

CURRICULUM REFORM IN SCHOOLS: THE INTEGRATION OF COMPUTER TECHNOLOGY INTO ENGLISH LANGUAGE TEACHING

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ABSTRACT

This study is a case study to explore how EFL teachers integrate computer technology into the instruction as a respond to a curriculum reform effort. The focus was the teacher's views on factors affecting their use of computer technologies in the classroom. The researcher used case study method that involved three participants. From the qualitative analysis method the researcher found four themes that describe teachers' use of technology in EFL classroom. Those are alignment with the hardware capacity, different teaching strategies, management of time, and expectation for better computer integration. The findings indicated that the implementation of strategies requires teachers to consider about all aspects connected to the integration of technology into the curriculum. The findings of this instrumental case study contribute to the understanding of factors affecting the integration of computers into the curriculum that provides insight into better practice of the utilization of technology into English language teaching.

Key words : Curriculum reform, Technology integration, Case study

1. INTRODUCTION

The purpose of this study is to explore how EFL teachers integrate computer technology into the instruction as a respond to a curriculum reform effort. Specifically, this study explores teacher's views on factors affecting their use of computer technologies in the classroom and how these views reflect changes in teachers' actual classroom practice. It is based on the recognition that teachers are the key players in curriculum reform and in particular the learning and teaching processes in their own classrooms. Therefore the study focuses on the teachers' voice. This study examines how their views and practices are developed and transformed as a change from conventional teaching without technology, to technology enhanced learning activities.

One of the key drivers of school reform is the trend in integrating information and computer technology into the school curriculum. Curriculum reforms require schools to improve teaching by integrating educational technology and at the same time the advance of computer technology inspires educators to make improvement in their curriculum. "Technology opens an array of possibilities for learning opportunities along with other changes in

the conduct of schooling" (McNeil, 2009: 158). There has been a rapid progression from teaching students how to use computers to using computers as powerful tools in everyday teaching and learning. Technology is often considered to be powerful as "a tool for global and multicultural social activism in the interest of human betterment" (McNeil, 2009: 159 – 160). Computer technology helps students to engage in beneficial negotiation of meaning both online and with other students in class (Dela Fuente, 2003; Lee, 2002; Meskill, 1992; Tudini, 2004) so that effective computer integration into the instruction can contribute to better student learning. This has implications not only for the way in which students learn, but also for the method of instruction. The adoption, development and growing emphasis on 'e-learning' and the development of banks of learning objects signify an expansion of curriculum possibilities.

Technology does not in itself bring about improvement in learning. Although it may bring positive impacts on students' motivation, the improvement of learning will depend on how the technology is utilized in the real application of foreign language learning experiences. On the other hand, there is no single model that can be used as the

standard method of using computer technology into language classroom learning activities. Integration of computers in second or foreign language classes as one implementation of technology in education does not guarantee that better learning can be automatically achieved. Therefore, by “creating successful collaborative teams that work on ambitious projects that are meaningful to someone outside the classroom” (Kearsley & Sheiderman, 1998: 20) it is expected that the integration of computer technology will facilitate better learning experience for students.

2. LITERATURE REVIEW

Many studies have shown the effectiveness of computer technology to foster student learning. However, there are still many gaps in the practice that require teaching practitioners to consider. Keengwe (2007) identified the gap that arises between teachers’ and students’ skill level in operating computer software. He claimed that “there is an alarming gap between technology’s presence in higher academic institutions and its effective integration into classroom instruction” (Kengwee, 2007: 170). His research found that for personal activities the participants are very competent in using word processing, using software, using electronic mail, using electronic files, and using the Internet and the World Wide Web, for both personal and instructional activities. In addition, the results from his study indicated that students are not highly proficient in higher-end computer applications that could enhance their learning experiences.

Many students lack exposure to technology and/or the Internet at school and home. This happens not only in foreign language learning context but also in the context of other subject matter teaching. The digital inequity this creates leaves students at risk of failing to develop the digital media skills needed not only to succeed in education and later in the workplace, but also to function effectively in society. Further compounding this issue is the fact that even when technology is integrated into learning, educational institutions serving students living in low economic background tend to use technology for more traditional memory-based and remedial activities, while institutions serving wealthier communities are more likely to focus on activities that stress communication and expression (Anderson & Romkvist, 1999). For example, the

average student may only utilize technology at school anywhere from once or twice a month to once or twice a semester, and the majority of this time is spent working on low-level cognitive activities such as word processing (Hart, Allensworth, Lauen, & Gladden, 2002).

