The Needs of L2 Teachers in the Application of Instructional Technology, 4(14)

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Abstract

This paper reports findings from a qualitative study with teachers in second language (L2) education on their needs in the application of instructional technology. A phenomenological approach was taken to understanding problems and difficulties L2 teachers experienced. A teacher-initiated learning-by-using strategy was used to identify possible solutions through an ongoing process of co-operative learning and interdisciplinary collaboration for professional development. The findings showed both preservice and veteran and both Caucasian and minority teachers knew well about traditional technologies. While all of them needed to learn more about interactive software programs and online resources, the veteran and minority teachers needed more help to use computers and the Internet. The strengths and weaknesses of traditional and new technologies were discussed. Several ideas about how to balance the use of traditional and new technologies in L2 instruction were presented. Five suggestions were made for effective professional development in the use of instructional technology in L2 education.

Introduction

The purposes of this study were to discover and uncover problems and difficulties teachers had in the application of instructional technologies in second language (L2) education, and to identify possible solutions through an ongoing process of co-operative learning and interdisciplinary collaboration for professional development. Our interest in this topic was spurred by the needs and enthusiasm of the inservice and preservice teachers who had been in our teacher education program and were eager to use a variety of technologies, such as chalk board, recorders, computers, and the Internet, to teach reading and writing in students' L2s. In this context, L2 education referred to English as a second language (ESL), bilingual education (BE), and modern foreign language education (MFL). Technically speaking, programs under these three categories had a common purpose to assist students to acquire non-mother-tongue languages through education (Feng, 1998). Therefore, they had much to share in regard to approaches to curriculum and instruction, including the use of instructional technology (Martinez & Herren, 1997).
Instructional technology in this paper referred to the theory and practice of design, development, use, and evaluation of technological processes and resources for teaching and learning. It covered old or traditional and new technologies that had been used as instructional and learning aids in schools to the date of this investigation (Anglin, 1995; Seels & Richey, 1994).

The Problem

According to the National Education Goals published in 1995 by the U.S. government, all U.S. public school classrooms would have computers and would be connected to the Internet by the year 2000 so that all students could take the information “super highway” to learning ("National Education Goals Report," 1995). Computers entered the nation’s schools, communities, and households since the 1990s (Heaviside, Farris, Malitz & Carpenter, 1995; Gooden & Silverman, 1996). L2 teachers had the opportunity as well as the responsibility to help their students to use computers and on-line networking technology to learn their second languages and communicate with other peoples of the world in non-English languages (Cummins & Sayers, 1997). L2 teachers, as other classroom teachers, must become literate and skilled in using computers and the Internet (CALICO, 1998). Many of them, however, had not been prepared to effectively support their teaching with the new technologies available.

The 1990s were of a decade of advocacy for the application of new technologies in classrooms (Glennan, 1996; Hayes & Bybee, 1995). Nevertheless, researchers reported that teachers’ proficiency to use, and gain access to, new technologies was uneven (Germann & Barrow, 1996; Howley & Pendarvis, 1994). Many new and veteran teachers were inadequately prepared to use computer-based technologies for instructional purposes (Kemis & Moran, 1996; OTA, 1995). Over half of the new teachers who were recent graduates from universities had had more exposure to new technologies; however, many of them had not gone beyond word processing and low-level games for drills and patterns. Few had used multimedia, on-line networks, simulations, and problem solving applications. Most teachers were eager to learn and requested inservice training through seminars, workshops, and co-operative learning with colleagues. While much research had focused on the needs of the general teacher population and teachers of sciences and mathematics in particular, L2 teachers had seldom been mentioned. The lack of information of their technological needs suggested a neglect of the potential of new technologies in L2 education.

