A Preliminary Study to Propose a Conceptual Framework of Smart Mobile English Learning Tool (Smelt)

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Abstract: Mobile learning (m-Learning) has different meanings for different communities, covering a range of use scenarios including e-learning, educational technology and distance education that focuses on learning with mobile devices. It is defined as learning across multiple contexts, through social and content interactions, using personal electronic devices. In other words, with the use of mobile devices, learners can learn anywhere and at any time. One of the most prominent issues that learners of the language face is their inability to use the language effectively and more importantly maybe they are shy to express themselves in a conventional class, due to their poor use of English vocabularies and words. An English learner with very low English vocabularies and English words will rather prefer to remain silent than being made to be scrutinized by all for wrong use of the English language. A mobile learning system that allows adult learners the use of pictures, tutorial and even videos will give them a variety of learning options and styles as is suited to each individual learner. In line with this a Smart Mobile English Learning Tool (SMELT) is developed to assist second language speakers in improving their English ability. In order to develop SMELT, a preliminary study was conducted to determine the need of such a learning tool that will aid learners to improve their English, even while moving. The study was performed through online method and the target population is the Smartphone users who are willing to learn English as their second language. The total number of respondents that have participated in this study is 51 whose age ranging between 21 to 55 years old. The results of this study indicate that the users need such a smart tool to improve their English based on the levels of learning progress. Moreover, the respondents inquired some services from SMELT that are reported in this study. Finally, a conceptual framework is proposed for mobile learning design requirements for lifelong learning from the results of the preliminary study.
Keywords: Mobile learning, English learning, Smartphone, User need.

INTRODUCTION

According to Benjamin Franklin, "Tell me and I forget, teach me and I may remember, involve me and I learn" [1]. This implies that the best way to teach any learner is to enable such learners to discover and learn at his or her own pace. It is a known fact that different people are able to learn in different ways. People tend to learn better when they are made to discover learning themselves, as such learner's ability to have control over their learning platforms tends to bring out the best out from each learner, thereby maximizing their full potential. Computer assisted instructions have created possibility for individualization and personalization of learning. The implementation of individualized learning has been experimented in various domains, like the adaptive hypermedia and multimedia environments [2]. Online learning encourages users to have more control over themselves with the lessons learnt. However, in designing materials for online learning one has to find own way to suit the goals of both the teacher and the program, the needs of the students and the technology available [3]. Many researchers argue that the growth of pervasive, ubiquitous, computing will have a large impact on learning [4]. Suitable devices for mobile learning include digital media players, smart phones, and personal digital assistants or PDAs. With the recent advancement in technological world, adult learners' desires is growing to have more flexibility with their learning tool. It allows them to learn even while moving or playing games. Hence, the need for mobile devices enhances teaching and learning in a virtual classroom environment. Mobile devices can be used in both online setting and in the brick-and-mortar (traditional methods). This study intend to develop and implement a mobile learning tool, called Smart Mobile English Learning Tool (SMELT), for adults who wish

to improve their English. Therefore, previous studies are reviewed in next section to get information for proposeing a conceptual framework and prototype for Mobile English Learning. Afterwards, preliminary study is reported which was conducted to find the user need from a self-learning English tool. Then conceptual framework is proposed and system ise designed accordingly. Final section of this paper concentrates on the user interface and relevant features of SMELT followed by discussion and conclusion.

BACKGROUND
Learning English as a Second Language

The difficulty by first language learners is to understand new language concepts and wording, and involves the abstract concept which is better imagined than learnt. It is stated that learners of the language face is their inability to use the language effectively and more importantly maybe they are shy to express themselves in a conventional class, due to their poor use of English vocabularies and words. An English learner with very low English vocabularies and English words will rather prefer to remain silent than being made to be scrutinized by all for wrong use of the English language [5]. In order to enable learners of the language to communicate in English language effectively, the teacher needs to design learning sessions in different ways, but this cannot be feasible with our traditional teaching methods as not all materials will be appropriate to achieve this goal. A mobile learning system that allows adult learners the use of pictures, tutorial and even videos will give them a variety of learning options and styles as is suited to each individual learner [6].