Another gap also arises on the level of teachers’ confidence. Some teachers are not confident about their computer proficiency but they showed an eagerness to improve their computer technology education (Bauer & Kenton, 2005). Meanwhile, confidence is a key factor in learning to teach with computer technology. Integrating emerging technologies into instruction can bring about new responsibilities for teachers (Boling, 2008). The low level of teachers’ confidence in using computer in the classroom has significant effect on the spirit of developing computer-based instruction. Further Bauer and Kenton (2005) found that low level of instructional time devoted to instructional uses of computer technology. They say that it is still difficult to find teachers who use computer technology most of their instructional time. The major obstacle of the computer integration into the curriculum includes hardware, time, student computer skill level, and internet connection issues.

Another important issue in curriculum reform effort regarding the computer integration into the instruction is related to the change of views and beliefs about teaching with technology. The images of teaching and learning that people bring to the classroom provide powerful organizing frameworks for how they think about teaching and are, therefore, difficult to change (Borko & Putnam, 1996). The highest likelihood of integration will occur only if they value technology integration and see compatibility between its innovative uses and their existing values and beliefs (Zhao et al., 2002). It should be realized that teachers and students may have different view about the role of technology in education.

In her study Boling (2008) found that the students view technology as making schoolwork more efficient and productive. However, the students doubted that technology could be used to support and enhance literacy learning. They also believed that engagement in online activities did not support the reading and writing skills that teachers are expected to teach in schools. The researcher also found that she and her students have different opinion about the use of blog for enhancing learning. The teacher

believed that the process of creating a Web Blog to publish information online was a positive learning experience that could heighten students' awareness of the writing process. On the other hand, her students expressed hesitancy toward using online forms of communication with children because they felt that technologies such as Blogs and instant messaging were unsafe. Therefore, the students believed that blogs and other forms of online communication had a recreational rather than educational purpose.

These instructors' use of computers is dynamic and unpredictable in terms of time and frequency. Kim & Rissel (2008) reported that beliefs about the nature of learning the subject matter and the interplay of these beliefs with their attempts to integrate computer use constitute variety of patterns. Instructors' beliefs about the nature of learning the subject matter and their own roles in the classroom significantly affected their adaptations of computer based instruction. "one major factors in instructors adopting computer in their teaching is their concern about its usefulness to their classroom endeavors" (Kim & Rissel, 2008: 64). The instructors' visions of themselves as instructors and their beliefs about the nature of learning the subject matter are foremost in their reflections on the use of computers, and both of these reveal an overriding concern for promoting learning in the classroom. In addition, external support factors such as encouragement from the faculty and peer pressure could be either positive or negative; depending on the experiences individual instructors accrued throughout their history of using computers in their classes.

Many studies also found that teachers have positive attitudes toward the integration of computer into the instruction. Many of them believe that computers give positive impacts on student learning. Chiu (2008) found out that the integration of computers into the instruction has impact on learners' learning autonomy. The study reported that learners' autonomy is also affected by the roles the teachers play in the instruction. Teaching roles do not provide opportunities for promoting learner autonomy whereas counseling roles creates a supportive learning environment for the development of autonomy in learning. It would be possible that when the teacher took the teaching role, the learners react by doing the assignment simply to do the task. On the other hand, the learners can be motivated to

re-read the works and make more revision when the teacher gave praise. Al-Jarf (2004) reported that the use of various computer-based methods increased the quantity of writing instruction and the amount of student writing more than traditional instruction. This condition helps students to improve students' writing skills.

3. METHOD OF STUDY

To acquire empirical data from the actual practices this research adopted an instrumental case study method (Stake, 1995) focusing on instructors' effort in integration of computer technology in their teaching. It aims to offer insights to better understand the complexities of integrating technology in teaching contexts. Case study model (Creswell, 1998; Stake, 1995) was employed to explore how three instructors used computers, identify their perception about computer integration in their teaching, and determine how the instructors manage the supports and barriers in making the instructional change. Instrumental case study was chosen as the most appropriate methodology because it provides insight into why and how instructors used computers in their classes. The data analysis followed the common procedure used in qualitative research studies.

3.1 Participants

The researcher contacted three instructors who have integrated computers in their courses and all agreed to participate in the study. In this sense, the sample was one of convenience, but provided the desired context of classroom instructions in which computer use was being introduced in a typical fashion. The three instructors of Instructor A, Instructor B, and Instructor C taught in different educational level. Therefore, they have different population of students.