A review of earlier literature disclosed some clues regarding L2 teachers’ needs, although none of the studies was directly concerned with the research question under discussion. In the 1980s, many L2 teachers did not have computers or access to the Internet. Few of them would connect language education with advanced technology. Those who had computers in their classrooms had experienced various problems and difficulties, such as lack of bilingual and foreign-language software programs, inadequate software integration into the curriculum, incompatibility between software and hardware, insufficient technical support, and lack of resources for funding and professional development (Maltby & Others, 1989; Streibel, 1986). Many of these problems and difficulties were similar to those experienced by the majority of the teacher population as described by Garrett (1991). L2 teachers, however, would have special needs, such as bilingual and multilingual software programs and the training to use them. The inservice and preservice L2 teachers in our teacher education program had frequently mentioned these problems. We sought to learn more about their needs and to look for solutions by working with them in a summer course, L2 Literacy Development and the Use of the Computers. This course had been taught by one of the investigators and had usually attracted a variety of L2 teachers from the northeastern states.

The Research Questions and the Hypothesis

Four questions guided the focus of the investigation. (1) What did inservice and preservice L2 teachers in the sample population know about old or traditional and new instructional technologies? (2) What were the strengths and weaknesses of these technologies for L2 instruction as perceived by the teachers? (3) How did L2 teachers use technology in instruction, and how did they view their strategies in using technology? (4) What did L2 teachers think they must do to optimize their use of technology?

No hypothesis had been proposed because this project was designed to uncover problems and explore possible solutions through an ongoing collaborative process (Maykut & Morehouse, 1994). These decisions were based on the review of the literature and our experience that the inservice and preservice teachers in our classrooms had a wide variety of knowledge about, and different experiences in using, instructional technology. Their needs might be quite different, although the ultimate goal of effectively using the old and new technologies would be the same.
Methodology

Our purpose was to enrich our knowledge of what instructional technology L2 teachers would need and how to help them get it. We did not intend to address any causes or effects of the needs identified by other researchers or us in this study. We did not think it would answer our questions by assuming and confirming the dimensions of the targeted problem. A phenomenological approach, as advised by McMillan and Schumacher (1997), would be more appropriate for us to discover and understand problems and possibilities of effectively using technology as perceived by the participants. To access the internal experiences of the teachers being studied, we situated our reliance on their relevant, observable behavior and words during the course of study. A participant-observation method was used as the major instrument to collect information of their relevant needs that were demonstrated in their professional activities and were reported by them.

Sample

Students in a 1998 summer course, L2 Literacy Development and the Use of the Computers, were the participants in this study. The course was taught by one of the researchers in a school of education at a metropolitan university. There was a total of ten students in the course: four were inservice teachers; four were preservice teachers; one was a graduate student in deaf studies who was a deaf person; one was a veteran teacher who was functioning as a librarian in her elementary school library.

Of the four inservice teachers, one was a recent graduate from our program and the other three were veteran teachers. Two inservice teachers, one was in a high school and the other was in an elementary school, had worked with multiethnic ESL students. The other two inservice teachers had taught children in elementary English-Spanish and English-Somalian bilingual education programs. Of the four preservice teachers, two planned to work with elementary Spanish-English bilingual students, one planned to teach Japanese and Chinese, and one planned to teach Spanish as foreign languages to secondary school students. The teacher-librarian had taught ESL and was in charge of selecting multicultural literary books for L2 literacy development for the children in her school. The deaf studies student was committed to using American Sign Language (ASL) to teach deaf children English as their L2. Two interpreters who accompanied her to class assisted this deaf student.

All preservice teachers had exposure to various kinds of L2 students through fieldwork, work as teacher aids, tutoring, or substitute teaching. All the participants had taught, or planned to teach, L2s in K-12 schools. All participants, except one, had experience learning and using an L2. Three participants were from African, Mexican, and Asian American minority groups, respectively. The other seven were from the European American group, including a Latina White female person.

