

An evaluation of a specialized portable system for tertiary distance teaching of ESOL

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Abstract: This paper reports on the piloting in Thailand of a prototype English for Speakers of Other Languages (ESOL) learning appliance. Two evaluations were held with volunteers from a Thai open university. The participants worked through a set of scenarios designed to evaluate their ability to use all the principal features of the appliance while remaining focused on the learning content. The results confirmed the feasibility and utility of the concept of a learning appliance for ESOL, while highlighting the importance of a close match between the learning content and the forms in which the content is presented. Lessons were also learnt about the special challenges involved when evaluating software across multiple cultures and countries.

Keywords: e-learning, ESOL, invisibility, usability evaluation, information appliance

Introduction

In order to support learning, educational software should be designed by considering the way students learn. The software should provide good usability so that student's interactions with the software are as natural as possible, without the student having to think about the technology. When the technology fits the need so perfectly that the user forgets that a complex technical device underpins it, then the technology is regarded as invisible [4]. It is this approach that the design of a distance learning appliance for teaching second languages, IMMEDIATE (Integrating MultiMedia in a DIstAnce learning and Teaching environment) was based on [2, 3].

White has written extensively about the distance teaching of second languages [9]. She observed that "finding the right fit between technology choice, institutional objectives, pedagogical aims and learner needs in particular socio-cultural contexts is complex and frequently problematic". What has to be supported is the interaction between the students and learning context to enable them to become autonomous learners. Whilst the emphasis has moved to a communicative/immersion approach to the teaching of second languages, there are still self-directed learners who prefer to engage in a community once they have sufficient confidence in their language skills [1]. Appropriate teaching material and its organization are important issues in both students and learning contexts. Levy [6] believes that a modular approach to the teaching of language should be employed in computer-based systems centered around Grammar, Vocabulary, Reading, Writing, Listening and Speaking. IMMEDIATE provides all the technology required to support this modular approach. It has also been specifically developed to allow student autonomy within either a self-directed or social constructivist framework. The challenge now is to explore how these teaching techniques can benefit students of a different learning culture while maintaining good usability and invisibility of its application.

In this paper, we describe the piloting of IMMEDIATE prototype at an open university in Thailand. The learning appliance, developed in collaboration with language teaching and distance teaching experts in Thailand and New Zealand, was designed to enhance the open

university's established distance ESOL program, by linking with native English tutors based in New Zealand. In this study, our goal was to test the usability and the invisibility of the prototype interface with real users of the learning appliance, in preparation for a full-scale evaluation with distance ESOL students in Thailand. Before elaborating on the evaluations, the learning appliance (IMMEDIATE) is described in the following section.

1. Background

IMMEDIATE is a customizable e-learning system designed to support distance learning for off-campus students. With IMMEDIATE, students can work from anywhere as the course material is mounted on a portable flash drive, which can be plugged into and run from any available computer. Unlike a web-based Learning Management System (LMS), access is not dependent on a reliable Internet connection as the course content is stored at the student end. The content is updated periodically in the background while the student works via the Internet or portable storage media.

The focus in the development of IMMEDIATE was on designing for *form*, which is to consider the students' roles as a computer user [2]. Our goal in the development of this tool is to minimize the visibility of the computer for the user, in order to maximize the visibility of the teaching content for the learner.

IMMEDIATE has been customized for teaching intermediate-level English for speakers of other languages (ESOL). Several learning modes were incorporated in the material supported including reading practice, writing exercises, listening practice, vocabulary, and live audio and text conversations between students and with the tutor.

2. Evaluation Plan

The goal of the pilot tests was to test and refine the teaching module, to tune the software to the ESOL requirements, identify and fix any remaining usability issues, and to refine our plan for a subsequent full-scale evaluation with distance students in Thailand and determine the feasibility of continuing to the next stage.

