



INVESTIGATING THE POSSIBILITIES AND CHALLENGES ON COMPUTER INTEGRATED TEACHING: RURAL SCHOOLS IN BATTICALOA DISTRICT, SRI LANKA

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Abstract

Information Integration of computer technology into the teaching-learning process will support teachers to organize their teaching-learning process in order to enhance the teaching efficiently. But due to the poverty and transportation difficulties in rural area schools in Batticaloa district, teachers did not receive enough training on integrating computer technology into the teaching-learning process. Therefore, this paper investigates the possibilities and challenges faced by teachers in Batticaloa district to integrate computer technology in their teaching-learning process. Quantitative and qualitative research approaches were used in this study within a framework of a survey research design. The study was undertaken in the district of Batticaloa which is located in the Eastern Province of Sri Lanka. The total number of teachers teaching in Batticaloa district is 6845. To encompass a diversified representation in the sample, schools which were seriously affected by the poverty and transportation difficulties were selected purposively. The questionnaire survey was distributed among the teachers who were physically present in the selected schools at the time of the site visit for data collection. Out of 200 teachers, 103 teachers returned their completed questionnaires. The data were collected using the questionnaire and closed-ended questions were analyzed by applying elementary quantitative techniques. Open-ended questions were analyzed qualitatively such as coding and categorizes. The study revealed that the majority of the teachers in Batticaloa district perceived that the integration of computer technologies will enhance the quality of their teaching. However, they faced many challenges in the implementation of computer integrated teaching. Therefore, this study suggests that relevant authorities should take responsibility to provide computer training and integrate computer-based teaching-learning activities into the school syllabus, and at the same time teachers in the Batticaloa district also need to realize the importance of the computer-integrated teaching to address the needs of the learners in the technology era.

Keywords: *Computer technology, Computer integrated teaching, Batticaloa, Poverty and Transportation.*

Introduction

In the 21st century, a large number of educational institutions all over the world have realized that integration of computer technology is needed to improve the quality of their academic programmes. Many schools in the world have started to incorporate the technological use of computers in the classroom to enhance the academic performance of the students. Therefore, it is important to organize professional development activities for teachers to help them to select the most suitable technologies and instructional strategies to enhance their teaching capacity.

Today's technology can provide greater opportunities for the teachers to share information with their students in an effective way. This allows educators to prepare students for the future, both in their personal life and professional life. Sri Lanka also believes that the integration of computer technology is one of the most important processes to enhance the effectiveness of the teaching-learning process as well as the professional competencies of the teachers.

Computers have changed the way society functions. Future generations have to compete with the emerging trends of a technologically-driven society that relies on computers to perform daily tasks. The classroom is a good starting point for people to learn how to use these complex machines. Computers grant access to the internet. Therefore, the use of the World Wide Web, multimedia presentation tools, animation techniques, and relevant video clips can effectively reflect the real-world situations into the classroom setup. Achacoso (2003) emphasized that the integration of computer technology enables



teachers to organize their teaching in an efficient manner. Further, computer technology helps teachers to build networks with other teachers from different parts of the nation and other countries in the world who share similar interests or who have the expertise in certain fields. But due to the poverty and transportation difficulties, teachers in Batticaloa district did not receive enough training and experience on using computer technologies. Therefore, they did not have

Opportunities to develop their computer skills to enhance their teaching competency to cope with the present world's needs. Under the rehabilitation activities initiated by the government, in order to rebuild the Eastern and rural part of Sri Lanka, a special concern is given to enhance teachers' computer literacy and skills to integrate computer technology in the teaching-learning process. But in practice, teachers are facing different types of problems and challenges to integrating computer technology into their teaching-learning process. Therefore, this paper tries to identify the possibilities and challenges faced by the teachers in rural area schools of Batticaloa district in integrating computer technology in their teaching-learning process.

