An Evaluation of Implementing ICT among Pre-Service English Teachers in Farhangian University

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Abstract

In recent years, the trend toward globalization and the needs of an information-oriented society have become a focus of attention for science educators. However, many teachers are still struggling to adopt and implement computers into their classrooms. Some researchers contend that beginning teachers are not adequately prepared to integrate computers into their teaching. This study examined the decision-making process used by secondary pre-service science teachers in implementing ICT (Information and Communication Technology) into English instruction by pre-service teachers in Farhangian University, Iran. The study sought to understand pre-service teachers' conceptual development and its impact on their new understanding of teaching and decision-making. The data were collected through a survey. The findings suggest a pivotal influence of teacher educators, cooperating teachers, and peer teaching on the development of practical theories, and subsequently the practice of pre-service teachers with computers. Participants highlighted that two most beneficial aspects that computers have as a pedagogical tool are helping and enhancing more student-centred learning and providing complex and sometimes interactive visual aids to help students understand concepts better.

Keywords: Computer-Assisted Language Learning, Information and Communication Technology, Pre-service teachers, Farhangian University

Introduction

Over the last decade, the term 'digital divide' has been widely defined as the increasing gap between the have and have-nots, or the divide between those who have and those who have-not (Malloch, 2000; Annetta & Minogue, 2004). That is, "there are some people who have open access to the Internet and other available technologies, whereas there are those at the other end of the spectrum who have very little, if any, access to the Internet and quality computing devices" (Annetta & Minogue, 2004, p. 488). Annetta and Minogue (2004) clarified that the have-nots usually live in low socioeconomic, remote, and rural regions and areas of the world. So, living within these areas prevents the people who are have-nots to have chances to access ICT, and to utilize the Internet for a broad variety of aims.

In addition, the digital divide is used to describe the increasing gap between know and know-nots (Malloch, 2000). That is, there are some individuals who have the knowledge and skills which enable them to use and access Internet and technology tools, whereas there are others who have very little or no technological knowledge and skills that allow them to use and access Internet and technology tools. In the same sense, Alexander (2008) declared that the digital divide represents the gap between the individuals who are information rich that enable them to access to ICT, and those who are information poor. Uzunboylu and Tuncay (2010) asserted that the digital divide term should be used to describe the distance between those who enjoy access to ICT and those who do not, who are

familiar with the potential of technology and those who do not, and finally, who can effectively use technology and those who cannot.

Despite the considerable number of pre-service teachers in Farhangian University in Iran, this portion of students has been excluded as participants in qualitative phenomenological approaches that explore and understand their real and lived experiences regarding ICT access. The lack of knowledge indicates a gap in the understanding of the ICT problem for the Iranian pre-service teachers.

This knowledge gap might lead to a continuation of the digital divide problem for current Iranian pre-service teachers group and other related groups who may study in higher educational institutions in Jordan.

The need for infusion of computers into English teacher education

The effective use of computers in the classroom has received much attention (Dani & Koenig, 2008; Clark, 2006), and English teacher education programs are increasingly expected to graduate teachers with the professional knowledge and confidence to effectively integrate innovative tools into the English classroom. Even though prospective teachers are provided with technology courses in which they engage in various technology-based instructional activities (Byrum & Cashman, 1993) as a core or elective course, pre-service teachers are not provided with a context in which they can make a pedagogical connection between the use of computers and their teaching. Thus, it has been suggested that significantly more emphasis should be placed on integrating instructional technology into the existing teacher education curriculum rather than simply providing pre-service teachers with technical knowledge and skills (Taylor, 2004).

In order to meet the new educational revolution, the role of teacher education cannot be overemphasized. As Langone et al. (1998) argue, "a teacher preparation program may be the first effort toward graduating teachers who are at the beginning stages of [computer] technology implementation" (p.295). In an effort to respond to this educational reform, teacher educators have tried to infuse technology into the teacher education curriculum (Brown & Warschauer, 2006), yet the lack of the pedagogical aspect of using technology becomes problematic and is "a major impediment to defining new pedagogical practice" (Crawford, 1999, p. 58) in teacher preparation programs.

