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Chapter 6

Innovative ICTs in the ASEAN Region:
taking advantage of technological ubiquity

Felix Librero

Introduction

The major topics for discussion in this Symposium are broad and cover a wide range of concerns requiring separate full dissertations. I shall address some of the innovative uses of information and communication technology (ICT) in the region. Much of the information I will share with you deals with educational concerns due in large measure to our experiences at the University of the Philippines Open University (UPOU) in the use of short message service (SMS) technology, a very popular component of mobile telephony.

SMS technology, whether through cell-phones or personal digital assistants (PDAs), is a worldwide phenomenon. It has caught on so rapidly among educators the world over that within a period of about five years from the time the concept became an educational talking point, mobile learning using telephony has shifted from a merely theoretical discussion to actual project implementation. In Europe, tests have been conducted at the Institute of Education, Learning and Skills Development Agency, and the National Research and Development Centre for Adult Literacy in the UK. On the basis of these experiences, the following lessons have been learnt (Stead, 2005):

- a) Mobile learning works, and reaches places other learning cannot. It empowers and engages the learner; the learner is more comfortable engaging in private and personal subject areas using a mobile device compared to traditional methods.

- b) It is best used as part of a blended learning strategy. Use of mobile devices in combination with group activities, paper-based materials, other ICTs, and the things teachers and tutors usually do has been found most effective.

- c) It is a collection of pieces to be fitted to a learning need, not a single solution. Mobile learning is a collection of technologies and devices in a teacher’s tool box. These tools include text messaging, audio-based technologies such as iPod, MP3 players; learning modules on PDAs, materials from camera ‘phones, and online materials such as blogs.

- d) Mobile ICTs are not just for one-way teaching, but for creating, collaborating, and communicating. This mix has been found to be useful and effective with most learners, particularly those who have dropped out of school.

- e) Mobile learning can be bridged into ICT. Many individuals, particularly those who have dropped out from school or are socially disadvantaged and have not learned basic skills in the use of ICTs, do not have the confidence to use them. Exposed to mobile learning tools, however, they seek additional information and skills to use other ICT-related tasks such as word-processing and using the Internet. Mobile learning can lead to more sophisticated uses of technology.

- f) Practice makes perfect, just do it. m-learning can be fitted into one’s teaching strategy through actual use, because the need for technical understanding is minimal and the ability to use the technology is learned “on the job.” This does not imply that one needs to undertake formal training in m-learning methodology before one attempts it. It means that the teacher and learner can get into it together and will actually learn together.

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Professor Felix Librero is Chancellor of the University of the Philippines Open University, Los Banos. The research discussed in his chapter is supported by the PANAsia Networking programme of Canada’s International Development Research Centre (IDRC): www.idrc.ca.
The European experience of m-learning points out that it is powerful for disadvantaged sectors of society. Similar experiences have been recorded in North America and in Asia. By and large, the discourse on SMS technology in education has been focused on its potentials. In Southeast Asia, however, particularly in Thailand and the Philippines, specific projects have been undertaken and major educational experiences have been recorded. In Thailand, m-learning has proved useful as a means to conduct tests of student performance on specific subject matter (Whattananarong, 2006). In a Thai experiment, for example, it was found that students who took the test by mobile methods performed comparably with students who did so by conventional methods.

The proportional use of mobile telephony for education is not well recorded in the literature. There is a voluminous amount of informal knowledge about the practical uses of mobile telephony in universities. In most Asian universities, both open and traditional, cell-phones are increasingly used to inform students on a variety of education-related topics. The activities for which cell-phones are extensively used can be classified into three groups (Suplido, Bonito, Escubio, and Mariano, 2003).

1) In academic matters, cell-phones using SMS techniques are used to announce lecture alerts (changes of schedule), schedules of focus group discussions, examination reminders, deadlines for projects and papers, new courses, grades, schedules for consultation, availability of library resources, and so on. These activities usually involve extensive interaction between the teachers and students, as in consultations about course requirements.

2) In extracurricular matters, student groups and organisations use the cell-phone to promote activities such as job fairs, social affairs, and discount opportunities, and in text-voting during student council elections.

3) In administrative matters, the following details have always been available over the ‘phone: university admissions, fees, university-wide activities, availability of scholarship grants, marketing campaigns, study surveys and policies, alerts to parents/guardians on students’ performance, emergency information such as bad weather alerts and suspension of classes.

In general, mobile telephony, particularly SMS technology, is a powerful information dissemination tool due to the following features (W2Wave.com):

- It saves time. You can contact hundreds of individuals instantly.
- It reduces costs. You can contact individuals for a fraction of the cost of voice calls.
- You can communicate with anybody, anywhere.
- It provides for two-way communication.
- It is highly interactive.
- It provides a direct response mechanism.
- Cell-phones are effective promotional tools.
- Individuals can read messages in their own time.