3.2 Research Settings

The study was conducted in Indonesia in which the researcher interviewed teachers who teach in major cities in this country. The interviews were conducted in December 2012 where the teachers have finished the teaching and learning processes in the even semester of 2012 curriculum year. The document analysis were started at the beginning of the semester and continued until February 2013.

4. FINDINGS

4.1 Demographical Description of the Participants

The three participating instructors had variety of years of experience teaching and different school situations. All instructors teach in one of major provinces in Indonesia. With regard to using computers, Instructor A described herself as a novice and expressed a lack of confidence. She had been teaching for 12 years but she just started to integrate computers into her instruction the last two years. She teaches undergraduate teacher education program. The college where she teaches is located in the central city and has initiated the use of e-learning since five years ago. Several computer labs are provided by the college and internet connection with 15 MB bandwidth in which the students can access online learning resources either using wired or wireless connection has also been established.

Instructor B had 15 years of teaching experience. He has used computers in his class instruction for about 6 years. He stated that he felt comfortable using a computer and had sufficient knowledge about using computers in instruction. He teaches EFL in a private high school, K10 – 12, in the central city with 450 students. The school has encouraged teachers to integrate computer technology into their instruction although there are only some teachers who respond positively with the invitation. The school provides 3 computer labs and provided internet connection with 8 MB bandwidth. The computer labs are intended for conducting computer courses. Limited hot spot area is also provided for the students.

Instructor C has 15 years of teaching experience. She stated that she was quite knowledgeable about using computers and started to integrate computer technology this year in the school. She teaches in middle public school, K7 – 9, in a suburban area with 540 students. The only motivation for the computer integration for this teacher is from the national curriculum. The government encourages teachers to utilize computer technology in improve learning. The school has 2 computer labs consisting of 20 computer units in each lab. The internet connection is very limited and only provided in the labs with very weak connection speed.

4.2 Data Sources

Data sources for this study were interviews and instructional documents that consisted of teachers' preparation and student's work. Three interviews were conducted with the instructors using audio chatting facilities to explore the instructors' beliefs about language teaching and the use of computers. The researcher used semi-structured guided questions (Patton, 1990) to probe views about language teaching and computer use and to ask for further explanations where necessary. All interviews were recorded and later transcribed verbatim. The lesson plans were sent to researcher by email and the works of the students were observed through the online learning portals used by the teachers.

4.3 Coding and Analysis

The analysis in this research followed the common procedure in qualitative research. The process included *data reduction*, *data display*, and *drawing conclusion* (Miles & Huberman, 1994). Based on the interviews, a tentative coding system was developed to understand each instructor's case. A constant comparative method (Bogdan & Biklen, 1998) was used to compare and contrast the three cases. A short summary chart of the categories was used during the analysis to organize and arrange the information into an immediately accessible and compact form, as well as to grasp what was happening (Miles & Huberman, 1994). This chart was also used to visualize the obtained data during the analysis so that comparison can be done more easily. The information from the interviews was then compared with the information from the instructional documents and the online works of the students collected using observation rubrics.

4.4 The Findings of the Study

All three instructors felt that each school where the instructors teach encouraged them to use computer technology to improve teaching. After conducting a cross-case analysis of the three instructors, four overarching categories emerged: 1) Alignment between the teaching strategies and the capacity of the hardware; 2) Change of management of time; 3) Teachers' and Students' computer skills; 4) Teacher education and professional development programs. The four categories were then used to generate themes for further analysis. There were

four themes that were generated from the coding scheme, namely: 1) Alignment with the hardware capacity, 2) Different teaching strategies, 3) Management of time, and 4) Expectation for better computer integration. The analysis of each theme is presented in the following section.

4.4.1 Theme 1: Alignment with the Hardware Capacity

The instructors in this study showed similar views about the importance of computer technology to improve learning. In addition, three instructors in the interview did not show any dissatisfaction about the quality of the hardware facilities in their school. The important thing is that they needed to adjust the teaching strategies so that the hardware weaknesses did not create too much trouble to the flow of the lessons. They also had carried out various changes in their teaching approach with the existence of the technology in their schools. Each of the instructors involved in the study clearly also contrasted with one another in their use of computers. They used different teaching strategies to fit with the available computer facilities in their schools.

