Technology Integration in CALL and non-CALL Environments

by

Dang Thanh Nhon, M.A.

School of Humanities and Languages

Tan Tao Unviversity

Abstract

The paper examined how technology integration into teaching and learning in Technical Communication course or a non-CALL course compared that with a CALL course. The finding was that besides tools dedicated to CALL and non-CALL courses respectively, the applications of technological tools in non-CALL and CALL environments shared the common characteristics. CALL as well as non-CALL practitioners were suggested experimenting available tools and considering the purpose of the course and the learning tasks before technological tools can be utilized to its fullest potential in the classroom.

Introduction

The use of technology in the classroom has increasingly been the subject of many studies in recent years (Mohammed & Al-Karaki, 2008). That said, integrating technology and the Internet into the classroom is becoming more of a focus because effective use of educational technologies has been recognized as an integral part of providing high-quality education. Bax (2003) suggested using computer-assisted language learning (CALL) as a normal component in the language classroom. Jarvis (2004) noted, "Computers now form a significant aspect of academic study whatever the discipline" (p. 114). To effectively deliver the content knowledge of a course, teachers are expected to utilize some sorts of technology to enhance students' learning. Widely accepted, the integration of technology in the classroom by different teachers within and across disciplines is different. For example, teachers of CALL courses could use technology in the classroom differently from teachers of other courses, thereinafter referred to as non-CALL courses. Alternatively, teachers in face-to-face classrooms might use technology differently from those of non-conventional classrooms. According to Levy and Stockwell (2006), applications and technologies used in language learning should not be necessarily the same to those used in other courses in other disciplines, but integrating technology in the classroom to achieve the learning

goals and continuity of technology use was essential. Therefore, the question to answer is how technology is integrated into teaching and learning in non-CALL environments rather than CALL settings, and whether the technological integration of the two environments completely differs from each other, or there are some applications in common between the two. Therefore, the aim of the paper is addressing the aforementioned idea that is worded into the following questions:

1. How is technology integrated into teaching and learning in non-CALL environments?
2. What application does this have in CALL, if any?

Literature Review

Technology integration

Technology integration is characterized as "the effort to use technology in an educational context" (Graham et al., 2009, p. 70). In Levy and Stockwell's (2006) words, integration means thinking about ways to combine classroom and lab-based learning, or combine in-class and out-of-class tasks, or the offline and online component of a course. Interpretively, teachers use technology to devise classroom activities, engage students with technology-oriented activities, and create a stimulating learning environment that meets individual learner differences.

Relationship between technology integration and student learning performance

It is widely admitted that students who learn in classes where teachers frequently apply computer technology in instruction are likely to positively respond to computer technology use to enhance their learning. It was found in Keengwe's (2007) study that the relationship between teacher integration of technology into classroom instruction and students' perceptions of the technology influenced their learning. Eight hundred undergraduate students at a Midwest public university were randomly selected as informants to the study. The general findings confirmed the assumption about the relationship between teacher use of computer for instruction and student learning effects. However, the results also revealed that

some participants lacked computer skills in various computer applications that facilitated their learning. Therefore, the author suggested direct instructions on how to use technology applications efficiently.

Technology integration in face-to-face classrooms

Bauer (2001) explored ways of enriching the traditional classroom environment by using common components of online learning to teach K-12 music teachers. The author used and integrated Internet-based tools and materials into the classroom in terms of bulletin board discussions, online quizzes to provide materials and check students' responses to assignments before class meetings.

According to the author, electronic or bulletin board discussions provided more flexibility during face- to-face class time. The author said, "While I still conduct discussions in class, I have moved several discussion activities to a Web-based bulletin board, allowing class time to be used for other projects" (n. p.). Bauer also found that, after online quizzes, students had some "knowledge" about the assigned readings prior to the class to be ready for discussion and material expansion. Also, online materials in terms of a designated web site or scanned readings in library reserves helped save students' time. The author asserted that "while many think of Internet-based learning only as distance learning, the same technologies are valuable for classes in more traditional, face-to-face settings" (n. p.)