Review of literature

Technology in the Classroom

Technology can help to facilitate a classroom where knowledge-construction takes place. Computers are having an influential effect on the teaching and learning processes, further, the use of computers in the classroom, schools would become more student-centered, and more individualized learning would take opportunities than ever before (Bork, 1985; Papert, 1980). Findings of a research done by Dwyer, Ring-staff, and Sandholtz (1991) indicate that computers can be used in collaboration for all subject areas, but that teachers have to take into account the different styles of teaching and the students involved in learning. This type of teaching requires changes in the teaching and learning approaches and the amount of time needed to learn how to use the technology (Sheingold & Hadley, 1990). Moreover, Negroponte, Resnick, and Cassell (1997) discuss that the Internet will grant new "knowledge-building communities" in which children and adults around the globe can participate and learn from each other. Computers should allow students to take responsibility for their own learning through direct exploration, speech and experience. This shifts the student's role from "being taught" to "learning" and the teacher's role from "expert" to "collaborator" or "guide". This type of change will support the development of society as well as the country. Therefore, under the post-war context, there is a need to build the technology integrated knowledge among the teachers and students to rebuild the community.

Computer Integrated Teaching

Teachers need to be supported in their efforts to use technology in the teaching-learning process in the classroom. Adaptation of computer technology in the classroom is very essential and basically, there are two strategies to integrate technology in the classroom. One is to implement technology to improve conventional teaching and learning based on lectures. The other is to transform the traditional approach into the constructivist approach and apply the technology to enhance new learning styles. Computer literacy gives a wide range of benefits to teachers to carry out their teaching-learning process effectively. Zemsky and Massy (2004) state that it can be a good indication of successful implementation of the technology integration program if teachers know about the benefits of technology for teaching and to instruct and use it regularly in their educational activities. Teachers usually struggle to identify enough time to spend in developing teaching-learning materials, and in this situation, teachers can directly go to a website and select any material or resources that meet their needs. Li (2007) highlighted that World Wide Web resources are useful for teaching. Technology can also help teachers to build networks of those who have the expertise in certain fields (Dirksen & Tharp, 2000). But teachers usually just know very basic computer technology stuff. Regarding computer literacy, Carnevale (2004) argue that if teachers know only very little about computers, the institution's investment in the facility may become less efficient. But many researchers suggest that lack of time was one of the major barriers faced by teachers (Granger et al, 2002; Kathriner, 2007).

In a study conducted in 2017, to examine the contribution of Information and Communication Technology (ICT) and Open Educational Resources (OER) integrated teaching and learning for supporting social change



among teachers in the post-war Northern Sri Lanka, the findings revealed that ICT and OER -integrated teaching and learning has supported to change teachers' thinking patterns and to change their social behaviours in a positive manner as well as to build up social relationships (Kugamoorthy & Rajini, 2017). This indicates the important role of ICT and OER-integrated teaching and learning in bringing about social change in a post-conflict social setting. Becker (1999) also expressed that network building helped teachers to solve their teaching problems and enhance their professionalism. Therefore, teachers in Batticaloa district have to come forward to integrate computer technology in the teaching-learning process in order to rebuild their society.

There is a widespread claim that technology can make learning easier, more efficient, and more motivating. "Computer technology could provide students with legitimate learning opportunities.". A research study which examines constructivist teaching and learning models indicates that technology brings complexity to the tasks that students perform and raises student motivation (Baker, Gearhart, & Herman, 1994; Dwyer, Ringstaff, & Sandholtz, 1990; Means & Olson, 1994). But students cannot be expected to benefit from technology if their teachers are neither familiar nor comfortable with it. Therefore, teachers in Batticaloa district have to familiarize themselves with the computer technology to support students to get the maximum benefits from the teaching-learning process.

Challenges to Integrate Computer Technology

Teachers are reluctant to use technology in their classroom teaching-learning process due to lack of experience with the technology (Wenglinsky, 1998). In addition to lack of experience, teachers face many other barriers in using computer technology in their teaching-learning process. They are lack of computer knowledge, lack of experience in using computers, inadequate computer technology support, time factor, teacher attitudes and lack of professional development in computer technology integration. A study conducted in three districts in Northern Sri Lanka, Kugamoorthy, Thanaraj, Lekange & Zaroodeen (2013) showed that during the last three decades, teachers in these regions faced problems in enhancing their teaching capacity with computer technology. Under the post-war circumstances in the Eastern area, a majority of graduate teachers expected to upgrade their professional competencies to cope with the present national and international standard of teacher professionalism. Therefore, a majority of the graduate teachers expressed that their first preference is to have computer training. The reason is that teacher induction programs failed to give enough focus to help teachers to survive with the new technology (Fulton, Yoon, & Lee, 2005). Ongoing professional development is necessary for teachers to learn not only how to use new technology but also how to provide meaningful instruction and activities using technology in the classroom (Ringstaff & Kelley, 2002). Teachers in Batticaloa district also should come forward to build their region to cope with a world-class community by integrating computer technology in their teaching-learning process.