Mobile Learning (mLearning)

The term m-learning ("mobile learning"), has different meanings for different communities, covering a range of use scenarios including e-learning, educational technology and distance education, that focuses on learning with mobile devices. Mobile learning is defined as "learning across multiple contexts, through social and content interactions, using personal electronic devices" [7]. In other words, with the use of mobile devices, learners can learn anywhere and at any time [8-10]. Some simple examples of M-learning technologies are handheld computers, MP3 players, notebooks, mobile phones and tablets. M-learning focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population. There is perhaps a new direction in m-learning that gives the instructor more mobility and includes creation of on the spot and in the field learning materials that predominately uses Smartphone with special software such as AHG Cloud Note. Using mobile tools for creating learning aids and materials

becomes an important part of informal learning [11-13]. M-learning is convenient in that it is accessible from virtually anywhere. M-learning, like other forms of e-learning, is also collaborative. Sharing is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback and tips.

Mobile Learning and Academic Achievements

Rapid advancement of wireless technologies and the quick attraction of youngsters to mobile technology led to persuade higher education for the increment of using handheld devices in the education system for the sake of fulfilling students' need and further encouragement. Young generations are more modernized and prefer to access to academic resources using their Smartphone other than using the traditional method of education [15]. Approximately 5.5 students enrolled in online course on 2012 in US where 2.6 million out of which were fully registered for online program [14]. Mobile used in education has affected on students' academic achievements for both offline and online programs. Some psychological factors such as self-efficacy, innovativeness, usefulness, ease of use, environment around the user, students characteristics, as well as external factors including subjective norm and system accessibility can effect on the students' adaption to the mobile devices in education [16]. Being cognizant of the effective factors of mobile learning in students' academic achievements can provide a better insight to the design of a new mobile learning application.

Learning Theories

There are three broad learning theories including *behaviorism*, *cognitivism*, and *constructivism*, which show how individuals acquire, retain and recall knowledge. Theory of *behaviorism* stemmed by Skinner [17] to state that once changing in behavior or new behavior is achieved, learning is emerged. The focus of this theory is on the philosophy of human behavior and learning process is based on the apparent changes in behavior. As soon as the learner responds to the stimulus from the environment, the learning process will be started [17]. Some mentalistic terms such as "wants", "needs", "desires", and "wishes" that could be considered as the stimulus to reinforce the behavior. If the level of deprivation is identified, the level of reinforcement and behavioral change can be predicted which are useful in designing mLearning applications. One of the weaknesses of behaviorism is lack of providing a critical thinking and problem solving platform for the learners. Learners are not able to change anything whereas they just follow what there are asked for.

Behaviorism was replaced by *Cognitivism* to focus on the inner mental activities such as thinking,

knowing, memory and problem-solving. Cognitivism is a complementary to behaviorism that believes human is not programmed animal" but is rational beings that requires active participation in order to learn. Changes in behavior must be observed to indicate what occurred in learners 'mind. Cognitivism analogize mind into computer and the way that received, organized, stored and retrieved information [18, 19].

Some cognitive theorists adapt structivist approach into learning in which knowledge is considered as a function to show how individuals creates meaning from their own experiences [19]. The focus of instruction shifted from teaching to learning and from passive to active application while moving from behaviorist and cognitivist to constructivist. *Constructivism* believes that one's world can be constructed based on individual experiences and internal knowledge. Constructivists opposed the belief of cognitivists and behaviorists that knowledge is mind-independent but they described the world stems as the one's own interpretation of experiences [20]. Constructivism includes philosophical and cognitive psychological roots from philosophers such as Nelson Goodman and cognitive psychologist like Jerome Bruner and Ulric Neisser.

Preliminary Study

Though there are available resources and English courses for the improvement of English language ability, they seem not sufficient enough [3]. However, many people are interested in learning the English language; there are some impediments that limit them from doing so. To conquer the limitation of existing resources, a Smart Mobile English Learning Tool (SMELT) is proposed in this study. In order to design SMELT, the preliminary study was conducted to enable the researcher to determine the need of a learning tool that will aid learners to improve their English, even while on the move. The intention of this preliminary study is to gather information about the requested features that the respondents would like to be included in the application that is going to be developed. The study was conducted through online survey and the findings of this study were used to identify the features that need to be included in the proposed app. In the next phase, the findings were used to assist the researcher in designing a conceptual framework for SMELT. The main goal was to deliver a tool that make the learning of English much more interesting, flexible, portable, mobile and above all, easy to use as well.