Jarvis (2004) investigated classroom applications of computers on delivering English as a Foreign Language (EFL) courses as well as the providers' attitudes toward computer use at British universities. The findings based on survey questionnaires were that the Internet was the most popular application of all computer-based material types, and second to the Internet was the word processor that was integrated to produce word-processed writing tasks. The author also reported the use of other software applications such as Power Point, Excel, authoring programs, concordances, and CD ROMs for authentic materials in classrooms. According to the author, the attitudes toward computer use were positive because computers were motivating.

It is universally known that the Internet is the richest, most prodigious, and most resourceful means to find information and it has been extensively used in many educational and scientific fields. Mohammed & Al-Karaki (2008) conducted a study on the attitudes of students toward the integration of the web as a medium of communication and a learning tool in traditional teaching as well as the percentage and effects of the Internet usage for learning. Five hundred and two male and female students at the Hashemite University of Jordan joined the study through survey questionnaires, lesson observations, interviews, and project reports. The results showed that using Internet in all university facilities was necessary, and students should be directed to employ Internet in university education to enrich their learning outcomes and experience. Remarkably, the study showed that the most common uses of the Internet in the university were email and Internet search. Although the authors said the Internet could not replace entirely face-to-face learning, it could be a good alternative and bring up "new ways of teaching at a wider scope" (p. 241).

According to Michaels (1995), methods and media were integrated to produce an effective Technical Communication class. These include workbooks, handouts, projection devices, slides, audio/visual tapes, and extensive use of the Internet and computers to write technical documents and translate information.

Michaels's observation was echoed by Collins and Wende (2002, as cited in Jarvis, 2004, p. 114) that "ICT [Information Communication Technology] use, in terms of email, word-processing, Power Point, and the Web, has become standard as part of the teaching and learning process" (p. 7). Obviously, these uses of computers in non-CALL classes appeared to have a lot in common with the computer integration in CALL classes.

Methodology

As mentioned above, applications of computers in face-to-face non-CALL courses could have

some in common with that in CALL. However, before coming to the conclusion, it is necessary to examine how technology is integrated in teaching and learning in non-CALL classrooms. By having one-month field work in the Technical Communications course of 27 students at Minnesota State University, Minnesota, in the US and conducting two semi-structured interviews, pre-interview and post-interview with the course professor.

Participants.

The participants were twenty-seven students (22 males and 5 females) in the face-to-face course of *Technical Communication 271,* section 2 at Minnesota State University, Mankato. The age of most of the students in this class ranged from 18 to 22. These students majored in various disciplines such as construction management, information system, automobile engineering, dietetics, and biology. There were 13 seniors, 7 juniors, 5 sophomores, and 2 freshmen taking this course. According to the instructor, the *Technical Communication* class (TC) was the service course, and a number of students from different majors were required to take the course to satisfy the writing requirements. The instructor said students in this TC class were required to have knowledge and skills with using computers from basic computer courses. Specifically, they had experience using some common application programs of Microsoft Office such as Word, Power Point, and Microsoft Project as well as effectively using some tools to search on the Internet. Students did in-class assignments individually or cooperatively on composing technical writing projects.

The class instructor had many years of experience in teaching, and he taught the TC class aiming to personalize students' technical communication by learning how to write technical documents successfully and comment on classmates' communication work practically. The instructor taught in the workshop style, i.e., moving around the class, asking students questions, talking with them, and helping them stay on task. The instructor used *Desire to Learn,* a course management system, to communicate

with the class, some websites on the Internet to create activities and assignments, the document camera with a projection system to show the class agenda, Microsoft Office 2010 suite, and other common technological tools such as *Doodle* and *Google services*.

The researcher's role.

The researcher went to observe the TC class in a computer lab located at the building Wissink 118, at Minnesota State University, Mankato twice a week on Mondays and Wednesdays within a month. In the class, the researcher took notes of the activities and interactions between the instructor and students, using Microsoft Project 2010. The researcher did not join or interfere with students' activities, but he observed the class activities and used a separate computer to document what happened in class as well as followed the teachers' instructions on the assignments. Although he was not able to log in *Desire to Learn* (D2L) for the class activities directly, he was given the links to the websites in case the class activities had something to work with the sites from the Internet. Also, in class the researcher particularly observed the way the instructor managed the class activities and built rapport with students. After the class observation time, he immediately rewrote and converted the in-class field notes into journals.