Data Collection

Data were collected from three sources. Informal interviews as one source were conducted during conventional student-teacher consultations. Each student and the instructor met individually twice to talk about the student’s experiences, concerns, needs, and special interests in regard to his or her work in this course. The first meeting occurred at the beginning of the course, and the second meeting came about two weeks before the deadline for student’s final project for the course. The students were encouraged to meet the instructor more times if they wished. Another source was the discussions on emerging issues brought up by the participants in class. About a half of each class session was spent in a regular classroom for discussions concerning L2 literacy development and the use of technology. The other half of the time was used for hands-on experimental teaching and learning activities in the instructional media center at the school of education. The third source was direct observations of participants’ using and dealing with technology during classes and meetings.

Loose-structured questions were used to facilitate discussions in class, such as "What instructional technologies have you seen or used in your schools?" "How did you let your students do their homework with that (software) program?" "Did you experience any problem when you were using it?" and so forth. Sufficient time was given for impromptu discussions on relevant issues and topics raised by the students. Two course assignments were mini-projects of teacher research and teaching demonstration; the students had opportunities to learn and use a variety of technologies in the computer lab to complete and share their projects. Adopting a method introduced by Hunt and Bohlin (1995), the progress of each student in this course was evaluated partially based on the fulfillment of the individual goals and objectives that were negotiated between the student and the instructor, and partially on his or her effective collaboration with other members, which contributed to co-operative learning.
Data Treatment

A portfolio was created to record, sort, and analyze data. Notes were taken during informal interviews. During the intervals and right after classes, the instructor jotted down any information that emerged from the discussions and lab activities. The information included issues, problems, needs, ideas, and solutions in learning and using various instructional technologies. These notes were later combed and synthesized into data for analysis. The process of data treatment was completely anonymous, and none of the participants was identifiable in the data or in the final report.

The data were recorded and sorted into two categories: Traditional and New Technologies. Each of these categories contained a list of technologies named by the participants. The information about the use of each technology was recorded in these six columns: Strengths/Usefulness, Weaknesses/Problems, Strategies to use, Needs to learn more about it, Solutions (to the problems or needs), and Other Things (anything that was considered important but could not fit in any of the other columns). A descriptive approach was taken to synthesizing and analyzing the data.

For the convenience of data analysis, the participants were divided into four groups: veteran teachers who had taught at least three years; preservice or first-year teachers; and ethnic minority and majority teachers. The deaf studies student was placed in the novice group. The librarian was with the veteran group.

Findings

The discussion of the findings was divided into two parts in light of the purposes of this study. The first part, The Needs, described the participants' knowledge and skills and their problems and difficulties in the use of instructional technologies. The second part, The Solutions, described the strategies for learning and using traditional and new technologies initiated by the participants during the course.

The Needs

The participants agreed unanimously that these things belong to the category of traditional technologies: paper, printing, copying machine, pens and pencils, the chalkboard, audio and video recorders and players, overhead projector, etc. After some debate, they reached a consensus that TV and VCR belonged to the "traditional" category. The preservice teachers convinced the others that the TV and VCR technologies were older than they were, that they had seen these devices in the classrooms since their kindergarten days, and therefore their use was already a part of the classroom tradition. All of them felt comfortable with these technologies and would turn to them without hesitation. They believed that these things were more reliable, handy, affordable, and still indispensable. Several problems and difficulties were identified: overhead projectors were heavy and noisy, and the light hurt their eyes; audio and video programs were not interactive; good audio and video learning materials were expensive and difficult to find; and ASL-English bilingual programs were very few. The veteran teachers reported that they used the chalkboard more often than transparencies. Nevertheless, they all acknowledged that traditional technologies were affordable, handy, and reliable, and were still indispensable. They thought that audio and video materials were useful for L2 learners for independent practice and believed that it was necessary for teachers to find more resources to learn to make their own audio-video programs. Figure 1 presents a summary of the application of, and the needs for, traditional instructional technologies.
Figure 1. A summary of the use of, and the needs for, traditional instructional technology by L2 teachers.

