Implementation In Integrating Information And Communication Technology By The Secondary School Teachers

Shamseda Azis Tabao, Ph.D, LPT

Marawi City, Philippines, +63-916-449-7177
shamsaztab@gmail.com

Abstract: This is a descriptive study which ascertained the extent of implementation in integrating Information and Communication Technology by the secondary school teachers in Teaching at Mindanao State University- University Training Center. The data were gathered from sixty three (63) respondents through questionnaire, interview and observation. Statistical tools used were mean, rank and standard deviation. The study worked on problem which showed the following findings: a) the teachers rated the implementation in integrating Information and Technology to a moderate extent in English and Science and b) Information and Communication Technology was integrated to a great extent in Mathematics. In the integration of Information and Computer Technology, the teachers encountered problems, such as: the insufficient ICT Computer units, the school have no access to internet; some teachers were not ICT literate.

Keywords: Implementation of information and communication technology, information and communication technology, and secondary school teachers' practices.

1. Introduction

Information and Communication Technology plays an important role nowadays in everybody's life and it is very significant for the educators to keep abreast on the use of technology. Almost everything was run by the technology and as an educator must know that technology can enhance the quality of education in several ways: by increasing their learners' motivation and engagement, by facilitating the acquisition of skills, and enhancing teachers' professional development. Information and Communication Technology are also transformational tools which, when used properly, can promote the shift to a learner-centered environment. There were numerous instructions that had been used by the teachers before technology was introduced and it is believed that teaching is a quite harder job. As years passed by technology was slowly but continuously introduced in urban areas, the traditional practiced of teaching was also changing as 21st century learning skills is the common goal in education these days. The Department of Education envisioned for an ICT in educational system to transformed students into a dynamic and life-long learners as well as being productive. To enable the teachers to upgrade themselves in ways of teaching, the Department of Education had issued several memorandum orders such: Memo Order No. 137 s. 2007, Memo Order No.125 s. 2008 and Memo Order No. 5265 s. 2009 and other related memos mandating the school administrators and teachers to prepared and upgrade their selves and be an Information and Communication Technology literate. Several observations and problems in teaching has been noted henceforth, integration of Information and Communication Technology (ICT) in teaching was conceived and prompted the author to study the integration of ICT of teachers to determine on how extent the teachers preferred to use ICT in their teaching to removed traditional method of teaching and prepare to apply modern method of teaching in response to the importance of technology in the modern society. This makes imperative for all students to become familiar with it. This showed the need for Technology equipment and facilities to assist the teaching-learning process and to enhance instructions.

2 Methodology

This study used descriptive method. The primary data was obtained with the aid of a questionnaire based on the perception of the sixty three secondary school teacher as respondents of the study from Mindanao State University – University Training Center. The respondents were classified according to the subjects taught such: eighteen English teachers, twenty two Mathematics teachers and twenty three Science teachers respectively. The Questionnaire was utilized as primary tool to gather data and it was a researcher-made and was modified on the following materials: (a) self-help topics/tutorial commands of every software; (b) survey on ICT indicators questionnaires; (c) the panel experts composed of: BS Computer Science graduate, English, Science and Mathematics teachers; and ICT coordinators validated the instrument based on content, appropriateness, clarity and accuracy. Upon the completions of all the suggestions from the experts, the administering of the questionnaire followed. The questionnaire content of statements that evaluated the extent of implementation of integrating ICT in teaching of teachers in English, Mathematics and Science as showed in Table 2, 3, and 4. To supplement the results of the study the researcher also used personal interviews and participant observation and the scoring procedure was used to describe the extent of the implementation of integrating ICT in teaching by using Likert's three point scales to interpret the results.

Table 1: Scoring Procedure

Scale	Qualitative Description	Mean Values	Qualifying Statements
3	Great Extent (GE)	2.51 – 3.00	91% - 100% Implemented
2	Moderate Extent (ME)	1.51 – 2.50	46% - 90% Implemented
1	Less Extent (LE)	0.50 – 1.50	Less than 45% Implemented

Table 2: *The Extent of Implementation of the Secondary School Teachers in Integrating ICT in Teaching English.*

Statements
1. Preparing Lessons.
2. Letting students use Word processing in preparing their Term Papers.
3. Using Multimedia.
4. Using Presentation Tools (Powerpoint).
5. Using Basic Internet browsing.
6. Following up on current news and issues.
7. Using pictures from computer.
8. Using computer for reading fictions.
9. Learning vocabulary in a foreign language.
10. e-mailing with students.
11. Allowing students to send their paper works and clippings through e-mail.
12. Letting students play in computer software (e.g. word puzzle, tongue twister games) to stimulates students critical thinking ability.
13. Letting students paint in the computer.
14. E-mailing with students.
15. Following up on current news and issues.