In contrast to the traditional approach in which technology courses and computers are generally taught separately instead of being integrated into the studies of other subjects, the infusion of technology into English teacher education programs should stress that sufficient practice is required for pre-service teachers to learn how to plan instruction in a meaningful way. In this new educational environment, faculties become more responsible for providing explicit examples of modeling the integration of technology and incorporating authentic tasks as a part of their teaching of pre-service teachers (Davis & Falba, 2002). Considering that pre-service teachers often do not have an opportunity to teach with computers in a real context (Brown & Warschauer, 2006) and need to learn about strategies for effectively integrating technology in "the real world of teaching" (Clift et al., 2001, p. 42), the development of a coherent view of what it means to incorporate computers into English instruction should be emphasized as course and field requirements during English teacher preparation programs.

Theoretical Framework

When it comes to the digital gap and my commitment to the tenets of critical theories, the aim in this study was to engage participants and researcher in a collaborative project to help participate in developing a language of possibility for change toward social justice (Weis & Fine, 2004, as cited in Oliver et al., 2009). So, in this study, I drew on critical pedagogies and drew on Leistyna and Woodrum 's (1996) insights that "critical pedagogy is primarily concerned with the kinds of

educational theories and practices that encourage both students and teachers to develop an understanding of the interconnecting relationship among ideology, power, and culture" (as cited in Bartolome, 2007, p. 280). That is, critical pedagogy provides both students and teachers with possibilities that allow them to develop thoughtful and critical understanding about the relationships between ideology, power and culture. In addition, critical pedagogy enriches students and teachers with creative, intellectual, and practical power to free themselves from the snare of the dominant forces of power and hegemony.

Engaging students in the process of learning has been a primary concern of workers in the field of education for several decades. Active engagement of students "in the construction of meaning around notions of work, community, democracy, and society" (Buck & Sylvester, 2005, p. 213) requires an understanding of cultural, institutional, and historical context, as well as the subsequent impact on mental functioning (Wertsch, 1998). Prawat (2002) discuss the works of Vygotsky and Dewey and how they have asserted that understanding human action requires going beyond the isolated individual. As a result, human action and thus education should be understood within a network of social interactions.

According to Friere (1998) "'there is no teaching without learning" (p. 31), this implies an inherent relationship between instruction and students' interests, needs, values, and beliefs. An integral aspect of progressive education is connecting what happens inside and outside the classroom through communities of faith. Classroom experience should include the evaluation of social, political, and economic powers as well as a critical view of the dominant hegemony. Teachers need to employ a pedagogy that empowers their students with the tools that develop thoughtful understanding about the relationship between ideology, power and culture. Critical understanding and embracing "a process that must embody the finest elements of what makes us human" (Beyer & Apple, 1998, p. 6) makes education the practice of freedom (Kumashiro, 2004). In addition, it enriches students and teachers with creative, intellectual and practical power that liberates them from the snares of the dominant forces of power and hegemony.

Teachers have a responsibility to create a learning environment in which student voices are powerful and their thoughts are respected. Students and teachers "bring [their] languages and dialects, cultures, and class into the dialectical dialogics of teaching and learning" (Chavez- Chavez 2004, p. 93) and subsequently, become critical agents "who actively question and negotiate the relationships between theory and practice, critical analysis and common sense, and learning and social change" (Giroux, 2007, p. 1). Therefore, drawing on critical pedagogical theories (Kumashiro, 2004) will help raise students and teachers' consciousness, and thus enable them to use their agency and have the capability to practice freedom.

Because the role of electronic technologies in changing the lifestyles of people is obvious and essential, teachers and students need to understand the potential of new technology tools in order to make education the practice of freedom (Kumashiro, 2004). New technology has a profound impact on the people - especially the ''new or digital generation'' - and their life, thinking, behaving, and interacting with the world.