METHODS

In order to and design the conceptual framework and develop SMELT, a preliminary study was conducted to acquire user need. The purpose of preliminary study is to find out what the end users expect from SMELT in terms of product features and benefits inherent in using the app. Therefore, an online survey was used to collect data because of its special and appealing features that are suitable for the design a questionnaire which to know the feelings of each respondent, their online experience. The questions vary from open-ended to simple Yes/No questions. In fact, the functional items are measured based on the Yes/No scale. The online survey was launched for two weeks using Google drive. The Google drive link was target-based and distributed through email and social network. The target respondents were those who believed that use of English is important for their daily life. Thus, a Yes/No question were set to filter the target respondents from those whom do not care about English learning in their daily life.

RESULTS
Demographics

The total number of 51 respondents has participated in this study. Most of the respondents are from the Malay ethnic group with 37%, Chinese (22%) and Indians (12%) respectively, followed by the other group with 29%. The males have a higher presence by 51% against females with 41%. Respondents in the age category of 21-25 years represent a highest participation (51%) followed by the range of 25-30 years old (22%), 31-35 (14%), and 36-40 (10%) in the adult population demanding for an improved English learning system. The least number of participants belongs to the age category of 41-45 (4%).

User Need

The results of online survey show that 92% of the respondents believe use of English is important in their lives who are the main target respondents for this study. Moreover, 96% have intention to improve their English ability, with only 4% undecided yet. Among those respondents who are interested to improve their English, 49% of them would like to use self-learning methods while 29% of them believe on enrollment in an English learning center. Furthermore, 22% of the respondents are interested in online learning tools. The results of this section reveal that most of the respondents preferred self-learning and online methods in order to learn English. Therefore, mL earning applications can be a good solution to fulfill the need of users regarding self-learning tool.

Additionally, majority of the respondents would like to improve their speaking and communication skills (48%) followed by writing skills (28%) and lastly reading and listening skills (21%). Most of them are fascinated to have speaking modules for English learning. The result reveals that most of the respondents are interested in improving their speaking skills; thus, more features can be added into the self-learning application to focus more on speaking skills.

As English is the most commonly used language all around the world, non-English speakers decided to learn English as their second language to communicate with the world. Thus, English self-learning became common among the users who are not able to join to English classes due to their tight schedule or financial problem. The results of preliminary study indicate that 80% of the respondents are aware of online English learning services, which is good news for English service providers; however, 20% of respondents are not aware of such service. 24% of the respondents have used these online services in the past whereas 76% of them never used online English services. Therefore, SMELT must be easy to use and provides enough instructions for the users to gain adequate literacy of using this English learning mobile application. Most of the respondents believe that their English will be improved via the use of an online tool, which is good news as they may show a positive behavioral intention to use learning applications such as SMELT.

The findings indicate that there is a need on English self-learning tool to improve their English based on the levels of learning progress. The system design must be in a way that meets users' yearnings and expectations. The services that need to be included in SMELT are determined from the study. For instance, interactive capability of the application is one of the users' expectations. Moreover, they believe that the learning materials must be trustworthy and the self-learning tool must have language translation features.

Finally, they require an application that can be run in any platform. The findings serve as basis for the proposed conceptual framework of SMELT. Since the preliminary study indicates that there is a need on English self-learning tool, SMELT conceptual framework is designed and the prototype is developed to improve their English based on the levels of learning progress.

System Design and Conceptual Framework

After thorough investigation of the previous conceptual learning frameworks such as [21-23], and conducting a survey to find user need, a conceptual framework was proposed for SMELT. mLearning activities for SMELT consist of the determination of *macro-strategies*, appropriate learning *theories*, and *micro-strategies* as illustrated in Figure 1. The first activity of mLearning in the proposed framework is determination of macro-strategies to find the main purpose of in-process mLearning application. This activity can identify whether the application is for education or training. Moreover, performance support can be identified by this level to ensure the application include support services or not. Acquiring appropriate mLearning theory will be chosen subsequently to identify the most congruous theory for designing the application. In order to design an appropriate application, the proposed framework deliberates more about learning theory of *behaviorism*, *cognitivism*, and *constructivism*, which are the three broad learning theories. Finally, *micro-strategies* include activities to cooperate between personal learning and system development.