Objectives of the study

The study focused on three specific objectives:

1. To identify the computer-based training requirement of teachers in Batticaloa district to enhance their professional competencies;
2. To study the reasons why teachers in Batticaloa district prefer to integrate computer technology in their teaching; and
3. To explore the barriers faced by teachers in Batticaloa district in the implementation of computer integrated teaching.

Research Methodology

Research Design

Among the research methods, quantitative and qualitative research approaches were used in this study within a framework of a survey research design.

Population and Sample

The study was undertaken in the district of Batticaloa which is located in the Eastern Province of Sri Lanka and this study was conducted on teachers who are teaching in the rural area schools of Batticaloa district. The total number of teachers teaching in Batticaloa district is 6845. To include a diverse representation in the sample, only schools which were seriously affected by the poverty and transportation were selected purposively. The questionnaire survey was distributed among the teachers who were physically present during the time of the site visit for data collection.



▪ *Data Collection Instrument*

The instrument used to collect information was a questionnaire. The structured type questionnaire was designed to collect information on three key areas namely: (i) the ICT based training required by teachers in Batticaloa district to enhance their professional competencies; (ii) the reasons why teachers in Batticaloa district prefer to integrate computer technology in their teaching and (iii) the barriers faced by teachers in Batticaloa district in the implementation of computer integrated teaching. There were three main sections in the whole questionnaire, and the number of questions in each section was varied. Also, under some of the main items, there were several sub-items, which were included to get a wider understanding of the aspects related to the main items. Under these sub-items, apart from structured type questions, a few open-ended questions were included. To develop the questionnaire, different perceptions of teachers on ICT were first taken into account. Secondly, the questionnaire was discussed with a specialist who is having in-depth knowledge about educational technology. Through this process, the questionnaire was validated.

Data analysis

The data obtained were tabulated and analyzed by applying elementary quantitative techniques such as frequencies and percentages. Open-ended questions were analyzed qualitatively such as coding and categorizing.

Results and discussion

This Researchers are thankful and obliged to the all staff, students of Kattankudy Central College for providing reliable data for done this research efficiently. And we are big thankful to the parents and lecturers who support us for the completion of this research. We humbly extended our thanks to all concerned persons who co-operated with us in this research work.

Personal Profile of the Sample

Table 1 gives an overview of the personal profile of the 103 participants. To include a variety of representation, schools were selected purposively where the schools facing difficulties by poverty and transportation seriously. To ensure the diversity of respondents, the questionnaire was administered to a sample including teachers of both genders teaching all school grades.

Table 1: Personal Profile of the Sample

| Main Characteristics | Sub Group | N | % |
|--------------------------|---------------------|----|------|
| Gender | Male | 27 | 26.3 |
| | Female | 76 | 73.7 |
| Specialized subject area | Arts | 62 | 60.2 |
| | Commerce | 14 | 13.6 |
| | Science | 17 | 16.5 |
| | Mathematics | 09 | 08.7 |
| Type of School | 1 AB | 49 | 47.5 |
| | 1 C | 22 | 21.4 |
| | Type 2 | 17 | 16.5 |
| | Type 3 | 15 | 14.6 |
| Location of the school | Urban | 17 | 16.5 |
| | Rural | 86 | 83.5 |
| Level of grade | Primary | 34 | 33.0 |
| | Secondary | 69 | 67.0 |
| Highest qualification | G.C.E. (A/L) | 28 | 27.2 |
| | Diploma in Teaching | 03 | 03.0 |
| | Degree | 56 | 54.4 |



| | | | |
|-----------------|------------------------------------|----|------|
| | Post Graduate Diploma in Education | 06 | 05.8 |
| | M.Ed. | 02 | 01.8 |
| Year of service | Below 5 | 03 | 03.0 |
| | 06-10 | 19 | 18.4 |
| | 11-15 | 24 | 23.3 |
| | 16-20 | 32 | 31.1 |
| | 21-25 | 14 | 13.6 |
| | Above 25 | 11 | 10.6 |

Among the 103 respondents, 73.7% of the teachers are female and 60.2% of the teachers specialized in arts subjects. In terms of the type of school, the majority were teaching at 1AB schools (47.5%). Majority of the sample were graduates with at least a first degree (68%). In terms of the classes taught, the majority were secondary school teachers (67%). It is noted that 13.6% of the teachers completed their postgraduate degrees. The majority of the teachers (83%) are teaching at rural schools and 97% of the teachers are having more than 5 years of teaching experience.