To pursue the social development potential of mobile learning using SMS technology, the IDRC’s PANdora initiative has undertaken a comprehensive study in the Philippines and Mongolia. This project, (Viability of Mobile SMS Technologies for Non-Formal Distance Learning in Asia: see Chapter 7), seeks to determine the utility of SMS technology as a basic tool in non-formal education. It is based on the m-learning experiences of the University of the Philippines Open University (UPOU). The project seeks to determine specific answers to the following questions (Ramos, 2006):

1) How feasible is it to use SMS for nonformal distance education (DE)?

2) What are the factors that motivate or hinder people in using SMS for DE?

3) What are the best marketing, design and instructional design strategies for promoting, attracting, and sustaining SMS-enabled DE programs?

The Ubiquity of SMS Technology

The cell-phone is one of the most successful technologies of the past two decades, and continues to grow at an unprecedented rate worldwide. The global growth of mobile telephony is indicated in Table 1.
Table 1. Projected global mobile penetration levels.

<table>
<thead>
<tr>
<th>Continent</th>
<th>2005</th>
<th>2006</th>
<th>2007 (%)</th>
<th>2008</th>
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<tr>
<td>Western Europe</td>
<td>101.4</td>
<td>106.3</td>
<td>108.9</td>
<td>110.3</td>
</tr>
<tr>
<td>North America</td>
<td>67.6</td>
<td>74.0</td>
<td>79.4</td>
<td>83.7</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>63.6</td>
<td>74.3</td>
<td>79.3</td>
<td>82.8</td>
</tr>
<tr>
<td>Latin America</td>
<td>43.3</td>
<td>50.7</td>
<td>53.3</td>
<td>55.0</td>
</tr>
<tr>
<td>Middle East</td>
<td>38.0</td>
<td>45.4</td>
<td>50.9</td>
<td>54.5</td>
</tr>
<tr>
<td>Asia/Pacific &amp; Japan</td>
<td>22.5</td>
<td>26.2</td>
<td>30.0</td>
<td>33.9</td>
</tr>
<tr>
<td>Africa</td>
<td>21.0</td>
<td>27.3</td>
<td>32.2</td>
<td>36.0</td>
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Source: Taaffe (2006)

In the Philippines, a relatively high percentage of the population has cell-phone access because it is low cost, has easy connectivity, is used on a very personal level, and is capable of getting the user’s attention at any time. The Philippines is widely touted as the texting capital of the world due to the fact that the daily volume of text transmissions is extremely large. Currently, the largest proportion of users of cell-phones for text messaging is comprised of low-income groups such as students, daily wage earners, market vendors, drivers of passenger vehicles, barbers, beauty parlour workers, ambulant vendors, domestic helpers, and, of course, criminal elements. Frequently, these people own more expensive models than those used by professionals such as university professors!

The ubiquity of the cell-phone in the Philippines cannot be overstated. It really is all over the place, from the President of the country to the lowest-paid office clerk in a small government office. It is the major means of social communication in the country today. When you send short messages, you do so asynchronously, so that before you actually send the message you can reflect on it first. When you reply to an SMS message, you can do it at any time, at your convenience, and you can reply privately, even send your message anonymously. All considered, SMS technology caters to the Filipinos’ cultural tendency to be non-confrontational in their communication actions. In view of these clearly positive features, it was considered that the technology might be useful in information dissemination and mass education. This is the rationale behind UPOU’s m-Learning project.

The 700UPOU Experience

In February 2003, we at the UP Open University, launched a mobile Learning (m-learning) project in collaboration with SMART Communications, Inc., a major cell-phone service provider in the country. The project is called TXT 700UPOU, and essentially uses SMS technology to provide educational materials to people “on the go” (Suplido, Bonito, Escubio & Mariano, 2003).

The UPOU m-learning project has the following guiding principles:

a) Authentic communication is achievable. SMS technology is able to provide service with no technology access barriers, no training necessary, faster response time, with automated responses from tutors if necessary. In addition, learners can find it easier to ask or respond to questions through texting.

b) Learner autonomy is possible. The hardware needed is personally owned and does not have to be shared. Learning can take place outside of work hours and can take place during “unproductive” work times. The learner is not tied down by the need to access other technologies, and the technology can be adapted to people with special needs. Furthermore, the use of this novel technology for learning provides a motivational stimulus for learners.

c) There is opportunity for student reflection With SMS technology, the learner is able to take time to respond to the questions and issues raised. A feature of SMS technology that seems to be a limiting factor is the number of text characters that can be transmitted at a time. This can force the learner to prioritise his messages, however, possibly promoting higher-order thinking.