Data collection and analysis.

The data was collected in terms of in-class field notes describing activities and interactions that the instructor and students did in the classrooms. The field notes were immediately converted into journals soon after the class observation to make sure what had happened in the class was documented and was not influenced by any internal and/or external factors (Fink, 2010). Along with the class observation journals, the data was also collected from the two interviews with the course instructor. The semi-structured interview was used because the researcher expected to cover questions in the protocol and have opportunities to ask for clarification, experience, and additional information from the instructor. The first interview was implemented on the first day of class observation, and the final interview was on

the last day of the class observation. The researcher used the *ipod* to record the two interviews at Minnesota State University, Mankato. The interviews were then transcribed using *Express Scribe*, and the data was qualitatively analyzed under the cross-comparison and correlation between the findings in the literature and the content of the class observation journals and the interviews.

Discussion

This section is dedicated to discussing the two issues from the two aforementioned research questions.

Technology integration in teaching and learning in the face-to-face Technical Communication course

The answer to the question on how technology is integrated in teaching and learning in non-CALL classrooms, specifically in TC class often depends on the purpose of a course, and the appropriate choice and use of the hardware and software as well as the programs dedicated to the particular course. According to the TC instructor, a successful learning environment required an "activity system" made up of components such as the learning goals, the instructor, students, and technology. The instructor stressed that the purpose of this TC class had to personalize students' technical communication by focusing on writing technical documents successfully, and it determined on how technology was integrated in the class. The teacher and students were observed to use a variety of programs such as *Word processor, Microsoft Project, Google Docs* that were said to be dedicated to writing, specifically writing technical documents effectively and efficiently. Second, the instructor' experience in technology use also contributed to the way technology is used in the class. The instructor shared in the interview that he had many years of teaching experience as well as plenty of experience in technology use as he also worked as an instructional designer and technical writer for *GeoLearning*, *Inc*. Therefore, he tried to adjust the use of technology according to students' feedback and his personal experience. Also, the instructor

considered students' needs and got to know their technical background and experience when using a certain technological tool to help shape the way of integrating technology in the class. Third, the students for the most part were reported to have experience in using computers and technology. It could be because the majors they specialized in required the use of computers, and the instructor stressed that the students were encouraged to learn by discovery or to learn technology by an experiential learning approach. Having knowledge about the three integral components probably helped integrate technology in the Technical Communication class effectively and efficiently.

Along with the three above-mentioned "pillars", the final and the most important determinant of technology integration in the classroom is the availability and accessibility of the technology itself. It was found in the TC class that besides a face-to-face interaction, the major medium for the teacher and students to interact and communicate to each other inside and outside of the class was D2L course management system of the university. It was learned that before the class time, the teacher had posted some tasks or assignments on D2L, and during the class, students were instructed to go to D2L to see the tasks required individually or cooperatively that they had to complete on that class meeting. Students were scaffolded to use some websites on the Internet related to their tasks to get the information or data, and they had to get their assignments done and submit their papers back on D2L before they left the class. In case some students could not complete their papers in class, they were suggested to submit their papers into the dropbox on D2L as soon as possible. When some students asked questions or submitted their papers on D2L ahead of the time, the teacher would answer them or give some feedback. It was observed that D2L activities in every class meeting. It could be understood that the use of the Website or the Internet in this TC class was consistent and congruent with that in Michaels's (1995) paper on Technical Communication class as well as in many studies in the literature such as Bauer (2001), Graham et al. (2009), Jarvis (2004), or Mohammed & Al-Karaki (2008).

An integral activity that allowed the teacher to instruct students and enabled students to complete their D2L assignment tasks was the use of the Internet that was considered a "must-have" resource in Technical Communication. Therefore, the instructor fully utilized some Google services on the Internet in the classroom. Very often the instructor suggested students to use Google or some of the Google services such as *Google Search, Google Docs, Google Map, or Google Translate* to seek the information or perform an operation. An example for this was that the instructor asked students to use Google Map to find out the distance between Mankato and Minneapolis, or use Google Map to interpret the maps and analyze the map data in terms of textual, visual, graphical, table aspects. Another activity was to use Google Translate to compare the accuracy of the information between the two versions written in two languages. This notion concurred with Franco (2010) that Google applications could be used in teaching regardless of face-to-face, hybrid, or online settings.