1. Computer Based Training Required by Teachers

To enhance the pedagogical competencies, teachers need to integrate computer technology into the teaching-learning process. Therefore, in order to get information related to their perceived needs for computer-based training, teachers were asked to indicate their willingness in a two-point (Yes/No) Likert-type evaluation scale.

Table 2: Required Computer Based Training

| Roles | Yes | | No | |
|---|-----|------|----|------|
| | N | % | N | % |
| In-service training related to computer integration | 53 | 51.5 | 50 | 48.5 |
| Refresher course for teaching practicum using computer technology | 42 | 40.7 | 61 | 59.3 |
| Innovative computer integrated teaching methodologies | 76 | 73.8 | 27 | 26.2 |
| Innovative computer integrated teaching techniques | 74 | 71.8 | 27 | 26.2 |
| English language development for using web-based resources | 63 | 61.1 | 40 | 38.1 |
| Computer training to us computer-based application effectively | 86 | 83.4 | 17 | 16.6 |

According to Table 2, the findings revealed that the majority of the teachers in Batticaloa district required computer training to use computer-based applications effectively (83.4%), to design innovative computer integrated teaching methodologies (73.8%) and to use innovative computer integrated teaching techniques (71.8%) to enhance their professional competencies. They showed their willingness to get the training to improve their proficiency in the English language to use the web-based resources (63%) (which also graphically shown in below figure). This is an indication that the teachers have already identified lack of English language skills as a factor that hampers their ability to integrate ICT technologies in the classroom. These findings indicate that the teachers have realized the importance of the computer literacy and integration of computer technology to enhance their teaching processes effectively.

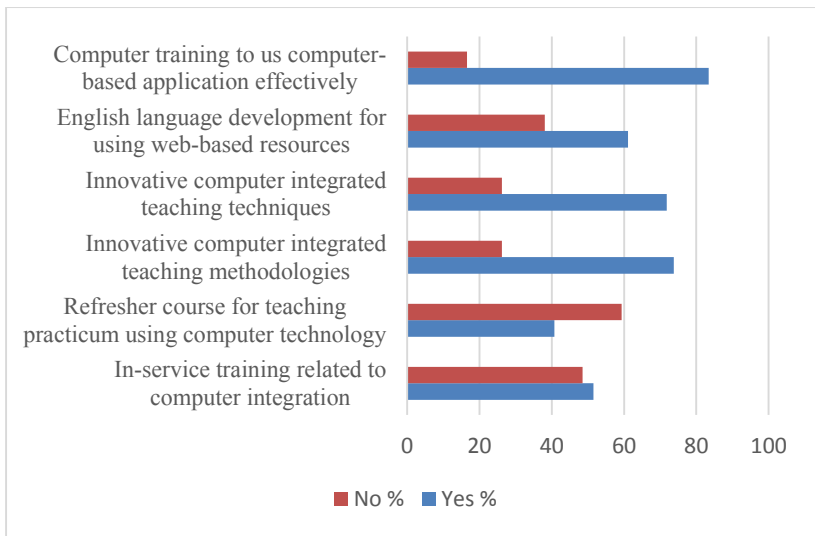


Figure 1: Graph view of Required Computer Based Training

2. Attitude towards Using Computers by Teachers

To identify the attitude towards using computers, teachers were asked to rate a given set of opinions on using computers on a four-point Likert scale.