Our evaluation plan has the following features. A set of scenarios are developed and translated into Thai. The participants are required to follow the tasks defined in the scenarios when evaluating the system. In order to capture immediate responses on the participants' learning experiences, a total of 15 statements to which the user rates agreement on a 5-point scale of "Strongly Agree" to "Strongly Disagree" are built into the scenarios. The participants rate the statement immediately on the sheet of paper as they proceed with their tasks. These statements focus on four study modes (*listening, assignment, reflection, and interaction*) and four features (*ask the tutor, self practice, messaging, and self assess*) of IMMEDIATE. Upon completion of the tasks, the participants complete a questionnaire in Thai on their experience using IMMEDIATE. The questionnaire is based upon an extension of the SUMI [5] questionnaire. It consists of 30 statements to which the user also rates agreement on a 5-point scale of "Strongly Agree" to "Strongly Disagree". The statements are worded both positively and negatively and are evaluated based on ten factors which include Helpfulness, Efficiency, Effectiveness, Affective, Online Medium, Privacy, Timeliness, Focus, Error Prevention, and Learnability. These factors have been identified from our previous study [2] as key factors for measuring the invisibility of a technology.

To analyze the statements from the scenarios and questionnaires, the median value for each response is calculated. The median values are represented as 1 = Strongly Agree, 2 = Agree, 3 = Undecided, 4 = Disagree, and 5 = Strongly Disagree. We also look at the top-2 and

bottom-2 responses to support the median values. The top-2-response score refers to someone choosing a 1 or 2: those who agree with the statement (somewhat or strongly agree), and the bottom-2 refers to someone choosing a 4 or 5: those who disagree with the statement (somewhat or strongly disagree). The top-2 and bottom-2 data are reported as a percentage of the participants. A bilingual focus group discussion is then conducted, using simultaneous translation, to solicit feedback and comments that may not be covered in the questionnaires. This discussion provides a semi-structured environment for evaluation feedback, which is transcribed and translated.

Table 1: Scenario questionnaire results from Second Evaluation

No	Mode/Feature	Statement	Median	Top-2	Bottom-2	Respondent
1	Listening Mode	1. This mode is stimulating and motivating	2	100%	0%	11
		2. This mode supports the learning process	1	100%	0%	10
2	Assignment Mode	3. This mode is stimulating and motivating	1	100%	0%	9
		4. This mode supports the learning process	1.5	100%	0%	8
3	Reflection Mode	5. I like the use of this mode to monitor my progress in this subject	2	70%	10%	10
		6. This mode supports the learning process	2	67%	11%	9
4	Interaction Mode	7. Using this mode is frustrating	3	44%	33%	9
		8. This mode supports the learning process	1	100%	0%	9
5	Ask the Tutor	9. This feature assists in the learning process	2	80%	10%	10
6	Self Practice	10. The exercises are stimulating and motivating	1	89%	0%	9
		11. The exercises can be completed easily	2	78%	11%	9
7	Messaging	12. Sending the message is easy	1.5	63%	25%	8
		13. This feature supports the learning process	2	78%	11%	9
8	Self Assess	14. This feature is stimulating and motivating	1	88%	0%	8
		15. This feature supports the learning process	1.5	100%	0%	8

3. Results

The pilot evaluation was conducted in two stages with volunteers from the Thai university. The first pilot involved 5 participants with limited computing and English language experience, while the second evaluation had 11 participants who were current or former ESOL students and used computers on a daily basis.

In the first pilot, the focus group discussion highlighted that these users had difficulty conceptualizing the tasks outlined in the scenarios, and lacked the minimal English language skills to fully interact with the system, including understanding the help features

which were written in English. They felt that the multiple modes made e-learning more attractive than learning through textbooks, although they found the *interaction mode* frustrating to use.

While the number of participants was small, the results from the analysis of the statements in the scenarios and questionnaire have helped us prepare for the second pilot study. As a result, further improvements were made to the software (mainly the *interaction mode*) and the instructions in the scenarios. A user manual summarizing the features of IMMEDIATE was also prepared and translated into Thai to assist the participants in the second pilot.

The first pilot conducted earlier was regarded as a baseline study to help us in our preparation for the second pilot. In the second pilot we had a larger number of participants with more experience in learning English as a second language. The majority of the questions in the scenarios received positive scores for median and top-2 (Table 1). However, similar to the first pilot, the interaction mode was still perceived as frustrating to use (median=3, top-2=44%).