It was observed that other common programs were also used in this Technical Communication class. As the class focused on writing technical documents, students used *Microsoft Word* extensively to write their papers. The use of Microsoft Word in this class was found concurring with many studies (Keengwe, 2007; Jarvis, 200). So, word processing still appeared to be one of the "strongest supports for composition writing". Furthermore, students used *Microsoft PowerPoint 2010* to present a topic of their interest or assigned by the teacher to class, or used *email* to contact with the instructor or their peers. In every class meeting, the instructor used the *document camera* connected with a projection system as a way to display the agenda of the class activities. Interestingly, students were encouraged to use *Doodle,* a program for time scheduling, to schedule their in-class presentation with the instructor, and they also used *Microsoft Project 2010,* project management software as an alternative way to document and record their answers to assignments. This reflects Levy and Stockwell's (2006) finding that "CALL can equally provide process materials, not only in such forms as the word processor, but also in terms of the structure

and sequencing of authentic tasks and activities…" (p. 238). As said elsewhere that students in this Technical Communication course were encouraged to use the *experiential learning* approach and their presentations on certain software or programs reflected this style of learning. In general, students were found to extensively use computers and the Internet to complete their tasks individually or cooperatively.

In short, the Technical Communication course employed *Desire to Learn* (D2L), a course management system, to provide online access to class content, homework, tests and assessments, grades, and other external learning resources. Some common Microsoft Office applications, namely *Word Processor, Microsoft PowerPoint, Microsoft Excel and Microsoft Project* were also utilized. Also, *email* was used to contact between the instructor and students and between students, and *Doodle* for time scheduling. Interestingly, such Google services as *Google Docs, Google Map, Google Search or Google Translate* were also used as addition to classroom activities.

The application of technology in non-CALL shared with that in CALL

As mentioned in the literature that technology integration in non-CALL classrooms appeared to have some in common with the computer integration in CALL class. Actually, as can be seen from the result of Question 1 as well as from the content of in-class observation journals and interviews, the use and integration of technology in the two settings, CALL and non-CALL are very much similar. First, for example, the use of D2L as a main medium for the teacher and students to interact and communicate with each other was found the same in both environments. Using the Internet for getting information and for knowledge increment extensively and "normally" in this non-CALL class reflected what CALL class did. The instructor advised it would be useful to teach any course in the computer lab with Internet access. This idea generally addressed the one more "crucial factor" that makes technology integration possible, that is, the institutional factor (Levy & Stockwell, 2006). In other words, to have technology integration in the classroom requires an infrastructural integration or institutional support, both

financially and technically. Second, some common Microsoft Office applications such as *Microsoft Word, Power Point and Microsoft Project* were important and necessary in both environments. The instructor said, "I would say it's [the use of Word and Power Point is] similar to my field in that we use software and hardware, but you use it for different purposes than we use it, but it's very important in both field". Obviously, the use of Word and Power Point in this face-to-face TC class was found congruous with the use in CALL class, and this has also been seen in the literature. Interestingly, *Microsoft Project*, the project management software, was used in TC class believed that CALL students might use this program to manage their studies in CALL. The uses of computers in the face-to-face TC class shared a lot in common with CALL classrooms. This "likeness" was addressed in Jarvis's (2004) words that no matter what discipline students major in, they were "expected to produce appropriately presented word-processed assignments, to contact tutors and classmates by email, to use Power Point in presentations, to search, evaluate and where necessary paraphrase and reference material from the WWW" (p. 114).

In short, the Technical Communication course or non-CALL course and CALL course employed more or less the same tools such as Desire to Learn (D2L), the Internet, Microsoft Office applications, email, and Google services. Also, the two settings encourage experiential learning, and the choice of technological tools depends on the course objectives rather than the tools themselves.