Table 3: Attitudes towards Using Computers

| Attitudes towards Using Computers | Strongly agree | | Agree | | Disagree | | Strongly disagree | |
|---|----------------|------------|-------|------------|----------|------------|-------------------|------------|
| | Count | Percentage | Count | Percentage | Count | Percentage | Count | Percentage |
| Good | 74 | 71.8 | 29 | 28.1 | - | - | - | - |
| Helpful | 67 | 65.0 | 36 | 34.9 | - | - | - | - |
| Usefulness | 69 | 66.9 | 34 | 33.1 | - | - | - | - |
| Beneficial | 67 | 65.0 | 36 | 34.9 | 23 | 22.3 | - | - |
| Important | 44 | 42.7 | 36 | 35.9 | - | - | - | - |
| Eye-catching | 66 | 64.0 | 37 | 35.9 | - | - | - | - |
| Innovative | 57 | 55.3 | 46 | 44.6 | - | - | - | - |
| Students like computers | 43 | 41.7 | 60 | 58.2 | - | - | - | - |
| Better teachers are using computers | 13 | 12.6 | 11 | 10.7 | 54 | 52.4 | 27 | 26.2 |
| Integrating computers have increased the effectiveness of teaching and learning | 52 | 50.4 | 51 | 49.5 | - | - | - | - |

Table 3 clearly shows that the majority of the teachers in Batticaloa district show positive attitudes towards using computers in their teaching-learning process. They strongly agree that using computers in the teaching-learning process is good, helpful, usefulness, beneficial, innovative and eye-catching. But it is noted that 52.4% and 26.2% of the teachers respectively disagree and strongly disagree with the statements that teachers who use computers are better teachers. This might mean that they are of the opinion that using computers is not an acceptable indication of good teaching.

3. Preference to Integrate Computer Technology in Teaching



In order to get the responses, an open-ended question was asked to find out the reasons why teachers in Batticaloa district prefer to integrate computer technology in their teaching. Table 4 summarizes the reasons mentioned by the teachers.

Table 4: Reasons for integrating computer technology in teaching

| Reasons | Supportive Quotes |
|--|---|
| Enhancing teaching quality | "We are able to provide quality experiences for our students by using computers and multimedia..." |
| Can use video clips | "We used video clips to illustrate some incidents such as tsunami, forest fire etc...." |
| Can make PowerPoint presentations | "We prepared PowerPoint presentations and shared among us" |
| Can show the real-world situations in the classroom | "...using computers, I was able to give real life experiences." |
| Help to sustain students' attention | "...we were able to keep student's attention for the whole class." |
| Can address the different learning styles of the students | "...as we used multimedia all the students were seemed to be attentive.." |
| Can motivate the students effectively | "...I was able to observe all the students actively involved in the learning activities..." |
| Can use innovative teaching methodology | "...computers helped me to change my |
| Can use innovative teaching techniques | "...with the help of computers, we used many innovative techniques to increase student involvement.." |

In order to get the responses, an open-ended question was asked to find out the reasons why teachers in Batticaloa district prefer to integrate computer technology in their teaching. Table 4 summarizes the reasons mentioned by the teachers.

4. Barriers faced by teachers

Teachers' responses to the open-ended question regarding the barriers faced by teachers in the implementation of computer integrated teaching are summarized as follows:

1. Computer facilities not provided
2. Lack of computer knowledge
3. Lack of computer training
4. Not received opportunities to get computer training
5. Not having technical knowledge
6. Not allowed to use computer labs in the schools
7. Lack of English language proficiency which acts as a barrier to integrating computer technology in teaching.
8. Unavailability of internet facilities
9. Not having a Technical support
10. Time constraints

Even though teachers preferred to integrate computer technology in their teaching, the above responses showed that they faced many barriers to implementing their computer integrated lessons.



Conclusion and recommendations

Most of the teachers in Batticaloa district prefer training in the fields namely computer training, computer integrated teaching methods and techniques. They also wish to integrate computer technologies in their teaching as they perceive it enhances the quality of their teaching. However, they work in an economically difficult district which has the lowest literacy rates in the country, thus they face many barriers to the implementation of computer integrated teaching. Therefore, this study suggests the following recommendations to enhance the computer integrated teaching in this region:

1. Relevant authorities should take responsibility to provide computer training to teachers and to introduce computer integrated teaching-learning activities into the school syllabus.
2. School principals should incorporate computer-related activities under the school-based teacher development programmes.
3. Ministry of Education must appoint an adequate number of technical staff to support teachers in implementing computer-based teaching.
4. Internet facilities should be provided to all schools.

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