Table 3: *The Extent of Implementation of the Secondary School Teachers in Integrating ICT in Teaching Mathematics.*

Statements
1. Using of application (word processing, spreadsheets, etc.) in classroom learning of Mathematics
2. Use for computations.
3. e-mailing for telecollaboration/on line collaborative projects, exchanging assignments and lessons.
4. Using in test administration, scoring and analysis
5. Using presentation tools (powerpoint)
6. Using computer statistical tool
7. Allowing students to browse internet to search new methods and strategy in problem-solving
8. Letting students playing games for fun to develop their critical thinking.
9. Using graphics

Table 4 *The Extent of Implementation of the Secondary School Teachers in Integrating ICT in Teaching Science.*

Statements
1. Preparing lessons.
2. Use internet finding/accessing information and educational materials for class experimentation activities and research materials for collaborative class discussion.
3. Teaching Basic Computer Operation and Concepts
4. Letting students to use Word processing in preparing their Research Paper.
5. Following up on the recent invented technologies and Drill for practice and/or experimentation activity.
6. Allowing student to play computer which helps student to stimulates his/her creativity and imagination.
7. Using Presentation tools (Powerpoint) making presentation/lectures
8. E-mailing for tele-collaboration / online collaborative projects, exchanging assignments and lessons, commenting on papers used in schools.
9. e-mailing with students.

The questionnaire was administered in the two campuses of MSU-University Training Center and was given personally to the teachers-respondents. The identification of the respondents was through population allocation using purposive sampling, out of one hundred twenty teachers from MSU - University Training Center only sixty three were selected as respondents who were teaching English, Mathematics and Science and fifty students interviewed of which their information would support the findings of the study. The researcher also asked several questions from the teacher-respondents related to the implementation of integrating ICT in teaching and provided the respondents with options or answer to choose from. All interviews were transcribed verbatim by the researcher. The information was coded by categories as used during the interview. This process was repeated throughout the interview of the respondents until the required number of respondents was set. For the treatment of data, the mean, standard deviation and rank were used.

3 Results and Discussion

Though teachers had onerous in adapting the use of technology nowadays to improve the quality of education especially its efficiency some of them still hassled in the integration of Information and Communication Technology in teaching their subject since they have troublesome concern. The English Teachers practiced using integration of ICT in: (a) preparing lessons; (b) letting students use Word processing in preparing their Term Papers; (c) using Multimedia; (d) Using Basic Internet browsing; and (e) following up on current news and issues at great extent because these items were always used by the English teachers in teaching. As such, the students used Word processing in preparing their Term Papers for them to develop Computer Literacy. They were Using Basic Internet Browsing to adopt a communication interaction through collaborative approach in learning. This was to develop learners to cope with the global trends. According to Camacho, et. al. (2009), teachers in using information and technology place more demands on their time. Teachers noted that extra time needed to learn new software and also to create new things for teaching because greater expectations were being place on them. The results showed that English teachers were contemporized in engaging their students into the global use of ICT. They practiced using pictures from computers in discussing sentence construction and composition writing and also used computer in reading frictions because it has animated sounds and pictures that make the classroom discussion more alive. Del Mar (2006) cited that using Web pages to enhanced an activity demonstrated that technology can be used to complement other aspects of good teaching rather than replace them. It is evident involving students in the creation of useful material as a part of learning exercise to make school more meaningful for students. It can be noted that ICT is best seen as just one tool available to students and teachers for expression and communication. While the integration of ICT in teaching mathematics, the students respond to ICT differently. Based on the results, the teachers used many format and modes in teaching the subject matter and used some combination of lecture, text and hands-on activities for conveying information. The mathematics teachers practiced at great extent the using of applications such as word processing and spreadsheets in classroom learning of mathematics. This supported by Garcia-Reyno (2009) who claimed that the spreadsheet is