Implications for CALL

The findings in the face-to-face TC class have some implications for CALL in terms of the teacher-CALL practitioner, students, and institutions. First, a successful learning environment requires the learning goals, the teacher, students, and technology, and that CALL practitioners need to have flexible attitudes toward the design, syllabus, or curriculum. This notion concurs with Levy and Stockwell's (2006) about the "middle path" that "a curriculum [is] devised not as a prescription, but rather as a guide or template, where there is considerable room to move within it as far as the specific

content is concerned" (p. 29). CALL practitioners need to use some common programs such as Word and Power Point effectively, keep up with the technology to know and select new and appropriate software and hardware to meet the needs and satisfy individual learner differences, as well as be able to use the Internet effectively and efficiently to find what they want to. Second, students are encouraged to learn by discovery because this experiential learning would help students know some other related programs that could help them deal with their tasks more effectively. Last, the infrastructural integration or institutional support for technology is always needed so that CALL practitioners have opportunities to perform experiments on some new hardware and software in teaching and learning.

Conclusion

This study has some limitations regarding the time length of the class observation, the proficiency level and experience of computer use of the instructor and students in TC class, and the researcher's possible flaw in data analysis. However, the finding is consistent with many studies that besides tools dedicated to CALL and non-CALL courses respectively, the applications of technology in non-CALL and CALL environments share many things in common. Technology integration strongly depends on the purpose of the course and the learning tasks. This notion concurs with Levy and Stockwell (2006) that pedagogy or instructional method comes before the selection and use of technology. What is more, the instructor's computer experience, students, and technology itself are also crucial determinants to technology integration. Therefore, the two settings are seen to share the fundamental technology integration in terms of the uses of D2L, the Internet, and some common programs of Microsoft Office. Technology can be a very effective teaching and learning tool, and proper integration presents students with rich and varied learning, but there is much for CALL practitioners to learn before technology can be utilized to its fullest potential in the classroom.

References

Bauer, W. (2001, July/August*). Enriching the traditional music classroom through Internet-based technologies*. The Technology Source. Retrieved from http://technologysource.org/?view=article&id=116

Bax, S. (2003). CALL – past, present, and future. *System 31*, 13-28.

Collins, B., & Wende, M. (2002). *Models of Technology and Change in Higher Education. An international comparative survey on the current and future use of ICT in Higher Education.* Center for Higher Education Policy studies. Retrieved from http://www.utwente.nl/cheps/documenten/ictrapport.pdf.

Fanco, C. (2010). *Teaching using Google*. The Internet Journal, 16 (2), 1-5. Retrieved from http://ieteslj.org/Techniques/Franco-Google/

Fink, A. S. (2010). *The role of the researcher in the qualitative research process. A potential barrier to archiving qualitative data*. Forum: Qualitative social research, 1 (3), Art. 4. Retrieved from http://nbn-resolving.de/urn:nbn:de:0114-fqs000344.

Graham, C. R. et al. (2009). *TPACK development in science teaching: Measuring the TPACK confidence of inservice science teachers*. Tech Trends, 53 (5), 70-79.

Jarvis, H. (2004). *Investiagating the classroom applications of computers on EFL courses at higher education institutions in UK*. Journal of English for Academic Purposes, 3, 111-137. doi: 10.1016/j.jeap.2003.08.002

Keengwe, J. (2007). *Faculty integration of technology into instruction and students' perceptions of computer technology to improve student learning*. Journal of Information Technology Education, 6, 169- 180. Retrieved from http://informingscience.org/jite/documents/Vol6/JITEv6p169-180Keengwe218.pdf

Levy, M., & Stockwell, G. (2006). *CALL dimensions: Options and issues in computer-assisted language learning*. Mahwah, NJ: Lawrence Erlbaum Associates.

Michaels, D. (1995). *From writer to trainer: Designing an effective technical training class*. Society for Technical Communication Proceedings, 21-24.

Mohammed, J. & Al-Karaki, J. (2008). *Integrating Internet into traditional education: A practical study of university students' usage*. The International Arab Journal of International Technology, 5 (3), 241-252. Retrieved from http://www.ccis2k.org/iajit/PDF/vol.5,no.3/5-118.pdf