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A MOBILE TOOL FOR LEARNING ENGLISH WORDS

Nadire Cavus Dogan Ibrahim

Near East Universiy, Lefkosa, TRNC

Computer Information Systems *Computer Engineering*

nadirecavus@neu.edu.tr dogan@neu.edu.tr

***Abstract*—Technology is changing very rapidly and nearly all branches of education are affected by these changes. As a result of these rapid changes there has been significant interest and growth in the number of educational institutions using mobile devices to support learning and teaching. There is also an increase use of wireless technologies in education all over the world. In fact, wireless technologies such as laptop computers, palmtop computers, and mobile phones are revolutionizing education and transforming the traditional classroom based learning and teaching into anytime and anywhere education. This paper investigates the use of wireless technologies in education with particular reference to the potential of learning new technical English Language words using SMS text messaging. The system, developed by the authors is called the Mobile Learning Tool (MOLT). We are aware that if the improvements and modifications suggested by students are added to the system then MOLT as an educational tool will have a positive contribution to the motivation and success of students.**

***Keywords*— Distance English learning, mobile learning, mobile phone.**

I. INTRODUCTION

According to Dye [1], "m-Learning is learning that can take place anytime, anywhere with the help of a mobile computer device. According to Brown [2] "Mobile technologies have the power to make learning even more widely available and accessible than we are used to in existing e-learning environments". Many researchers [3,4] believe that mobile technologies bring new opportunities to traditional learning in the classrooms and lifelong learning outside the classrooms.

Berger [5] lists the implications that mobile technology can bring to teaching and learning:

- Better realization of "anywhere, anytime",
- Freedom of organization in and out of the classroom,
- Collaboration among students separated geographically,
- Transparent connection to nets,
- Remote sensing and integration of information,
- Shift from "anywhere, anytime" to "everywhere, everytime".

According to Singh [6], mobile learning is a paradigm shift and it changes existing situations in learning.

Milrad [7] explains the number of features that mobile technologies have for education: Portability, social interactivity, individuality, context sensitivity, connectivity, merging digital and physical realms. Mobile devices have some benefits for education [8]: Portability and mobility, flexibility, convenience, remote accessibility, ease of use, utility.

In his recent article on mobile devices, Livingston [9] defines them as being "small enough to fit comfortably into a purse, pocket or holster, so you can conveniently keep it with you at all times". In the United Kingdom we would probably equate this to saying that mobile devices are small enough to fit into a pocket or shoulder bag so they can be kept with us at all times.

It can also be argued that there are strong pedagogical reasons to incorporate mobile learning and the use of mobile devices into educational practices. Developments in pedagogy and learning science have moved towards processes that engage a more active learner using 'constructivist' models, with learners making their own decisions that match their cognitive needs [10]. In her case study on the pedagogical advantages of ubiquitous computing in a wireless environment, Sotillo [11] concludes by saying: "New developments in wireless networking and computing will facilitate the implementation of pedagogical practices that are congruent with a constructivist educational philosophy".

Mobile learning supports messaging applications for students and teachers. It allows communication and interaction both synchronous and asynchronous [2]. Communication and interaction are the main characteristics of contemporary constructivist paradigm. Attewell and Smith [12] say that "The role of phone calls and messaging in friendship rituals such as gift giving and sharing suggests the mobile phone has potential as a collaborative learning platform". SMS is widely used for text messaging to send short messages (160 characters) within short time in daily life [13]. According to statistics SMS is already used more than e-mail in Europe [2]. Research carried out at *Wake Forest University* [14] shows that student mobile phone usage patterns are moving away from more traditional messaging like the

use of email towards newer technologies such as Instant Messenger (IM) and Short Message Service (SMS). We feel this trend should encourage students to be more engaged with course material outside the classroom as well as communicate better among themselves.

A survey carried out at the Near East University showed that the widespread use of mobile phones among our students has led us to consider how this technology might help us to improve the motivation of students and help in teaching. The authors looked at language-teaching capabilities of mobile devices to consider how wireless technologies are being adapted to meet changing educational needs. An important question is how to create a mobile system for teaching new words, which has added-value features for its user. The system is about the use of mobile phones in teaching new technical English language words. We have pilot tested our m-learning system with as few as 17 students. Based on the feedback we received, we have decided to use the system in English I courses and we expect to get results as soon as possible. During application new words and their meanings will sent to students throughout the day in half hourly intervals.