(ALL = all teachers; PT = preservice teachers; VT = veteran teachers; MiT = ethnic minority teachers; MaT = ethnic majority teachers; Rs = researchers)

<table>
<thead>
<tr>
<th>Type of Technology</th>
<th>Strengths/Usefullness</th>
<th>Weaknesses/Problems</th>
<th>Strategies to Use</th>
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<th>Solutions to Problems or Needs</th>
<th>Other Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper and printing</td>
<td>ALL: They are all indispensable, convenient, and affordable.</td>
<td>VT: A/V programs are noisy.</td>
<td>VT: Do not use an overhead projector too long at one time.</td>
<td></td>
<td>VT: Use the chalkboard more,</td>
<td>Rs: Teachers should network and collaborate to make and share materials.</td>
</tr>
<tr>
<td>Pens and pencils</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>PT: A/V programs are not interactive.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td></td>
<td>transparencies less.</td>
<td></td>
</tr>
<tr>
<td>Chalkboard</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>VT: A/V programs are not interactive.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use</td>
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<td>VT: Use A/V programs for introduction to new materials and review.</td>
</tr>
<tr>
<td>Copying machine</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>VT: A/V programs are not interactive.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use the</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
</tr>
<tr>
<td>A/V recorders/players</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>VT: A/V programs are not interactive.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use the</td>
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</tr>
<tr>
<td>TV and VCR</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>VT: A/V programs are not interactive.</td>
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<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
</tr>
<tr>
<td>Overhead projector</td>
<td>VT: A/V programs are also good for students to learn and practice by themselves.</td>
<td>VT: A/V programs are not interactive.</td>
<td>VT: Use A/V programs for introduction to new materials and review.</td>
<td>VT: Use the</td>
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The computers and the on-line network technologies were identified as the new things that presented new opportunities as well as challenges to teaching and learning L2s. All the participants had access to computers either in their classrooms or at home or both. They reported that computer word processing had already become indispensable for teachers, though they did not go beyond simple word processing. Two veteran and two minority teachers had not used email. They felt that they were lost at the beginning when they were exposed to the Internet. Multimedia laser disks were unfamiliar to all.

In comparison to the veteran teachers, the preservice teachers who were studying in our teacher education program had more exposure to a variety of educational software programs and the Internet. Generally speaking, the novice teachers of Caucasian background were more enthusiastic about using the new technologies. They were familiar with monolingual and bilingual CD-ROM programs for lower-level listening and reading practices. One of them could use compact disc interactive (CD-I) programs for grammar and spelling, and games for drills and patterns, and writing practice. One of them knew the Internet well and was eager to develop an online international pen-pal project with elementary bilingual students for bilingual literacy development. The inservice teacher who was a recent graduate had not been introduced to CD-ROM or CD-I programs for literacy development, but she indicated that she would like to try them with her high school ESL students for individualized reading and writing development. The course instructor and the deaf studies student searched the libraries and the Internet for ASL materials, but the gains were very small. Few ASL-English software programs were available for intermediate or higher-level English learning, which was very disappointing.

The veteran and minority teachers were concerned about their ability to understand and use new technologies at the beginning of the course. Some of them did not have confidence that they could learn and become as competent as other class members in using new technologies. The veteran teachers did not think it was practical to let students work with computers in class because there were not enough computers for them. The operations of CD-ROMs, CD-Is and laser disks were complicated. Immediate help was often unavailable when their classroom computers crashed. Some of their students had better computers at home and knew more about the computers than did their teachers. The teachers with years of teaching experience worried that classroom management and information management would be very challenging because it would be difficult to oversee what their student were doing when they were online.

The above observations confirmed the reports by the researchers mentioned earlier that teachers would still need help in using new instructional technologies, and that many veteran and minority teachers might need special assistance because they did not have enough exposure to advanced technology. Most participants did not know well
the various functions of comprehensive application programs such as Microsoft Word and Claris Works that were popular in schools. For instances: all of the participants had used these programs for word processing only; a few of them knew that Claris Works might be used to create student information database, but none of them had ever tried to do so; they did not have any knowledge that these programs might be used for drawing, calculation, basic statistics, and many other tasks. Another weakness of these L2 teachers was that they knew little about non-English programs for Internet communication that had been used around the world for years. In Figure 2, a summary of the use and the needs for new instructional technologies is presented.