The responses from the questionnaire revealed that the majority of the participants were satisfied with the system's *Efficiency* (58.2%), *Affectiveness* (56.4%), *Timeliness*, *Focus* (51.5%), *Privacy* (59.1%) and *Online Medium* (54.5%). However, the system's *Error Prevention* mechanism needs to be further improved as the results were similar to those from the first evaluation (median=5, top-2=0%).

From the focus group discussion, several encouraging suggestions and comments were collected. In particular, the learning support was regarded as very useful and should be incorporated in other e-learning system such as Mathematics. Some also felt that more feedback was required to users indicating that their assignments and messages have been sent or received. They should also know when an invitation to talk was denied. And some felt that the layout design for some appliance features should be more like other software products with similar functionality in order to reduce confusion among the users

4. Discussion and Conclusion

This paper presented the results of initial pilot evaluations of a prototype ESOL learning appliance in Thailand. In the first pilot, the participants had difficulty following the instructions in the scenarios. Their lack of understanding the English language and computer experience could have led to the unfavorable responses to the factors that were being evaluated such as *Learnability* and *Effective*. This feedback confirmed the need for learners to master the English language well enough to undergo electronic training where no human instructor is available [7]. We also discovered from the focus group discussion that the participants were not aware of the type of evaluation they would be involved in. This highlighted the importance of recruiting participants with an interest in the learning activity supported by the appliance rather than recruiting participants at random.

On the other hand, the participants in the second evaluation experienced some initial confusion as to how to operate IMMEDIATE because of an expectation that the interface would be similar to the Windows and Microsoft software that they used on daily basis. Nevertheless, the majority of the factors were rated positively as these participants' experience of English language learning was quite high. In the second evaluation only 24% of the participants claimed they were distracted by the technology when trying to focus on their work compared to 40% of the participants in the first evaluation. The technology certainly appeared to be less visible. This result could be due to the improvements made to the learning appliance following the feedback received in the first evaluation.

Both evaluations received unfavorable feedback for *Error Protection*. These were expected as the problems encountered were mostly from features which were not part of our earlier

heuristic evaluation. These features underwent several changes which were not fully tested before the first and second evaluations. Both evaluations also highlighted the need to have translations in Thai included in the learning material (i.e. the recording in the listening mode). Some instructions in the learning material were also perceived as not clearly stating how the exercises should be completed. These highlighted the cross-cultural usability issues and the need to design e-learning content incorporating native language instructions in order to serve the large non-English speaking learners. Several collaborative works on e-learning with people in Asian countries [7, 8] have revealed the need to have learning content developed in both English and the native language. They highlighted that language difficulty should be taken into consideration when e-learning is carried out across borders and the lectures are given in English.

The findings from these evaluations have revealed to us that in addition to usability, designing for invisibility requires a close match between the learning content and the forms in which the content is presented. We have discovered that invisibility will be negatively affected when the learning content does not match the student's expectation. The next step in our study is to work on the usability and content problems brought out during the pilot. Heuristic evaluation will have to be conducted on the added features of the learning appliance and materials in both English and Thai will need to be developed to improve the learning ability of the students.

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References

- [1] Garret, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal*, 93(s1):719-740.
- [2] Johnson, R., Kemp, E., R., & Blakey, P. (2007). The learning computer: low bandwidth tool that bridges digital divide. *International Forum of Educational Technology & Society*, 10 (4), 143-155.
- [3] Kemp, E., Thompson, A., Johnson, R. (2008). Interface Evaluation for Invisibility and Ubiquity – An example from E-learning. CHINZ 2008, July 2, 2008, Wellington, New Zealand.
- [4] Norman, A. D. (1998). *The Invisible Computer*, MIT Press, Cambridge, Massachusetts.
- [5] SUMI questionnaire. Retrieved from <http://www.ucc.ie/hfrg/questionnaires/sumi/index.html>.
- [6] Levy, M. (2009). Technologies in use for second language learning. *The Modern Language Journal*, 93:769–782.
- [7] Toh, C. E-learning Implementation Preparation in Asia Region. Retrieved from <http://hrdgateway.org/hub5/research>.
- [8] Urano, Y. and Wu, J. (2004). Lessons Learned through Joint Research Projects on e-Learning in Asian Areas. *National Institute of Multimedia Education*, 64-71.
- [9] White, C. (2006). Distance learning of foreign languages. *Language Teaching*, 39 (4), 247-264.