4.4.2 Theme 2: Different Computer Integration Strategies

High level of computer integration. Instructor A taught three courses during the semester; intensive reading, extensive reading and English prose (focusing on short stories). She intensively used the computer in each courses. She brought a laptop to the classroom and used it for 30 minutes to show how to use the course Web site. A projector has already been installed permanently in the classroom so that she just needed to connect her laptop to the projector to show her teaching materials. She developed online network websites for the students to post assignment in the form of messages and to share ideas about the topic of class discussions. In the classroom, Instructor A used the teaching materials which she developed to introduce the class discussion. She often used group discussion activities to invite students to express ideas about the topic of the course. After some activities which are typical as classroom activities, in the last 30 minutes Instructor A showed the students' responses posted on the course Web site. She showed only some of them and gave comments on the messages posted

by the students. She didn't show all of the posted messages because of the limitation of time

The use of computers done by Instructor A can be described as high level of computer integration into the curriculum. She described that the students have high level of computer skill, so that she did not need to work on teaching some basic things regarding computer skills. The way she utilized computer technology was well integrated with her goals for the course. When Instructor A gave instruction to the students to do online activities outside the class schedule, she had a specific purpose for the students to access materials on the course Web site. Sometimes in the class sessions she also needed to guide students in using the course Web site, especially the website which was managed by the university.

Instructor A informed that she got sufficient supports to integrate computer technology in her instruction. Sometimes she had difficulties in managing the course Web site so that she asked other instructors who had better knowledge about web. She also was satisfied with the quality of the facilities provided by the institution in the form of computer laboratories for the students and hotspot facilities for the students so that the students didn't have too many difficulties in doing the online activities.

Her initiative to integrate computer technology required her to change her method of teaching. She informed that she had included the online activities in the course syllabus in which online activities become an integral part of the course. She was aware of the difficulties it may create, so she tried to be flexible at the beginning of the semester. She did this to give opportunities to the students to familiarize themselves with the technology facilities. After 3 weeks, she became more confident about her strategy in integrating the computer technology into her instruction. In the interview she also described how she had to do trial and error since she started to integrate computer technology last two years. She made changes in her syllabus and lesson plans. She also felt the difference in the interaction in the classroom because the students have much information to share and discuss.

Medium level of computer integration. Instructor B taught English course to eleventh grade students in his high school. When he was in a regular classroom, he spent most of the class time on group discussions about reading assignments focusing on

organization, main point, and style. For whole-class discussions, he brought in writing samples in the form of essays or functional texts to analyze organization, cohesion, and grammar. Instructor B had students share their final drafts in groups and comment orally on each other's papers as peer review. He sometimes brought his laptop and a projector in the class because there was no projector, installed permanently in the classroom. He moved his class to the computer lab for writing practice or to access online materials.

He also developed a course Web Blog for the students to access. However, he did not assign the students to post anything on the course Web Blog in a regular basis. The instructor posted teaching materials in the course Web site in which the students can access. Class discussions were related to materials posted by the instructor on the course Web Blog. He used the website for discussion when the class moved to the computer lab.

The use of computers done by Instructor B can be described as medium use of computer in the sense that he connected students' activities in the lab with classroom discussion. He used the computer lab three or four times during the semester, spending a total of 12 to 16 hours in the lab. He conducted group discussion in the regular classroom and had his students write their essays in the lab. During lab time, students worked individually on their writing project, writing, revising, and editing their essays on computers based on their classroom discussions. Instructor described the sessions in the lab as an independent learning time. His group discussions in the regular classroom were designed to facilitate students' activities in the lab when the topic of the discussion was related to writing or writing skills.

Instructor B used the online discussion twice in the semester to assign students to share the findings from their assigned task. He stated that reading other students' postings on the online discussion board is important to improve interpersonal communication that can enrich students' writing process.

Similar to Instructor A, Instructor B also got support from his co-instructors in the school. He often discussed the difficulties regarding the online facilities with other instructors so that they could share ideas to make better online instruction. However, since the internet connection was only provided in the laboratories the online activities could

only be carried out in the laboratories. The instructor also mentioned that some computers were old so that some students complaint about the speed of the machines. He expected that the school could improve internet facilities and change the old machines so that the online learning facilities can be improved too. He also described that the computer skill of the students was high enough including keyboarding, word processing, using powerpoint and searching online materials. In the interview he informed that he did not make significant changes in his syllabus. He included computer technology issues in some of his lesson plans. He also informed that there was no big change in the classroom interaction model. The changes happened when the class activities were moved to the computer laboratory. The students seemed to be busier working individually in the computer lab. They intensively work in front of the computer to finish the task given by the instructor.