**Figure 2.** A summary of the use of, and the needs for, new instructional technology by L2 teachers.

(ALL = all teachers; PT = preservice teachers; VT = veteran teachers; MiT = ethnic minority teachers; MaT = ethnic majority teachers; Rs = researchers)

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<th>Other Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Application</td>
<td>ALL: Applications help teachers work more efficiently. For students it is more interesting to write with the computers.</td>
<td>ALL: Not enough computers in the classrooms.</td>
<td>VT: Schedule and let students share the computer in class.</td>
<td>VT: Learn more about the various features of the comprehensive applications and simple authorware programs.</td>
<td>VT: Always try them first before using any computer programs in class.</td>
<td>MiT: Have concern for themselves whether they could do as well as the other people do.</td>
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<tr>
<td>Authorware</td>
<td>PT: CD-ROMs and CD-Is are good for individualized study. Interactive programs may be used as &quot;tutors.&quot;</td>
<td>VT: Students know more than teachers do about the computer and programs.</td>
<td>VT: Ask student computer nerds to demonstrate the programs they can.</td>
<td>ALL: Need instruction and practice on how to use interactive programs.</td>
<td>MaT: Network with colleagues for on-site support.</td>
<td>Rs: It is a policy matter whether L2 teachers can get institutional support for technology enrichment.</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>ALL: Laser disks contain rich information and are good for secondary studies.</td>
<td>ALL: Laser disk and CD-I operations are complicated.</td>
<td>VT/MiT/MaT: Not all teachers have Internet access.</td>
<td>ALL: Need orientation how to find and use online resources effectively.</td>
<td>VT: Attend seminars and workshops on specific topics, or take courses for systematic training.</td>
<td>Rs: Teachers' proficiency in the target languages may be challenged when they use the Internet and the CD-Is with students.</td>
</tr>
<tr>
<td>CD-I</td>
<td>ALL: Networking may be used for learning by both teachers and students.</td>
<td>VT: Teachers may lose control once students are online.</td>
<td>ALL: Give clear instructions and assignments, and let students use CD-Is and laser disks in labs where help is available.</td>
<td>Rs: Let students work on specific tasks in small groups on the Internet. Internet use must be task-oriented.</td>
<td>Rs: Teachers' proficiency in the target languages may be challenged when they use the Internet and the CD-Is with students.</td>
<td></td>
</tr>
<tr>
<td>Laser disc</td>
<td>ALL: Email accelerates communication.</td>
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<td></td>
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<tr>
<td>Internet Email</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>World Wide Web</td>
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</tbody>
</table>
The Solutions

To address the needs, the participants negotiated individualized goals and objectives, and initiated their mini-projects in learning-by-using. Each of them volunteered to demonstrate in class one new thing learned during the course. These projects included obtaining free email accounts and setting up online study groups; getting low-cost or free learning materials from online resources; using CD-ROMs, CD-I and laser disks for reading and writing development; using comprehensive computer applications for instructional design and delivery; using the Internet for research, teaching, and learning; and combining low and high technologies for instruction. Besides group work to construct knowledge about instructional technologies, a brief, systematic introduction to the computer operating system and computerized networking was given to demystify computers before the participants began their explorations and experiments.

Most preservice teachers chose high-tech tasks to demonstrate online communication, learning in virtual reality on the Internet, and doing instructional activities with CD-ROMs and CD-I. One preservice teacher showed the class how to use an interactive program, Storybook Weaver Deluxe, to teach ESL creative writing and desktop publishing, which was welcomed by the class. One led a bilingual cyber tour to learn about the environment of the Galapagos Islands, which fascinated the class because it allowed simultaneous learning of the environment of the islands, two languages, and computing skills. The deaf studies student showed her teacher-made ASL-English words videotapes and learning tools and demonstrated a lesson successfully to teach mathematical concepts to deaf students in both ASL and English.