Mobile Learning

A widely accepted and common used definition of mobile learning proposed by [1] is learning that is wireless and ubiquitous so the idea of wearable computing is very well applied to m-learning. Basic task of advanced forms of education is to provide flexible education that could assure mobility to the learners. Mobile learning is generally defined as e-learning through mobile devices [17]. Users have to find a personal computer with internet access to learn something in e-learning. This is not a completely anytime anywhere learning [18]. According to [19] "Mobile technologies have the power to make learning even more widely available and accessible than we are used to in existing e-learning environments".

[20] say that mobile learning framework includes four levels:

- Mobile learning applications,
- Mobile user infrastructure (browser, handheld devices, mobile phones),
- Mobile protocol (adoption of content with WAP or other protocols),
- Mobile network infrastructure (cellular systems, satellites, etc.)

Many researchers [21, 22] believe that mobile technologies bring new opportunities to traditional learning in the classrooms and lifelong learning outside the classrooms. M-learning provides location awareness applications to learners [23].

II. THE STUDY

The aim of this study has been to develop a new mobile learning system using mobile phones in teaching new technical English language words to undergraduate students to support their normal English language lectures.
The system developed and the experimental study has been carried out at the Near east University, Department of Computer Information Systems (CIS), during the Spring 2007 semester. In order to send the SMS text messages, a Windows based program has been developed by the authors on a personal computer (PC), called the *Mobile Learning Tool* (MOLT).

The material is the MOLT developed by the authors. The software is based on the Visual Basic programming language. The ActiveX control package Logiccode GSM [15] was used in the program to format the SMS text messages and send them to a mobile phone attached to the PC via the Bluetooth interface. Any model of standard mobile phone could be used as long as it had Bluetooth interface. The mobile phone received messages and phone numbers from the PC and then sent these messages to the recipient students at the times requested by the PC. Figure 1 shows the block diagram of the system developed by the authors.

First of all the teacher loads manually the mobile telephone numbers, the words to be sent and their meanings to a PC. In addition, the starting and ending dates and times of the experiment are also specified. The only action the students are required to do is keep their mobile phones switched on throughout the day so that they can receive the new words and their meanings as SMS messages. Messages are sent to the students at the dates and times specified by the teacher via the GSM mobile phone network.

Every half an hour the program reads a new message from the messages file and sends this message as an SMS to all of the students participating in the experiment. Students receiving the messages are expected to read and learn the new words wherever they happen to be. The messages (English words) sent to students together with their meanings. The description of the meanings of words were chosen as short as possible, so that the recipients can read these messages on their small screens without having to scroll down many times.

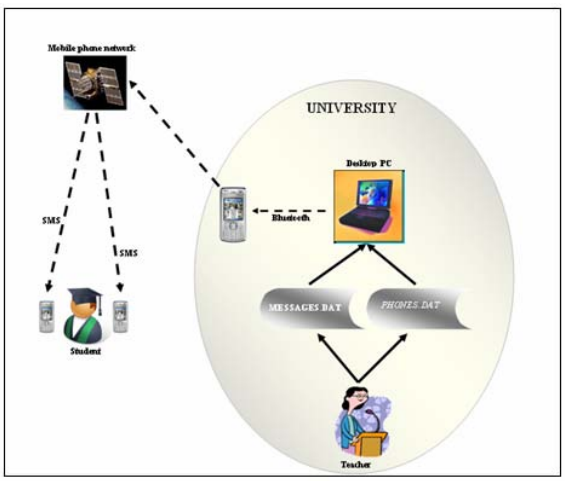

Figure 1. Block diagram of the system

The computer program consists of a single *Graphical User Interface* (GUI) based display and Figure 2 shows a snapshot of the screen when the program is run. The program operates by entering the starting and ending dates and times of the experiment, and once started it runs throughout the experimental period, terminating automatically at the requested date and time. Before the program is run two text files are created: File *MESSAGES.DAT* stores the messages (ie, the selected technical English words and their meanings) to be sent to all the students. Similarly, file *PHONES.DAT* stores mobile numbers of all the students participating in the experiment.