Low level of computer integration. Instructor C taught English to seventh grade students. It is the first grade in the school where English is taught to the students. The instructor taught reading, writing, speaking and listening skills which were often presented in integrated manner. Her class met for 4 hours each week in a regular classroom. In the regular classroom, Instructor B used a variety of activities such as pair work, group discussion, whole class discussion, student presentation and grammar exercises. Students learned about how to write a topic sentence, practiced reading and writing short essays or functional texts, and they also practiced listening and speaking skills. Pair work in the classroom usually was based on the language activities in the genre-based EFL materials that the instructor designed.

In the semester, Instructor C assigned two projects to the students. Project one required students to create a compilation of functional texts in the form of procedures. The result of the project was a compilation of texts of procedures which the student created. For the second project the instructor assigned students to make descriptive texts describing events in their neighboring environment. Both projects required students to use computer to make the printed materials which should be submitted to the instructor. To do this she coordinated with computer technology teachers to help the students to accomplish the tasks. The

computer technology teachers taught word processor program. The instructor informed the technology teacher about the project and asked the technology teacher to spend some meetings to help students to design and create the printed product. The coordination with the computer technology teachers was conducted at the beginning of the semester so that the technology teacher had the time to plan his day-to-day teaching schedule. She also informed the students that they might find materials from everywhere including internet resources. She knew that some students had already been familiar with internet for chatting. The students usually went to internet rental center because the internet connection in the school is very limited.

The computer use done by Instructor C is best described as low level of computer integration. She used them in a limited and restricted manner that seems not to be linked to all of her classroom activities. She did this because of the limited computer facilities in her school. There was no projector installed in the classroom. When she wanted to show visual materials or play video clips she had to bring her laptop and projector to the classroom. There were only 3 projectors in the school which were be used by all teachers so that she had to book it long time before she wanted to use one.

It is clear that Instructor C has the biggest barrier regarding computer facilities in her school. The computers were only provided in the laboratory with very limited internet connection. The computer laboratories were intensively used by the computer technology teachers so that Instructor C could not move her class to the computer laboratory. The only way that she could do was to cooperate with the technology teachers in the school. In the interview Instructor C informed that she did not make any changes in her strategy of teaching. In general the teaching and learning situations were the same. When the students presented their project result the teaching and learning process was just like the conventional class without computer technology. The only change was seen on students' motivation and enthusiasm. The students seemed to be very happy with the projects that they created. They told in their reflections that they had wonderful experience in processing and finishing the project using computer. Other instructors showed some forms of amazement with the product that the students have created. Some of them were surprised with the computer ability of

the students. Therefore, Instructor C planned to design another project-based learning again in the next semester utilizing computer technology.

4.4.3 Theme 3 - Management of Time

The three instructors indicated that they were enthusiastic about computer technology in learning. However, they expressed an overarching concern about the amount of time to prepare computer-based lessons. The three instructors showed different level of difficulties regarding the time management related with the computer integration. Instructor A informed that since she had all delivered lessons in the traditional manner without computer technology, she reported a dramatic increase in the amount of time it took to prepare a class to use some form of computer technology. She needed to back up her lesson plans in case of technology failure. She also informed that with the intensive use of online learning interaction, she had to get up early in the morning and checked any changes in the course Web site.

Instructor B informed that in his class in the lab students had to be more carefully directed to be productive in groups where just one member used the computer. Rotation plans had to be in place to share sparse computer time equally. The time it took to get students engaged in a computer lesson from start to finish in a class less than an hour was stressful to the participant. It needed more time to make students ready to do the tasks in the computer lab. To make it worse, some students came late since it was not their regular classroom. Students also needed travelling time from their regular class to the lab so that the lab activities are often late for about 5 to 10 minutes. In the lab students had to find seats at computers that were operating, switching on, listening to directions, and reading handouts. Then they would negotiate keyboards and menu bars to get to desired location. This would often take up to 10 minutes of class time. When the activities involved online process, the students required much time to get into the desired web site. Another time-consuming activities also happen when students shut down the computers. Therefore, the class might get 25-30 minutes of quality instruction as reported by Instructor B. The instructor was very brave, but he often wondered if it was all worth the extra time.

Instructor C did not show any concern about the time issue in her computer integration activities. She did not make significant preparation regarding

the technology issues in her instruction. The only extra time that she reported was that when she negotiated with technology teachers. She had to inform the purposes of the project as clearly as possible so that she does not give too much trouble to the technology teachers. She had to be cognizant about the impact that she created on the technology teachers' schedule.