According to Friedman (2005), after the Internet's expansion for popular use in the 1990s, the technological revolution allowed individuals to become authors of their own content in digital form, which enabled them to share it globally with other individuals. Friedman writes (2005):

It is now possible for more people than ever to collaborate and compete in real time with more other people on more different kind of work from different corners of the planet and on more equal footing than at any previous time in the history of the world using computers, e-mails, fiber-optic networks, teleconferencing, and dynamic new software, (p.8)

This technological revolution has transformed many aspects of interaction in the world. One only needs to consider the impact of social media outlets like Twitter and Facebook to confirm this notion. The education community is not immune to these changes in interaction. Innovative technology has been challenging today's global educational community "to design learning opportunities that prepare both young and older alike to benefit from and contribute to contemporary culture" (Norton & Wiburg, 2003, p. 4-5). Further, it challenges the educational system to teach students the digital literacy skills needed to be successful in a rapidly evolving world.

One of the ways in which we, as critical pedagogues, may pursue social justice is by using technology in public education institutions to improve the digital literacy of those students who do not have access to technology on their own. According to Tickton (1970), this "greatly influences a students' ability to learn, can make education more productive, more individual, and powerful, making learning more immediate, giving instruction a more scientific base and making access to education equal" (as cited in Norton & Wiburg, 2003, p. 5).

Additionally, using technology in the classroom allows students to practice their own interests, which is one of the students' rights in a democratic education. Freire (1998) supported this assertion in the seventh letter of Teachers as cultural workers: Letters to those who dare teach, in which he advises teachers "from talking to learners to talking to them and with them; from listening to learners to being heard by them" (p. 63). This emphasizes his belief that no effective teaching and learning may occur without considering the learners' interests. Therefore, teachers should be adaptable to students' interests knowing that learners' needs are dynamic and they grow throughout their learning journey. Digital literacy is a skill that individuals throughout the world can apply to learn more about self, others, and our interaction in this world. Our students need a form of '"liberal education" that invites them to know how to learn, and to think about the world differently in partnership with others.

Freire (2005) explained that "we must redefine our understanding of the world; though it is historically produced in the world, this understanding is also produced by conscious bodies in their interactions of the world" (p. 96). Advocates of increasing the use of technology in education argue that the interaction of the 21st century learner is being redefined by technology. It is important to recognize the research in the previous section that shows how technology can actually enhance the students' interaction with their world. Solomon and Schrum (2010) confirmed this idea by stating, "educators can use new tools so that students have new ways to learn both old and new skills" (p. 4).

Significance of the Study

The literature focuses on the value of integrating technology into the teaching and learning process in order to provide learners with the ability to think critically, collaborate, and solve problems (Norton & Wiburg, 2003). Studying the literature that focuses on the significance of integrating technology into the pre-service teachers education curriculum and the obstacles that pre-service teachers face in utilizing technology in their learning and teaching settings (Choy, Wong, & Ping, 2009) helped me justify this study in order to explore how pre-service teachers of one university identify, experience, and negotiate the barriers to ICT access in their schooling experiences.

The majority of the literature that has looked at the Jordanian higher education system drew on quantitative approaches and focused on the effectiveness of integrating technology in education. However, what is critically missing in the literature is a deep understanding of the pre-service teachers' experiences and perceptions. This is possible by qualitative phenomenological approach and drawing on the framework of critical theories in order to understand the barriers to ICT access in pre-service teachers' context based on their lived schooling experiences. It is important to learn and

understand the unique experiences of the Iranian pre-service teachers that highlight their struggles and successes about the barriers to ICT access.

Pre-service teachers are the future teachers who will be teaching future students. Therefore, discussing the issue of ICT access with them is very significant for them; for their peers in other Jordanian universities; for their instructors, administrators; and for the whole of elements that affect teacher education programs in Iran. Understanding the perceptions, attitudes, knowledge, and experiences of Iranian pre-service teachers regarding the barriers to ICT access in their schooling will assist them to integrate technology into their teaching and learning. This qualitative study is designed to bring a deeper understanding of the nature and meaning of the barriers to ICT access in Iranian teacher education program development.

Students need to have opportunities that allow them to break the barriers of the classroom, "from school to lifelong learning" (Norton & Wiburg, 2003, p. 9). Therefore, in order to provide current and future students with opportunities to integrate technology into authentic environments and activities which touch their environment and their learning needs, student teachers will need to explore technology tools and the barriers to ICT access in their discipline (Crocco & Cramer, 2004). This will not be achieved without opening spaces, which include a critical perspective based upon the viewpoints and attitudes of the participants, to discuss the barriers to ICT access based on their schooling experiences.