Files MESSAGES.DAT and PHONES.DAT were created buy the instructor using a text editor such as Windows NOTEPAD. File MESSAGES.DAT contains a list of words and their meanings. A word is written first, followed by its meaning in the next line. Similarly, file PHONES.DAT contains phones numbers of all the students who took part in the experiment.

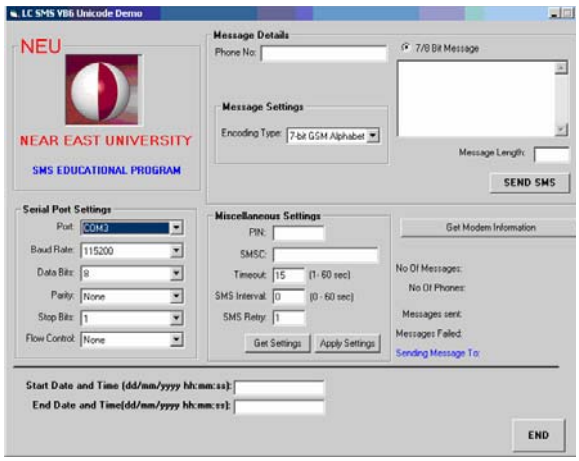

Figure 2. Snapshot of the screen

III. CONCLUSIONS AND FUTURE WORK

Wireless technologies such as laptop computers, palmtop computers, and mobile phones are revolutionizing education and transforming the traditional classroom based learning and teaching into *anytime* and *anywhere* education. The beauty of this system is that the learning process takes place away from the classroom environment while the students are involved with their everyday activities.

It is the authors' opinion that widely used personal mobile phones and similar mobile devices could be extremely useful during the development and application of web-based distance education systems.

Based on the research, the following educational effects are expected: Students will find the MOLT system very comfortable, functional and useful, students will express their enjoyment of learning away from the classroom with the help of their mobile phones, students enjoyed using the MOLT system as a tool while learning as it brought greater flexibility into their learning as now they could learn anywhere anytime, the interest of students to the use of mobile phones will also help them learn new words.

The overall goal of this study has been to value-add to the anytime and anyplace flexibility of m-learning. The teaching of new words by using mobile phones is expected to be successful. A future aim is to improve the system in several ways:

- The MOLT system uses the SMS messaging system to send messages to students. In many applications it is much easier to understand and learn if multimedia based messages can be sent instead of simple text messages. For example, video clips, pictures, or sound can be sent for more efficient learning. Sound is especially very important when teaching the pronunciation of words.
- The develop system can be used for teaching other subjects, where short lecture notes can be sent to students.
- Bi-directional communication can be introduced into MOLT so that students can send feedback to the instructor, or send back quiz answers.

The study on more motivating tools and techniques that induce the participation of external experts and that promote interactions among diverse participations should be further conducted in the future.

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REFERENCES

[1] Dye, A., Mobile Education – A Glance at The Future, 2003. Retrieved 14, January 2005 from: http://www.dye.no/articles/a_glance_at_the_future/index.html

[2] Brown, T., "The role of m-learning in the future of e-learning in Africa". *Presented at f the 21st ICDE World Conference*, 2003. Retrieved 14, January 2005 from: http://www.tml.hut.fi/Opinnot/T-10.556/2004/Materiaali/brown03.pdf

[3] Strauss, H., "Wireless Classrooms: Evolution or Extinction?", 2004. Retrieved 14, January 2005 from: http://syllabus.com/print.asp?ID=8287

[4] Robson, R., "Mobile Learning and Handheld Devices in the Classroom", 2004. Retrieved 14, January 2005 from: http://www.eduworks.com/Eduworks_new/Documents/Publications/Mobile_Learning_Handheld_Classroom.pdf

[5] Berger, C., Wireless: Changing Teaching and Learning "Everywhere, Everytime", EDUCASE review, January/February, 2001, pp.58-59.