The m-learning model. Six principles govern the development of modules in the UPOU m-learning program.

1) Topics are identified with popular appeal. Given the typical uses to which cell-phones are put in the Philippines, it was decided that topics of general interest would be selected for the project.
2) The specific topics for which m-learning modules have been developed include mental math, spelling (English), use of English idioms, healthy lifestyle, nutrition, physical exercise, smoking cessation, and stress. All of the modules were designed to include: learning objectives, units of instruction leading to the achievement of objectives, and assessment measuring achievement of the objective.

3) Pre-test materials are developed for learners to try out to assess their knowledge. Text messages transmitted to users (texters) encourage them to test their knowledge on particular topics, and to obtain and study UPOU modules in order to learn what they don’t know.

4) Learners are informed of the importance of further study on particular topics. They are encouraged to learn more about the topic because it is information that they will find useful in the future.

5) Handy, small-size manuals are printed that the learner can use to study at his/her own pace. These refer to the modules that discuss the subject matter in more detail.

6) Post-tests are developed.

Instructional design considerations. In developing the mobile modules, UPOU instructional designers were guided by the need for:

a) Accessibility. Course materials were designed for use by a diverse audience, so that there would be no restriction on who might be allowed to take the courses, considering on the broad demographics of cell-phone users, and the technology’s accessibility to groups previously excluded from the courses.

b) Interactivity. There should be points of automated interaction between the user and teacher for drill and practice, and personal interaction for feedback and consultancies.

c) Usefulness. The materials’ content must be useful to the user; but mere assumption of its usefulness is not sufficient to ensure that the user will seek the information. The presentation of the information must be appealing, in order to get the user’s attention and interest. Ultimately, the user will use the information when s/he has learned it.

d) Unobtrusiveness. Teaching/learning episodes must be delivered in short capsules, so that the learner considers them to be part and parcel of the things they normally do.

e) Immediacy. Instant feedback should be possible, whether automated or personal.

f) Adaptability. A learner proceeds at his/her own pace and can skip or repeat some parts of a module depending on specific needs.

g) Ease of use. Menus and commands employed should not be complicated, but easy to follow.

h) Privacy. The learner maintains privacy throughout the program, to avoid the stigma of non-performance and to minimise fear of making mistakes in public.

i) Suitability. SMS technology can deliver materials through various options. The advances in mobile communications should be exploited to provide materials developed in various formats.

Instructional design limitations in using SMS technology

There are numerous positive aspects of SMS technology that favor good instructional design. There are equally numerous negative aspects, however. For example, the basic Generation-1 cell-phone has a small screen, small keypad, some phones have monochromatic screens, and text messages are usually limited to 160 characters. In addition, there is no point-and-click navigation option, the acceptability of text spelling and grammar in an academic setting is questionable, there are limited many-to-many points of interaction (cell-phones are more suitable for independent learning), learners cannot use the cell-phone to track down their
own progress, multimedia (MMS) cell-phone users in the Philippines are still relatively few in number, and face-to-face interaction is an option available only to those with 3G cell-phones.

**How does cell-phone learning work?** Here is a typical situation. A student may be sitting on the bus from residence to work or business or school. He is waiting to get to the bus stop where he must get off. There is enough time to take out the cell-phone and to key in “7008768” (or “700UPOU”). This yields an auto-response asking what information is requested from UPOU. The user ticks m-learning. In return, he is given a selection of topics, ticks the topic of choice, and sends the request. The next message received is a set of matching-type questions requiring responses. After this brief diagnostic test, the evaluation result appears. If the user has passed the diagnostic test, congratulations are given. Otherwise, encouragement to read up on the topic is given. The title of a pocket-sized print material on the topic is provided, and information about how to obtain this from UPOU. The module may cost 50 pesos, or one US dollar. After reviewing the print material, the learner may decide to take the diagnostic test again, and would probably pass it. Next, a certification from the UPOU can be requested, indicating a pass on the diagnostic test for that particular topic. The learner can do this for a wide range of topics that have been developed to this point.

From the beginning, UPOU’s partner in this innovative use of cell-phones for educational purposes has been SMART Communications, Inc., a subsidiary of the Philippine Long Distance Telephone Company. SMART’s main role has been to provide the delivery system and marketing, through text broadcasts to its subscribers. UPOU’s role has been to develop the materials and to program them for delivery through SMS technology. In the first 12 months of the project, 700UPOU received 9,000 inquiries, rather less than expected. This may be due largely to flawed marketing of the project. There are many things that need to be fixed in the project, both in the University and the telephone company, and we are looking into the possibility of reviving and improving it.