Knowing the limitations of ICT access that pre-service teachers suffer from would assist the Iranian higher education professionals, such as administrators, policy makers, and instructors, to provide more digital opportunities for their students in order to have an "education [that is] more productive, more individual, and powerful, make learning more immediate, give instruction a more scientific base and make access to education equal" (Tickton, as cited in Norton & Wiburg, 2003, p. 5).

Research questions
The research focused on the following research questions:

1) How pre-service English teachers are thinking about and conceptualizing teaching English

2) How this thinking evolves, grows, and changes through teaching and learning experiences, particularly perceptions of the use of a computer as a pedagogical tool in English classrooms.

Methodology
Participants
The participants of this research study were a group 20 pre-service male teachers studying English as their majors in Farhangian University, Iran. These participants had the experience that I was interested in investigating. In using qualitative research, I "seek to give voice to members of oppressed groups - and to uncover the hidden knowledge that they have cultivated from living life on the margins" (Hess-Biber & Leavy, 2007, p. 77).

Instruments of the study
Computer Technology Skills and Information Literacy Self-Assessment Survey (CTSILSA)
Data from the pre- and post- surveys of the 'Computer Technology and Information Literacy Self-Assessment' and 'Attitude toward Computers' were used to augment the data gathered from the interviews, specifically ascertaining changes in the participating pr-eservice teachers' knowledge and skills about computers. All research instruments were developed by the researcher. The Computer Technology Skills and Information Literacy Self-assessment (CTSILSA) survey was conducted in

the beginning and near the end of SCI course. The intention of conducting the CTSILSA survey was to ascertain additional information that reflected participants' levels of confidence and knowledge about using computer technology. The responses from pre-service teachers were used as a tool to examine developmental changes in confidence and knowledge related to the usage of computers.

As for the survey items, eight different aspects of computer skills were assessed: 1) Basic Computer Skills (Basic Computer Operating Skills, Computer Maintenance and Security Skills, and File Management Skills); 2) Word Processing Skills; 3) Spreadsheet Skills; 4) Presentation Software and Multimedia Skills; 5) Online Communication Skills (Browser and Navigation Skills /Email/Chat); and 6) Information Literacy Competencies and Information Literacy Ethics Competencies (Moral and Ethical use of Computer-based Technology). Participants were asked to rate themselves for each skill from the following perspectives:

1=1 need to learn this.

2 = 1 can do this a little.

3 = 1 can do this with ease.

4 = I am capable of teaching this to students.

Results and Discussion

Teaching Experiences in Implementing Computers into English Classrooms among Pre-service Teachers

The survey was conducted with pre-service English teachers during the nine weeks of the teaching practicum. The survey was designed to examine implementing computers into English classrooms during the practicum in particular. It was conducted on the second professional growth day. Twenty pre-service English teachers completed the survey. One female student (Teacher Candidate #21) did not participate in the field experience.

Views about the Features of Good English Teaching Practice

A total of 12 out of 20 students said that they used computers in their lessons, but eight pre-service teachers did not implement computers in their instructions after the first professional growth day. Those respondents who implemented computers were asked if they also had implemented 'Outcomes from the ICT Program of Studies' when integrating computers into their lessons. Only two out of 12 respondents said that they had actually implemented outcomes from the ICT Program of Studies .

Based on responses from pre-service teachers who completed the survey, a total of four pre-service teachers did not integrate computers into their lessons throughout the entire teaching practicum. The main reasons for decisions not implementing computers into lessons among these four pre-service teachers related to the limited access to computer equipment in schools in which they were placed.

The written responses from pre-service teachers showed that no single reason influenced their decision to implement computers in teaching, yet several respondents indicated that a couple of different reasons influenced their decisions with respect to computer integration during the practicum. The responses indicated that pre-service teachers mostly implemented computers because they wanted to improve their teaching and enhance students' learning.

On the other hand, pre-service teachers mostly did not integrate computers into their classes because of the traditional teaching style of their mentor teachers, the unavailability of computer equipment and other resources required for computer integration, and time constraints in that they did not have enough time to plan and prepare lessons involving computer integration. Interestingly,

none of respondents mentioned their technology proficiency as a factor for their decisions. The written responses are categorized and summarized in Table 1.

