Mohd Ayub A. F. et al. (Eds.) (2011). Workshop Proceedings of the 19th International Conference on Computers in Education. ChiangMai, Thailand: Asia-Pacific Society for Computers in Education.

Technology Implementation: A Conceptual Framework derived from the Use of Audio Podcasting and EFL Student Perceptions

Aubrey Neil LEVERIDGE*, Mei-Jen Audrey SHIH & Jie-Chi YANG
Graduate Institute of Network Learning Technology, National Central University, Taiwan
*neill@lst.ncu.edu.tw

Abstract: The implementation of technology is a daunting task. Much research has focused on either the implementation of the technology itself, or taken a standpoint from the instructors' perspective. With this in mind, research as of late, has seldom adapted a learner perspective or focused on issues related more closely to the learners' requirements. In this vein, the current study qualitatively gathered student perceptions and central concerns regarding technology implementation in an EFL listening comprehension class. From the findings, a conceptual framework was created which will enable EFL instructors and course designers to make informed choices on how best to implement technology, benefiting all students regardless of their academic proficiency.

Keywords: EFL, podcast, TAM, learner perceptions

Introduction

Technology implementation for instructional purposes has always created interest amongst administrators and instructors since researches have suggested various potential benefits of incorporating computer technology into language learning. However, while research foci have been on the overall benefits of implementation, the individual needs of learners has all but been overlooked. Apparently, the disregard of students' needs while using implemented technology, are the reasons that cause the gap between instructors' expectations and students' actual learning outcomes. Nicholson, Irvine, & Tooley have pointed out that the mere provision of technology does not ensure that learning will occur [1]. Moreover, without the consideration of student involvement and participation, even the best developed system cannot be successful [2]. Since the learners are an integral part of implemented educational technology, Dillen & Gabbard have called for more research on technology-rich learning environments with a particular emphasis on the learner as receiver [3]. In this vein, the current study aimed to employ a mixed methods study to further investigate and assess Taiwanese students' perceptions and central concerns of technology implementation (in this case, audio-podcasting) in their school contexts of English language learning classes.

1. Background of the study

Listening comprehension is an important skill for learning a foreign language; according to current research, the use of authentic material to aid second language listening is the most appropriate means for learning. However, many English as a Foreign Language (EFL) learning environments, Taiwan in particular, lack authentic listening materials. Consequently, gathering such resources is difficult [4] and, as a result, Taiwanese students may not have equal chances to practice listening as compared to other English skills, i.e. reading [5]. With recent advances of internet technology, such as high speed internet and digital storage, there has become an abundance of learning resources online, particularly audio material in the forms of MP3s and podcasts. With these resources readily available, instructors and course designers have easy access to authentic materials for listening instruction and may thus provide students with a variety of learning opportunities.

Khadimally stated that, "…technological implementations in the classroom can be a powerful means to help students acquire a new language…" [6]. However, "… learners with different levels of prior knowledge require different kinds of instructional approaches" [7]. Moreover, the learning content must be delivered in not only an appropriate manner but in an appealing one. As Nayak & Rai pointed out, lessons are generally created for a target audience: those students who are classified as academically average [8]. Moreover, lessons are also delivered in a manner which best suits the target audience, further compounding the problem for non-average learners. Consequently, those whom are classified as either higher or lower academically, fail to receive adequate attention [8] and are faced with unappealing delivery methods.

Furthermore, research into learning preferences show that while learners with a greater degree of prior knowledge show more control over the media, those with a lesser degree of prior knowledge require additional support. With this in mind, audio podcasting has become a popular medium for instructional delivery as it holds mass appeal to a more general audience. Nevertheless, for it to be an effective instructional delivery medium, it must be appealing to students, regardless of their academic abilities. Still, as much of the research on technology implementation has focused on the potential for enhancing students' learning achievement [9] [10] as well as the strategies of implementation technology in a particular subject areas. There has been a limited body of literature centering specifically on the students' perspective of technology implementation. To this end, the aim of this study is to assess students' perceptions of classroom technology implementation, more specifically, audio podcasting. A particular focus will be given to lower academic achievers, as they tend to require additional support. From their perceptions, determinations as to the best possible enhancements to instructional audio podcasting are deduced, in turn creating a more appealing and effective instructional environment applicable to a greater range of students.