**Issues that need to be addressed.** The UPOU experience has highlighted the following concerns:

- **a)** Course developers, instructional designers, tutors, and learners have to design their questions and responses to the 160-character cell-phone limit.
- **b)** The telco selected as partner in this kind of project must be reliable: i.e. must be able to provide the service 24/7.
- **c)** There is a need for in-house technical support capability, especially if programming support is not provided by the telco. In the UPOU experience, the telco has merely provided infrastructure and some marketing support.
- **d)** There is a need to harness the strengths of MMS which, if designed correctly, could address the learners’ multiple intelligences. For example, picture messages could be used to illustrate mathematical concepts for visual learners.
- **e)** There is a serious need to promote m-learning projects using SMS, given the users’ conventional perception that the SMS technology is something they can only use for entertainment and personal communication.

**Some Lessons Learned**

1) The individual uses the cell-phone generally for purposes other than getting educated, which seems to be an unplanned and unintended outcome.

2) Getting the cell-phone user interested in educational content largely depends on the creativity of the instructional designers. A user must not sense an attempt to “lecture”, but must be glued to the content. This may be achieved by employing content treatment techniques and instructional design techniques that are appealing.

3) The user is especially likely to terminate an unenjoyable SMS activity in view of the fact that it costs money. An appropriate question is, why are texters actually willing to spend money for messages that they forward to friends, and yet unwilling to spend to access knowledge that they need to study?
4) Cell-phone users must feel the urgent need to access, on their own volition, information by responding to the messages they receive. If not, they will not easily respond to broadcast messages, because this also means that they have to pay for the responses they make. In this situation, broadcasting a text message is probably more useful for two reasons: 1) the user is not spending to access the information; and 2) the user is receiving the information automatically whether s/he likes it or not. The hope, of course, is that the user will become more interested in the topic, and will seek more information voluntarily, by sending the appropriate response message.

5) SMS technology is an effective tool for public information campaigns, specifically through text broadcasts where the information is initially received passively rather than sought actively. Succeeding communication experiences will be dictated by the influence of the initial information on the receiver. The subscriber who receives the initial information may decide to seek more or simply ignore it.

The UPOU experience has confirmed out that SMS technology can be a powerful tool in information dissemination, and not merely in formal education. There is wisdom in testing this concept on a regional level, where the impact of SMS can be magnified. The next section of the paper, therefore, illustrates this by proposing a regional SMS-based information campaign on a current priority issue for the ASEAN nations, avian ‘flu.

Information Campaign on Avian ‘Flu Through SMS Technology

It is hereby proposed that a regional information campaign on avian ‘flu be undertaken with the following features and components:

- **Campaign goal.** The overall campaign goal should be to inform and educate the ASEAN public about the causes, control measures, and cure for the avian ‘flu.

- **Coordinating agency.** The ASEAN Foundation could serve as the regional coordinator for such a project, responsible for designing the regional information campaign and for generating the funding resources required.

- **Country participation.** All ASEAN countries should ultimately be involved in the campaign. There should be a focal agency to coordinate all activities relating to the campaign in each of the countries. As well as the focal agency, telcos should be involved to provide the channels through which information is disseminated.

- **Development of information materials.** Under the auspices of the ASEAN Foundation, information materials should be designed, developed, and produced for distribution to the focal points and participating telcos.

- **Basic strategy.** Short messages on avian ‘flu should be composed, programmed, and broadcast regularly to cell-phone users in all countries of the region.

- **Role of the telcos.** The telcos should agree on specific software to be used in the dissemination of information. This should have the capability of broadcasting text messages to the telco subscribers.

**General procedure.** Implementation of the regional information campaign should follow the following general procedure:

1) In general, the regional information campaign would be organised and implemented under the auspices of the ASEAN Foundation. The Foundation would liaise with governments in identifying national agencies to serve as focal points of the campaign. It is suggested that the focal points should be information agencies in the member countries.

2) The ASEAN Foundation should appoint a regional campaign planning and management team responsible for the implementation of the campaign.
3) The regional information campaign should be undertaken using SMS technology.

4) Information materials should be developed and distributed to focal points and telcos participating in the campaign. These materials should be in the form of text messages broadcast to all subscribers of the participating telcos. Content of these text broadcasts should include general information about avian flu, outbreaks in specific regions, procedures being followed to prevent the spread of avian flu, and other important pieces of information that the public ought to have.

5) The information campaign’s planning and management team should implement an evaluation of the project, and recommend future action to be taken. A suggested evaluation model shall is process documentation.

The unfulfilled promise of cell-phone technology in social development is enormous. It is proposed that the ASEAN Foundation should take advantage of this technological revolution by organising a team to prepare a detailed project document for an ASEAN regional information campaign about avian flu.

References