Table 1: **Factors influencing decision-making in the implementation of computers during the teaching practicum (APT)**

Implemented computers	Did not implement computers
Related to teaching • To improve teaching o Variety in instructional strategies o As a tool for concept delivery o Clear presentation for concepts o Appropriate for the content taught o Easy to organize the information (e.g. notes) o Time efficiency (e.g. easy for setting up) ***Related to learning*** • To enhance learning o To assist visual learners o To assist in conceptual understanding of difficult concepts • To increase learning opportunities for students • To make learning interesting • To improve classroom communication ***Related to personal beliefs about the importance of computer skills for students***	***Related to school environment*** • School support o Teaching styles of mentor teacher (e.g., very structured teaching schedule, no opportunity) o Unavailability of resources and equipment (e.g. LCD projector, computer lab, other resources) • Time constraints • Inappropriate for teaching content or context Related to personal reason • Laziness

The following are selected responses from the participants:

Reason for implementing computers

• *To attempt a different technique in teaching, and observe how well it worked*

• *Mostly as a more efficient or effective means to deliver the content. For example, Power-Point shows outlining the steps in balancing chemical reactions (answer key to a quiz they took) Or outlining all the organics of a cell and their functions.*

• *Easier than setting up lab apparatus*

• *Excellent simulations found on the Internet can enhance understanding of difficult concepts.*

• *To improve the efficiency of communication in the classroom. As well, the resources were there, so I thought I might use them as well.*

Reasons for not implementing computers

• *The structure of my mentor teacher does not easily allow for the implementation of computers. Also, they [The integration of technology] did not provide success in content delivery or understanding, or success in my placement.*

• *The opportunity just has not been there.*

• *I do not have easy access to a projector or computer lab so I can't use computer technology in my class.*

• *Time constraints as of yet have not allowed me to go to the computer lab.*
Types and Ways of Computer Applications Used in Teaching English

The responses from the participants showed that pre-service teachers implemented various types of computer applications during the nine-weeks of teaching practicum. The types of computer applications used varied, including word processing, PowerPoint, the Internet, simulations, and motion sensors. Among these, presentation tools, the Internet, computer simulations, and multimedia software were more frequently implemented than other applications. Some pre-service teachers integrated spreadsheets into their English classes. This result showed that majority of respondents were not able to find ways to integrate spreadsheets for teaching their subjects, and teacher educators should model how these computer applications can be integrated into teaching English subject areas. Table 2 summarizes the ways in which computers were implemented by pre-service teachers throughout the practicum. processes related to computer integration. Among 11 respondents who implemented computers in their teaching, nine respondents provided answers to the questions regarding changes associated with the use of computers.

Table 2: Types and ways of computer applications used in teaching English

Computer Applications	Ways of implementing this application
Word Processing	Everyone used this application to develop notes, tests, and students' worksheet quizzes.... For preparation of the lesson, as well as writing journals
Spreadsheets	Most of them used Excel to graph and print charts, for computing data and for grades
Presentation Software (e.g. PowerPoint,)	Most of them preferred to use PowerPoint for lectures, lecture notes (occasionally), but mostly as a way to spark up the content, slides used to teach lessons and presenting lesson materials, for giving notes and pictures to display to the class, for presentation, showing movies, and notes, and pictures to display to the class
Multimedia Software (e.g. video clips, sound clips)	• Have shown some video clips of experiments, watch videos on topics relating to content to explain it all better, movie clips to illustrate concepts, educational videos, demonstrations and educational videos, and showing movies
Online communication (e.g. E-mail, Chat room)	E-mail was used to contact teacher and university Facilitator, Communications with staff, with their colleagues
WWW Software (e.g. Web searching	• Students "google" search • Internet resources for playing games in classes • viewing web page and reading article • Worked for Internet searches • Fact finding and information source • For research: search engines, website • Online tutorials

The written responses showed that some respondents did not experience any changes in teaching with computer integration. On the other hand, some participants mentioned increases in classroom discussions and students' engagement as a positive result of implementing computers in their English lessons. Some of the respondents indicated that they had experienced some improvements in their teaching and students' learning as a result of computer integration. However, one student found that "using PowerPoint was not as effective as working through the material using other methods. Seemed more sterile and less interactive," . The written responses particularly showed that of the teacher candidates started to see the usefulness of using computer technologies for teaching English. This pre-service teacher initially did not believe that the use of computers was a good idea for teaching English. However, the reflective responses from teacher showed evidence of conceptual development in his understanding of using computers in education although he still thought that the use of computers in English classroom was not necessary for him.