Fig-1: Proposed Conceptual Framework for SMELT

As shown in Figure 1, the first step of the conceptual framework is device requirement analysis.

This step seeks to rectify issues related to the most common features of the system that are necessary for convenient learning, the position of ICT in learning, potential mobile learning applications and users expectations. Other than concrete requirement, users and the environment is assessed in this step. Use of learning theories is essential in the next step of the proposed framework which is information context, support and interaction. Theories are used to determine the direction of the designed materials. For instance, *constructivism* is used to construct new knowledge based on user experiences and failures. Exercises and drills with immediate feedback can be provided as part of *behaviorism* characteristics to motivate students. Activities provided by mLearning program can assist users at the end of self-learning session and exercises to recognize and address their problems. These reflections are the results of using *cognitive* theories. Technology is usually used for knowledge acquisition as a supporting tool. Pre-activity or post-activities for users' encouragements are added into the database in mobile learning context. Learning contents stored in the system databases are designed to be text based, audio, animation, video and 3D. The forth step of the proposed framework is Androgogy knowledge, which refers to the adult pedagogy and measures users' attitude, skills, experiences, motivation, learning patterns, environment and influencing factors as part of demand for adult mobile learning. The m-learning activity is more concern about understanding the needs of users and factors that influence their learning [3]. Device usability is another important factor in the design of any m-learning system framework as part of the requirement analysis. It emphasizes that the system would be useful and easy to use for accurate learning outcomes. Usually evaluation is done to appraise the usefulness of mobile learning towards learner motivation. The last step is the adaptive feature that allows the system to evaluate every learner and move them to the next level based on the evaluation done for each learner. The activities in the modules are usually designed to encourage learner control. Learner control will give the learner flexibility to what he/she desires to learn at any given time. Information context and learner support service are very useful, as they create confidence and competencies needed to overcome any difficulty that may arise while in use. Few support services are included in SMELT including consulting services, blended learning services, training and community support services.

User Interface of SMELT and Relevant Features

SMELT is offering Self-English Learning services through the use of their android-based Smartphone. The application must be downloaded from Google play store. User interface of SMELT is illustrated in Figure 2. The home page summarizes the services included in SMELT at a glance and informs the interested parties/clients the services that they should expect from the application. Users can choose any button to receive the relevant services. The product has three levels of English learning module, i.e. elementary, intermediate and advanced levels where each learner is expected to choose their level of learning after having replacement test. Free evaluation test questions have been attempted for every level of learning. This free pack is intended to stimulate the interest in learners to purchase the full package at a very reasonable price. Learners will have to score 70% to be promoted to the next level of learning, in a complete pack. All users need to click on the elementary pack first to answer questions. This pack also contains audio/video questions that learners are expected to answer after listening to a conversation or an audio sound. Learners have the opportunity of learning with the visual aids, in this case a picture. They must fill in the correct answer to complete the sentences.