The inservice teachers tended to prefer low- and high-tech balanced approaches. They used computer applications such as PowerPoint to design presentation slides and cards and printed them out on transparencies and papers for instructional purposes. One veteran teacher taught her ESL students to speak and write English using a CD-ROM program and paper and crayons. She turned her newly learned Internet knowledge and skills into immediate use, designed an ESL teaching unit, "Learning About Japan in the Virtual Museum of the Japanese Culture," and implemented in her elementary ESL classroom. The Internet became the most efficient and effective tool for the librarian in her research of multicultural literary readings, though she had not touched the Internet before. She overwhelmed the class and herself with an annotated list of over 200 citations of multicultural literary readings for children by using resources on the Internet. The recent graduate used CD-I multimedia Grolier Encyclopedia and CD-ROM Smithsonian for high school ESL reading materials. She was happy to be introduced to these resources because it had been difficult to find texts that were academically and cognitively appropriate for ESL teenagers.

The ethnic minority teachers, though they had computers and learned how to use them, tended to rely more upon traditional technologies, such as overhead projectors and transparencies, paper cards, pencils and crayons, and clay and plastic toys, as instructional aids. They said that these things were more convenient for their teaching. Nevertheless, they designed technology-rich activities as part of their projects for the course, such as studying with CD-ROM programs and making audio-video learning materials. Multimedia laser disks turned out to be the most difficult for all. The laser disks were digital programs; however, they did not come with detailed, well-organized operating instructions. The numbers and letters on the buttons of the remote control panel told the users little about the functions of different combinations of the numbers with the letters. After several unsuccessful tries, the members of the class suggested avoiding using laser disks until the operation became simpler.

What We Have Learned

The findings verified several major factors that had affected effective use of new technologies in L2 classrooms reported by Shelley (1998) and other researchers. These factors included opportunity to keep up with the advancement of instructional technology, anxiety-free, hands-on experience to learn, co-operative learning, an easy-to-use system, and school support. Though it was not surprising to reencounter them, it was necessary to review them because their existence showed an overdue problem. As technological innovations would continue to invade K-12 classrooms, this problem would logically indicate an everlasting need for professional development.

From the perspectives of the participants, the above problems would be better addressed through an institutional approach by the school administration in collaboration with teacher-training institutions through an on-going
partnership. The computer industry must be informed that schools would need more and better bilingual and non-English software programs for L2 education. The message must be sent that the markets were not only in schools in the U.S. but also in the international global communication and business communities. Government and social agencies must give more help to the deaf community with advanced technologies.

Teachers must take the initiative to establish good communication with the school technology department to guarantee concrete, timely support. Our project would not have progressed smoothly without the help of the staff and the resources at our instructional media center. We were allowed to use the well-equipped high-tech classroom in the center for the first half of the lessons. Then we moved around the labs for experiments. Our classes were scheduled from 4:00 p.m. to 7:30 p.m.; the assistant director of the center and her assistant stayed late with us each day, rescuing the frequently crashed or frozen computers, showing us how to reconfigure the settings to use different programs, and working on the digital remote controls. We observed that one of the reasons why teachers tended to be conservative using new technologies was that they could not get timely help when they had technological difficulties. Their schools gave them computers and some software programs; however, these new things were simply “dumped” at corners of their classrooms, and they could not figure out how to make them work.

We learned that everybody could learn efficiently and use new technologies effectively when individualized guidance and encouragement were given. The participants came with special strengths, needs, and weaknesses. They performed equally well by the end of the course. The novice teachers were very enthusiastic about new technologies. They needed to hear the warnings by the experienced teachers about the potential problems and difficulties. The veteran teachers tended to be cautious in using new technologies. What they needed were organized introductions to the new things and some quiet time for practice. The ethnic minority participants were timid at first and seemed to prefer a safe approach to new things. They needed to see that they were as capable as the other teachers. A good way to help them see their potential was to encourage and support them to perform and achieve at the same level with other teachers. We understood the legacy of historical disempowerment of ethnic minority teachers and students in the area of educational technology (Gonzalez & Darling-Hammond, 1996; National Coalition of Advocates for Students, 1994) and were determined to make a difference in this course. We gave them extra direct and indirect encouragement and tutoring when necessary. Their successful work in this course taught us that co-operative learning in a supportive community with equal expectation was critical for the professional growth of minority teachers.