With respect to the challenges associated with computer integration, pre-service teachers who integrated computers into their lessons experienced different types of challenges. Technical problems were still major challenges for pre-service teachers when implementing computers in classrooms. At the end of the practicum, some pre-service teachers showed development in pedagogical awareness concerning using technology in educational practice. None of the respondents mentioned the availability of resource and equipment as challenges.

Regarding evaluation of the educational effectiveness of computer integration among pre-service English teachers, three out of 12 pre-service teachers who implemented computers did not provide their answers to the questions about the evaluation of educational effectiveness of computers in their teaching. Responses from nine respondents showed that pre-service teachers who had teaching experience using computers during the second half of practicum mostly thought that the use of computers in their English lessons was educationally effective, yet some of nine respondents developed critical views about the use of computers in the educational setting. Overall, pre-service English teachers evaluated their computer integration during the practicum as educationally effective for their teaching, as well as for students' learning.

However, one respondent talked about the importance of availability of resources for computer integration in all schools in order for her and all other teachers to stress integration of technology in an educational setting. The following are selected responses from participants regarding their judgments related to long-term outcomes resulting from the integration of computers into the field of English education:

• It should improve both teaching of English and student comfort with technology.
• Wait until all public schools actually have all this technology. Until they do, I don't think it's worth stressing out about. I will not bust myself about learning how to use it or buying it if the school cannot support me.
• Invisible use of technology as students already knew how to use it themselves so it should be considered as a common place usage in the classroom.
• Students will benefit from using materials and equipment that they might use in real life job situations. Having them learn how to use online resources is very beneficial to creating life-long learners.

Intention to Implement Computers for Future English Teaching

At the end of the survey the pre-service teachers were asked about their intention to implement computers into their future English teaching. In addition, they were also asked to discuss three types of computer applications that they were going to use for their teaching. 17 out of 20 pre-

service teachers intended to integrate computers into their future teaching while three of the respondents did not intend to do.

The majority of respondents considered the following as the three types of computer applications/technologies that they would like to implement in their teaching if no perceived barriers exist: 1)) PowerPoint (presentation tool), and 3) Internet (communication, online research and navigating). In addition, participating pre-service teachers considered utilizing multimedia (movies and digital videos), laptops and projectors, video conferencing, and smart boards. None of the respondents mentioned the use of database and word processing applications for their future English teaching.

Suggestions for Teacher Educators to Help in the Effective Use of Computers in English Instruction

At the end of the survey , pre-service teachers provided their suggestions regarding how teacher educators could help pre-service teachers make effective use of computers in English instruction. Twelve pre-service teachers provided suggestions. These preservice teachers mostly expected teacher educators to model how computer technologies could be integrated into actual classroom situations by implementing computers regularly in teacher education programs, as well as providing demos and resources related to computer integration. Some pre-service teachers noted the importance of developing comfort with using technology among teacher educators, as well as providing courses on computer integration. The following are selected comments made by pre-service teachers with respect to how teacher educators could help pre-service teachers develop knowledge and skills in relation to the effective use of computers in English instruction.

• *Use them [computers] regularly in personal settings to raise comfort levels. Become familiar with possibilities and try to observe them in use.*

• *Model use of computer technology both as a delivery tool and as a research tool. Provide examples of useful resources*

• *Teacher educators must become more comfortable with technology to help pre-service teachers*

Conclusion

The results of this study showed that the ways of implementing computers into English lessons were varied amongst participating pre-service teachers. Some pre-service English teachers extensively integrated various computer technologies into their practice, though some decided not to.

Although the data showed that pre-service English teachers' personal and professional experiences with the integration of computers varied, certain computer applications were not implemented for either pre-service teachers' teaching or learning.