[6] Singh, H., "Leveraging Mobile and Wireless Internet", 2003. Retrieved 14, January 2005 from: http://www.learningcircuits.com/2003/sep2003/singh.htm

[7] Milrad, M., *"Mobile learning: challenges, perspectives, and reality"*. In K Nyiri (ed) Mobile learning essays on philosophy, psychology and education. Vienna: Passagan Verlag, 2003, pp.151-164. ISBN 3 85165603 2.

[8] Jo, J., Moon, K., Jones, V., and *Cranitch, G.,"Innovations in e-Learning with Wireless Technology and Personal Digital Assistant"*, 2002, Gold Coast Campus: Griffith University, Australia.

[9] Livingston, A., "Smartphones and other mobile devices: the Swiss army knives of the 21st century". *Educause Quarterly*, number 2, 2004, pp. 48–52. Reproduced in Educause Quarterly. Retrieved October 21, 2004 from: http://www.educause.edu/LibraryDetailPage/666&ID=EQM0425

[10] Farmer, M. and Taylop, B., *"A Creative Learning Environment (CLE) for anywhere anytime learning"*, *Proceedings of MLearn 2002*, European workshop on mobile and contextual learning. Educational research papers of the University of Birmingham, no. 14. In: TAYLOR, J., 2003. A task-centred approach to evaluating a mobile learning environment for pedagogical soundness**.** MobiLearn Consortium, 2002. Retrieved October 25, 2004 from: http://www.mobilearn.org/download/results/Mlearn_paper.pdf

[11] Sotillo, S., *"Pedagogical Advantages of Ubiquitous Computing in a Wireless Environment"*, The Technology Source. May/June, 2003. Retrieved October 25, 2004 from: http://ts.mivu.org/default.asp?show=article&id=950

[12] Attewell, J., Savill-Smith, C., "Mobile Learning and Social Inclusion: Focusing on Learners and Learning", 2003. Retrieved 14, January 2005 from: http://www.lsda.org.uk/files/pdf/1440.pdf

[13] Stone, A., *"Designing scalable, effective mobile learning for multiple technologies"*, Learning with mobile devices, edited by Attwell, J and Savill-Smith, C, 2004, Learning and Skills Development Agency, London.

[14] Walker, C., "WFU first with campus pilot of pocket PC phones". *Wake Forest University News*, 2005. Retrieved June 27, 2006 from: http://www.wfu.edu/wfunews/2005/082405m.html

[15] Logiccode GSM SMS Active X DLL (V2.2) ,2007. Retrieved May 04, 2007 from: http://www.logicode.soft.com

[16] Alexander, B. Going nomadic: Mobile learning in higher education, September/October, 2004, EDUCAUSE Review, (39), 28-35.

[17] Trifanova A., Ronchetti M. A general architecture for m-Learning, 2003. Retrieved 14, January 2005 from: http://www.dit.unitn.it

[18] Meisenberger M., Nischelwitzer A. The mobile learning engine (MLE) – a mobile computer-aided, multimedia-based learning application, 2004. Retrieved 14, January 2005 from: http://www.mapec.at/docs/MApEC_Proceedings.pdf

[19] Brown, T. The role of m-learning in the future of e-learning in Africa. Presented at f the 21st ICDE World Conference. 2003. Retrieved 14, January 2005 from: http://www.tml.hut.fi/Opinnot/T-110.556/2004/Materiaali/brown03.pdf

[20] Leung, C., Chan, Y. *Mobile learning: A new paradigm in electronic learning*. Proceedings of the 3rd IEEE International Conference on Advanced Learning Technologies (ICALT'03), 2003.

[21] Strauss, H. Wireless classrooms: Evolution or extinction?. 2004. Retrieved 14, January 2005 from: http://syllabus.com/print.asp?ID=8287

[22] Robson, R. Mobile learning and handheld devices in the classroom, 2004. Retrieved 14, January 2005 from: http://www.eduworks.com/Eduworks_new/Documents/Publications/Mobile_Learning_Handheld_Classroom.pdf

[23] Trifanova A., Ronchetti M. A general architecture for m-Learning, 2003. Retrieved 14, January 2005 from: http://www.dit.unitn.it