From this it can be seen that the more intensive the computer integration is the more extra time is needed. The extra time appears not only on the classroom activities but also on the instructor's activities outside the classroom meeting. The interview from the three instructors also indicates that when computer integration has been planned since the construction of syllabus the instructors force themselves to accomplish the best computer integration into their instruction.

4.4.4 Theme 4 - Expectation for Better Computer Integration

The three participants showed different expectations for the future of the computer integration in the curriculum especially regarding with the courses that they teach. Instructor A mentioned that she was happy with what she did at that moment because she could do something new. However, it would be very helpful if the institution where she works gave training to instructors especially on the practical things related to web blog design. Some professional development programs that she had attended were too complicated so that she could not use it in her courses. Different information was given by Instructor B in which he mentioned that he concentrated on preparing students to attend the standard test at the end of the school year. Therefore, he had to make careful computer integration into his instruction so that the computer-based projects were aligned with the standard competencies described in the curriculum. He expected that the professional development programs can help teachers to use computers effectively to prepare students to do the standardized tests. Instructor C also had different opinion about improving computer integration into the curriculum. She was still enthusiastic to learn about how to use computer in her classroom. However, she was aware of the capacity of the school in providing the facility. She didn't have specific expectation of the forms of professional development regarding the use of

computer in education. She mentioned that she tried to join any professional development program regarding the use of computer in the curriculum. She believed that sometimes in the future she will need the skills to create better teaching.

The three instructors did not get specific courses regarding the computer integration in the curriculum when they took their teacher education programs. They started to learn how to use computers in the classroom when they had already been teaching for some times. All of them expected that the current teacher education programs also prepare their students to utilize computers in the classroom. Therefore, the future teachers are not only able to use computers for their personal purposes but also to use the technology to improve teaching and learning in the classroom.

5. CONCLUSION

Although this study is limited by the fact that it followed only three instructors who taught different types of language classes it allows us to glean a number of insights if we keep its limitations in mind. The experiences from the three instructors indicate that intensive computer integration requires more complicated facilities. The use of online instruction has significant impacts on the requirements of compatible computer technology in the schools. Teachers will be reluctant to integrate computers in their instruction when the computers are too old or internet connection speed is too slow. This signifies that the change to technology enhanced education requires the attention not only from the teachers but also from the administrators. Teachers should be knowledgeable about the appropriate methods when computer is used in teaching and learning. They should realize that computer integration into the curriculum requires them to change the teaching methods that are different from conventional teaching and learning. Administrators should also take the lead and make difference so that schools will not lag behind other sectors in society. Schools need to upgrade the computer facilities in the classrooms and get teachers to use them (or find out why they don't).

What teachers do in classrooms is a reflection on their training. In finding that teachers are challenged to improve their teaching by integrating computers into the instruction in the school

community, this study raises serious questions about how there were trained. Teacher education programs are understandably in a transitional phase with regard to computer technology, which is a relatively new kid on the university's curricular block. It is important that the teacher education programs device their

students with strategies in integrating computer technology into the curriculum. Teacher education programs should also realize that computer technology always changes so that technology workshops and other special offerings continue to be an important resource for teachers.

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APPENDIX INSTRUCTOR INTERVIEW PROTOCOL

- **Introduction:**

This study is intended to explore an instructor's experience who has implemented technology integration initiative in his/her instructional process. This is study to explore the experiences of an instructor who has implemented the integration of computer technology into his/her teaching practices. The exploration will be concentrated to get clear description of the computer technology integration model that the instructor has carried out as a curriculum reform effort in his/her school.

Within this interview we will begin by asking you some basic background questions followed by specific questions related with your experience in carrying out the curriculum changes.

- **Socio-Demographic Information Questions:**

1. How long have you been teaching?
 - a. In general?
 - b. At this program?
 - c. Within this school/university?
2. What level/semester do you teach?

3. What subject/content areas are you certified to teach?

4. What other jobs/careers have you had?

- **Interview Questions:**

1. What does your class activity generally look like?
2. How do you evaluate the compatibility of the hardware in your school?
3. What problem do you have regarding the amount of time to prepare computer technology lessons?
4. How do you or other teachers handle the problem of time to prepare computer technology lessons?
5. Describe your students' computer skill level.
6. What do you do to help students having low computer skill level?
7. Please describe the use of internet in computer integration into the curriculum in your school.
8. What barriers do you have regarding the use of internet for classroom activity in your school?
9. What kinds of professional development program for teachers are necessary for better technology integration into the curriculum in your school?
10. What are the roles of the administrators in creating better technology integration into the curriculum in your school?