Nevertheless, through these authentic learning experiences, individual pre-service English teachers developed unique views about computer integration based on their beliefs, values, and preferences. A new educational environment where innovative pedagogical considerations and new skills were required created feelings of bot excitement and anxiety for teacher candidates/pre-service teachers. On one hand, most pre-service English teachers described their experiences with computer integration as enjoyable and valuable. They also appreciated new teaching and learning opportunities using innovative tools. On the other hand, pre-service English teachers struggled with "uncertainty" as they considered the pedagogical effectiveness of computer integration both for their teaching and their students' learning. As well, they also experienced some challenges and changes associated with the use of computers for teaching and learning. Technical problems associated with computer integration created 'feelings of frustration/anxiety/fear' among the majority of pre-service

teachers, and therefore, they were considered as the most challenging elements while integrating computers.

Given that pre-service teachers' practical theories are "rules-of-thumb based on experience and consisting of a repertoire of practices, strategies and ideas" (Feldman, 2000, p.610), the ideas, perceptions, and views of pre-service English teachers were explored to facilitate discussion of the data related to their practical theories.

The data suggest that there are some variations among the practical theories of pre-service English teachers. Individual pre-service teachers held a range of beliefs and values about both English teaching and learning as well as the integration of computers into English classrooms. These beliefs and values were constructed from participants' prior experience as a learner and a student teacher while teaching subject areas. Furthermore, the nature of practical theory is complex because it was constructed from the life history of pre-service teachers (Feldman, 2000). Surprisingly, some of the pre-service teachers had already brought the views concerning the critical and pedagogical aspects of using computers into the educational settings.

Participating pre-service teachers brought to the teacher education program a unique understanding of their students, their experiences with teaching strategies, and teaching resources for English instruction. Some elements of practical theory, which have been identified in the present study, seemed to be associated with a particular way of implementing computers into English lessons. In addition, the data from classroom observations and interviews suggested that specific teaching techniques, exemplars and routines were also part of the practical theory of pre-service teachers. Importantly, each element of practical theory appeared to be closely interwoven. It is difficult to generalize the responses from individual pre-service teachers because there was great variability between most of participants. In particular, fundamental attitudinal differences toward the integration of computers existed when considering that ICT outcomes are a compelling force for every teacher. Nevertheless, some ideas related to the practical theories of pre-service English teachers are suggested in the following section.

Four dominant perceptions of effective English instruction/teaching and learning were identified. One perception places a high value on 'integration of variety into English instruction,' that is, as learners, pre-service teachers emphasized the importance of integrating multiple teaching approaches/techniques to accommodate different student learning styles.

A second perception focuses on 'motivating students' as an essential component of effective teaching. Pre-service teachers believe that students enter classrooms with a wide range of interests and abilities with respect to learning and applying English. From their prior experiences of learning English, pre-service English teachers believe that it is imperative for teachers to make English (the subject matter) fun and interesting to students in order to get students' attention and to help them explore and maximize their academic potentials.

A third perception of teaching focuses on 'interactivity.' From a constructivist perspective, pre-service teachers believe that meaningful learning experiences involve students' active participation/involvement (into the learning process) and emphasize the importance of integrating interactive lessons into English learning. Pre-service teachers consider that interactive lessons provide students with different perspectives on their learning and the opportunity to engage in student-centred activities. It is also considered that the integration of interactive lessons helps teachers accommodate the various learning styles of students.

Finally, the data showed that the majority of participating pre-service teachers were optimistic about the integration of computers and ICT outcomes into English lessons, yet their understanding about ICT outcomes as mandatory curriculum was minimal. However, some cautions concern-

ing pedagogical effectiveness and other educational issues associated with the integration of computers were addressed by some of the participants. The majority of pre-service teachers positively viewed the potential of the computer as a tool for teaching and learning based on their positive learning experience of using computers. From this perspective, pre-service teachers emphasized the critical role of teachers while computers are integrated into English classroom. Based on pre-service teachers' placing a high value on visualization and student-centred learning in English education, it was highlighted that the two most beneficial aspects that computers have as a pedagogical tool are helping and enhancing more student-centred learning and providing complex and sometimes interactive visual aids to help students understand concepts better. This perspective is likely reinforced by a prior belief concerning how students learn English.

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