The contents of SMELT are basically made up of 3 different learning levels as mentioned above. The first is the Beginner/Elementary Level which includes the introductory parts of the language, evaluation questions. This bundle make up simple present, present continuous, simple past, going to, can, can't, can, could, nouns, I'd like etc. The second bundle is the Intermediate Level. This is like the mid-point between the beginner level and the advanced level. The practice and evaluation questions here are drawn from such areas like sentence building with possibility (must, can't, maybe, will), past (should have, might have, could), uncountable nouns, adjectives, adverbs, articles with countable and uncountable nouns. The next level is the Advanced Level stage, in which the learner has matured in his ability to use the language effectively. The advanced bundle comprises future sentence building will be practiced with simple past, past continuous, past perfect continuous, used to, future continuous, future perfect continuous, present perfect continuous, conditionals, used to etc.
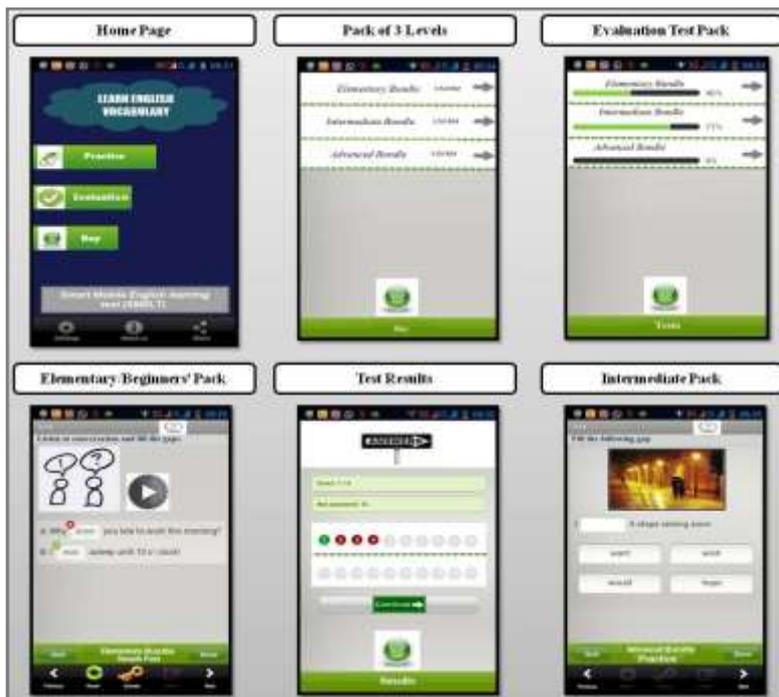
Fig-2: User Interface of MELT

There are some relevant features in SMELT consisting Ability to Learn Offline, Online Placement Test, Adaptive feature, and User rating. The system could be accessed by learners, even while offline. The moment the application is downloaded and learning modules are paid for, the need for online is automatically eliminated as the learner will only need to learn from the modules downloaded on the mobile interface. One of the very useful adaptive features of the system is its ability to assess and determine the appropriate level of learning for each new learner. This is done by administering an 'entrance' exam for new users where if a user scores the predetermined score of 70% and above on their first attempt on the beginners' pack then the user will be moved automatically to the intermediate level of learning. Another adaptive feature is the activities that are presented to the learner which involve the creation and manipulation of representations. If the learner requires mental models that correspond to the representation, then he/she should be involved actively in those creations and representations. In addition, content should be designed with multiple representations as a rule to help learners drive down what they learnt. This feature assists the adaptive engine to provide the student with the single representation that is the best matches with students' aptitude profile. It also gives the engine additional representations (text vs graphics, or graphical representation of some concepts), and different styles of conceptual explanation. Furthermore, the learner should be provided with a final learning activity which encourages reflection and integration of the knowledge learned. Such a system incorporates enough support that will help the learner to concentrate on learning the content and not the system itself. This feature enables the learner channels to add most of his cognitive efforts into learning the material and not the system. Finally, users could rate the services rendered by SMELT as feedback for the purpose of marketing strength.

DISCUSSION AND CONCLUSION

Learning has a complex process which is affected by many philosophical and psychological factors. Cognitive and behavioral study is required to know the effective factors of learning and to design a feasible method of teaching. Adult learners have different learning styles that differ from young learners. This group of learners requires flexibility, and always likes to be in control of their learning process. Learning process is changing by advancement of technology and Smartphone can be utilized as an appropriate tool of self-learning. In view of the foregoing, a tool for English learning called SMELT is proposed on the mobile platform for adult learners who owned Smartphone. SMELT can assist the working class, foreigners, housewives, and non-native speakers to improve their English ability at the comfort of their homes. In addition, a preliminary study was conducted on the need of SMELT for adult learners. Based on the responses and findings from the study, it is clear that there is a need for this application in the target market specially for improving communication skills. After thorough study of different learning theories, previous studies and preliminary study, the conceptual framework is adapted based on the framework proposed by Liu *et al.* [23], due to its completeness in addressing the basic factors that need to be considered in developing a mobile application. A proper match is

made between user need, content and strategies to fulfill the need of novice learners encountering a complex body of knowledge. SMELT is feasible to be marketed and the proposed conceptual framework could assist the researcher to design of the prototype for SMELT and future improvement. SMELT can motivate students to learn English independently and improve their communication skills. Educational schools and institutions can use mobile English learning tools such as SMELT to encourage students for learning English as a second language.

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