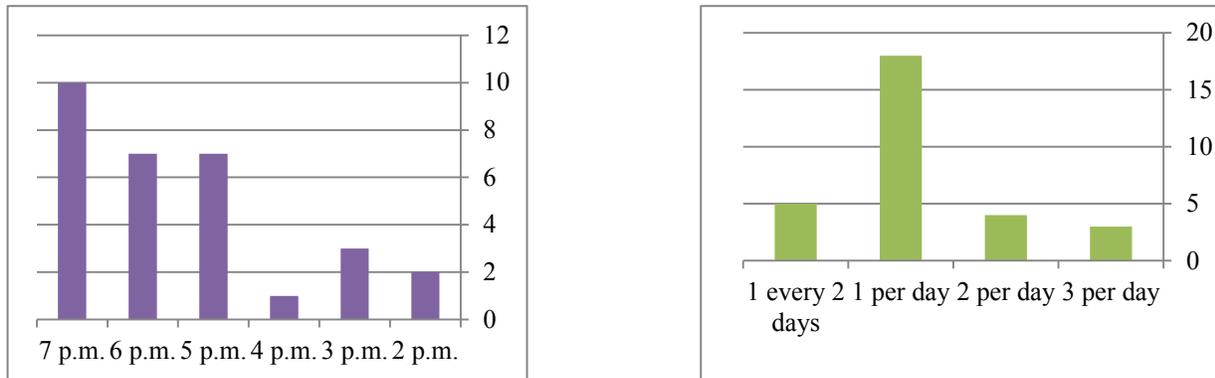
Figure 6: Semi-illiterates' preference for timing (between 5: 00 p.m. to 7:00 p.m.), and frequency of the messages (one vocabulary item per day)