2. Methodology

2.1 Sample and Setting

Participants included 121 students, enrolled in the twelfth grade of an English language program at a private senior high school in northern Taiwan in the spring of 2011. Seventy-seven percent (77%) of the participants (N=121) were females and all participants were aged 17 or 18.

2.2 Procedures

The mixed-method study addressed the effectiveness of implemented technology (audio-podcasting) with learner satisfaction in the form of acceptance using a triangulation strategy with multiple resources of data collection. Primary data sources included three questionnaires: the first concerning participants' prior exposure to English as a foreign language instruction; the second regarding their preferred method of communication in English (reading, writing, listening, speaking); and the third, an open-ended questionnaire concerning their learning needs which mirrored the desired enhancements for audio-podcasting. The first questionnaire contained an additional subscale measuring students' acceptance of the implemented technology was modified from the Technology Acceptance Model (TAM) developed by Davis [11] and consists of twelve 7-point Likert scale items where 1 indicated "strongly unlikely" and 7 indicated "extremely likely".

3. Results and Discussion

To permit a more vivid understanding of the different perceptions students held, two distinct clusters were formed according to the TAM results: Cluster A comprised approximately the 10% of respondents with the lowest acceptance ratings; while Cluster B was comprised of approximately 10% of respondents with the highest TAM acceptance ratings. In effect, all participants who returned responses indicating acceptance of the technology implementation but did not indicate any particular central concerns, were removed from statistical analysis as they neither augmented nor diminished the outcome, but obscured it. With this more distinct grouping, four specific themes emerged: 1) the addition of subtitles or captions; 2) the addition of user controlled audio speed; 3) the addition of single word support; 4) and the addition of translation support. Each theme is described in the following section.

Qualitative Findings

The data from the open-ended questionnaire generated four key themes that support and further clarify the quantitative results. The first one deals with *the addition of subtitles or captions* (i.e. the redundant text in the learners' native language: subtitles, or in the target language: captions). Those students who were classified as "lower academic achievers" believe that audio-podcasting provides a valuable means to enhance their listening ability; however, many were not able to grasp particular utterances or words. For instance, Student A said, "Students who do not understand the listening content can get the ideas from the additional information (Chinese or English text)." Likewise, Student B stated that the addition of Chinese text would facilitate understanding of the "…more difficult vocabulary" and in some instances, the "Chinese meaning…" should be given. According to Vandergrift, lower prior knowledge in second language learning rely on "bottom-up" processing to garner

understanding from listening content [12]. Consequently, these students may have difficulty inferring the meaning of particular words from the phrasal context in which it is given. Thus, as Student C commented, the provision of visual content (i.e. text, graphics or pictures) "… may give a deeper impression or understanding…" of the listening content.

The second theme to emerge was the *addition of user controlled audio speed* (i.e. the ability to increase or decrease the rate of speech (wpm)). Interviewees described confusion when the content was presented too quickly for them to process. As Student D stated, "I think the addition of a function which can adjust the speed, either fast or slow, would be good: since I feel that some parts are too fast to understand well". Some students, particularly lower academic achieving students, rely on "bottom-up processing" and thus need time to: 1) process each word individually, 2) combine the individual words in the sentence, and 3) process the sentence as a whole.

The third theme to arise was the *addition of single word support* (i.e. similar to dictionary-like function to check word definitions). Several students mentioned that although full attention was given during the listening process, some contextual keywords were still missed. Student E reflected, "…vocabulary explanation is needed, especially for some [words] with difficult or multiple meanings". Coming across such words created a period of slower processing followed by confusion. This confusion was further compounded when the subsequent sentences were not processed due to the continued processing of previous items.

The fourth theme to become apparent was the *addition of translation support* (i.e. the provision of immediate English-to-Chinese interpretation).Those participants, categorized as lower academic achievers in English listening, needed an alternate aid to check the word and/or phrase meaning during states of confusion caused by the listening content, without interfering with ensuing sentences or interrupting the lesson flow. For instance, Student F commented, "…if there was a Chinese translation, I would better comprehend the context". Also, Student G noted that a supplement of whole text Chinese explanation would be beneficial to quickly clarify the meaning of context. An optional translation will allow for faster processing and permit students to continue without contextual confusion.