It caused our concern that many L2 teachers did not realize the potential as well as the challenges the Internet presented to them. They did not know that communication in over a dozen of world languages, such as Russian, Spanish, German, Dutch, French, Chinese, Japanese, and Korean, was already a reality on the Internet. On the one hand, the access to direct multilingual communication through the Internet offered resources and opportunities for L2 education. On the other hand, it presented direct challenges to L2 teachers and their K-12 students by testing their ability to use the target languages and testing their cross-cultural understanding (Lafayette, 1996). These opportunities and challenges, among a host of other things, would be a powerful engine to drive L2 teachers to improve their L2 proficiency and increase their cultural knowledge with the help of the Internet technology.

Teachers must have a clear idea about the technologies that they would encounter in today’s schools. The participants in this research all demonstrated that they had known something about it by the time they came to the course. However, none of them had an explicit understanding of the differences and potentials of traditional and new technologies for L2 teaching and learning. This void, if it had not been addressed, would have affected their decisions in taking a systematic approach to update their technological knowledge and skills. During the course, the participants constructed their knowledge about instructional technologies collectively before they identified the kinds of technologies they must be able to use in K-12 classrooms. This turned out to be a crucial step for them to set up individual goals and objectives to increase their ability in using instructional technology.

We also learned that co-operative learning and resources sharing together would build an avenue for teachers to learn new technologies with efficiency. The design of this course and the diversity of the participants encouraged natural interactions between experienced and novice teachers and between experienced and new computer users. Individualized learning objectives and evaluation gave the participants freedom to pace their progress based on their individual needs and allowed them to reflect freely upon their learning experiences.

Conclusion

The findings suggested answers to our research questions. This inquiry was conducted with a small sample, and therefore we did not intend to generalize the findings to other L2 teachers whose situations might be different. More quantitative and qualitative studies on the same topic must be conducted periodically in order that the needs for
technology would be better understood in a timely fashion. The following are our five considerations about what should be done for effective professional development for L2 teachers in the area of instructional technology.

First, competencies for L2 teachers to use instructional technology must be specified. Teachers, policy makers, professors with expertise in this area, and representatives from relevant industries must decide these competencies through joint effort. The requirements must be rewritten periodically to reflect the advancement of instructional technology. Decisions on the competencies might be made at state, district, or school level and must be integrated with the respective curriculum framework. This would give teachers a clear idea about the minimum expectations for them. It would serve as a reference for teacher-education programs in terms of program design and program requirements. As a convenience, school administration could use it as a guideline to organize professional development activities systematically.

Secondly, long-term university-school-industry partnerships must be encouraged and supported with policy. Universities should serve as the key players of the partnership, help introduce new technologies to schools, and take leadership in developing appropriate professional development programs for inservice teachers.

Thirdly, specific courses of teaching and learning L2 with technology must be offered in L2 teacher-education programs. Preservice teachers must learn systematically the basics of using technology for proficiency development in listening, speaking, reading, and writing. Inservice L2 teachers should have opportunities to participate in such courses, if the cycle could not be shorter. Opportunities must be created to allow novice and experienced teachers work together so that they could learn from each other.

Fourthly, minority and veteran teachers must be given more support and more flexible opportunities to learn and use new technologies. Expectations for their professional development in this area must match their individual goals and objectives.

Lastly, schools must have sufficient staff to provide technological services. There must be at least one person to be charged with the responsibilities in each elementary, middle, and high school.

We realized that this study led us to new issues, such as the necessity of any program change in L2 teacher education, funding for university-school-industry partnership, and resources for schools to guarantee adequate technological services. It was our hope that this study would invite more people to join the discussion so that better solutions would be found.

References


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