Table 1 Conceptual framework

Theme	**Low Academic Achievers**			Technology Implementation (Audio-podcasting)	**High Academic Achievers**		
	Characteristics	Requirements	Enhancement		Characteristics	Requirements	Enhancement
1	Low level of prior knowledge	visual cues: textual or pictorial; to gain contextual knowledge	provision of contextual-graphical cues	learner control of caption/subtitle availability	High level of prior knowledge	n/a	No additional support needed
2	Slower processing	Slower audio at a speed which may be processed	Ability to slow down content to avoid confusion	variable speed control	Faster processing	Faster audio which content is delivered more efficiently	Ability to speed up content to avoid boredom

3	Uses bottom-up processing	available meanings of singular words	optionally target language dictionary support	Link to online dictionary, or pop-up dictionary	Uses top-down processing,	meaning gathered from context,	no additional support needed
4	Low level of prior knowledge	available translation of translation	optionally native language support	Link to online translator, or pop-up translations	High level of prior knowledge	n/a these student can deduce meanings from context	no additional support needed

4. Conclusion

The overall findings from the current study show that students, regardless of academic achievement tend to perceive audio-podcasting as a useful deployment of technology integration. The results of the statistical analysis illustrate that perceived levels of acceptance are positively associated with the type of learning supports required as well as the level of prior knowledge. The indications are thus two-fold: first, this indicates that students with greater prior knowledge need fewer additional supports, however they would benefit from acquiring individual control over the speed of delivery which in turn will expedite learning; second, students with less prior knowledge require additional support which will enable faster processing of meaning and overall comprehension, i.e. visual cues in the forms of either text, graphics or both, as well as individual control over the speed of delivery which will slow the learning as to facilitate the additional time required to process the content. Furthermore, low academic achievers will further benefit from the implementation of an online dictionary in the target language as well as having translation support available. The aim of this study was to assess students' perceptions of classroom technology implementation, specifically audio podcasting. From this assessment themes emerged concerning the students' learning needs and a conceptual framework was created. This framework will assist instructors and course designers to generate a more appealing learning environment, which addresses the learning requirements of a wider spectrum of students, in answer to the students' principal concerns.

References

[1] Nicholson, G. Irvine, H., & Tooley, S. (2010). A test of podcasting effectiveness for lecture revision. In Proceedings of 24th Annual Australian and New Zealand Academy of Management Conference: Managing for Unknowable Futures, December, 2010.

[2] Catchpole, M. J. (1993). Interactive media: the bridge between distance and classroom education. In T. Nunan (Ed.), Distance education futures (pp. 37-56). Adelaide: University of South Australia Press.

[3] Dillon, A., & Gabbard, R. (1998). Hypermedia as an educational technology: A review of the quantitative research literature on learner comprehension, control, and style. *Review of Educational Research, 68*(3).

[4] Tsou, W. & Chen, F. (2004). Strategy Training and Foreign Language Instruction. *Language Association Journal, 55*(3), 8-12.

[5] Li, Y. J. (2008). The Effects of Different Types of Listening Support on the Listening Performance of Elementary School Students-A Study of Chang-Shing Elementary School. Unpublished Master's Thesis. National Pingtung University of Education. Retrieved from http://etd.npue.edu.tw/ETD-db/ETD-search-c/view_etd?URN=etd-0709108-184234 on 09/10/2011.

[6] Khadimally, S., (2011). Integration of technology into adult ESL classes in Turkey: Adult ESL students; and ESL teachers' perceptions about implementation of ICT in one English preparatory school (FDY) in Istanbul. Proceedings from the 11th International educational technology conference, May, 2011.

[7] Shin, E. C., Schallert, D. L., & Savenye, W. C. (1994). Effects of learner control, advisement, and prior knowledge on young students' learning in a hypertext environment. *Educational Technology Research and Development, 42*(1), 33-46.

[8] Nayak, S. K. & Rai, S. S. (2011). An analysis and design of knowledge based system for teaching and learning processes. In Proceedings of the 5th National Conference Computing For Nation Development, March, 2011.

[9] Belmont, I. A. & Verdugo, D. R. (2007). Using digital stories to improve listening comprehension with Spanish young learners of English. *Language Learning & Technology, 11*, 87-101.

[10] Stepp-Greany, J. (2002). Student perceptions on language learning in a technological environment: Implications for the new millennium. *Language Learning & Technology, 6*(1), 165-180.

[11] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

[12] Vandergrift, L. (2004). 1. Listening To Learn or Learning To Listen? *Annual Review of Applied Linguistics, 24*, 3-25.