a very effective component which aids the teachers in different kinds of data like students' master list, students' records of attendance, grading sheet and presentation of reports in worksheets, tables and graphs. However, the teachers still need to enhance their ICT skills in doing the spreadsheet. The mathematics teachers integrated ICT in test administration, scoring and analysis at great extent because it is more convenient and easy for them to make corrections in their previous work and helped them for the accurate computations of grades and evaluation while integration of ICT by using computer statistical tool, allowing students to browse internet to search new methods and strategy in problem-solving, letting students playing games for fun to develop their critical thinking and using graphics practiced by the mathematics teachers at moderate extent. Teachers reported that the relationship between their learners is sometimes reversed with regards to information technology. Some teachers mentioned that they had students showed highest potential in ICT and describe their new relationship with their learners as "co-learners". Teachers also saw the potential for technology to be isolating and realized that classroom and other activities had to be arranged in ways that reduce the likelihood of isolation. Through ICT, the test administration, scoring and analysis was also used by the mathematics teachers at great extent because it is more convenient and easy for them to make corrections in their previous work and helped them in the accurate computations of grades and evaluations. This could avoid repetitive work. The mathematics teachers gave an importance of using ICT in their teaching and concerned to the students' learning. According to del Mar (2006), "the use of Powerpoint presentations have been criticized by some", but the mathematics teachers provide on how ICT helped teaching in the use of peripheral devices on computer which they believed that it helped students on higher level concepts rather than on less meaningful task. Pimping (1996) disclosed that teachers have hard time keeping up with the pace of change. During the researcher's interview, one teacher said that people are stressed. Families are stressed. This level of stress being transferred to the young students but in spite of, the science teachers used ICT as research tool. They used computers to provide students the access to information from the internet. Based on the mathematics teachers' assessment, the using of graphics got the lowest rank. This implied that teachers seldom used graphics as they preferred using spreadsheet at great extent because it is a powerful tool in collecting and analyzing data. However, they often used graphics because they considered the level learning of the students and even they are limited in exploring the graphics, teachers still presented graphs. The study also revealed that mathematics teachers have been committed to update the students by integrating ICT in teaching mathematics in spite the lack of technology equipment: computers and internet connection and the like. It was the teachers effort to make students acquainted with ICT. The data also implied that the mathematics teachers adopted the Revised Basic Curriculum. The revised curriculum claimed that ICT should be integrated in teaching in order to develop the lifelong learning skills, given that the coverage of the subject matters tends to take priority over in-depth learning. The science teachers integrate the use of ICT through preparing lessons and use

of internet finding/accessing information and educational materials for class experimentation activities and research materials for collaborative class discussion at great extent. This facilitated students in gathering data for their class projects and also facilitated the reading of research of work written by students as well as in following up the current events and issues about technologies. The science teachers also integrated ICT in their teaching as communication tool. The use of ICT in the classroom helped the students get used to e-mail. This also facilitates communication among students. The students would learn to communicate via internet by e-mailing on working projects. The teachers also considered the teaching of basic computer operation and concepts as implemented to a moderate extent. The science teachers believed that it is very significant for the students the implication of computer in education. Although lack of computer sets in school for students as one factor that hindered the improvement of students in learning computer, based on the result, this does not stop the science teachers to do their best to educate students on ICT. Requiring students to use word processing in preparing their research paper was also required by the science teachers. This is another way of letting their students to learn about the use of ICT. It found out that through this activity, the students could build self-learning with less assessment. Garcia-Reyno (2009) supports the finding and cited that science teachers can enhance teaching through ICT by enabling learners to visualize and understand science processes and systems. Through ICT, the students could find information and could try carry out research, record, present and analyze results, explore relationships and present ideas. Teachers also assessed the practice of following up the recent invented technologies and drill for practice and/or experimentation at moderate extent. It was their belief that ICT was very helpful for the learning skills to provide a better understanding about the subject matter. The using presentation tool was practiced at moderate extent. This was only used for making presentation to support in presentation the lecture and classroom activity. Garcia-Reyno (2009) emphasized that using powerpoint presentation especially teaching science combines audio and visual to help students understand the lesson and to make classroom discussion very interactive. The teachers also practiced Allowing student to play computer which helps student to stimulate his/her creativity and imagination at moderate extent and this only happened during their vacant time of the students. E-mailing for tele-collaboration / online collaborative projects, exchanging assignments and lessons, commenting on papers used in schools was also encouraged by the science teachers at moderate extent to make their work easier and give students the chance to compare their work with their classmates. This is necessary to make some comments and suggestions before coming up with the final output. According to Charron (2009) the inequalities of students is a problem. The problem was the disparities between students who have access to computers at home and those who do not. Those who have computers at home have more time to explore ICT than the others. E-mailing with student was least practiced by the teachers because they were conscious about their relationship with their students. During the interview, few science teachers mentioned they used ICT tools to improve their

presentation of material in class. The teachers explained that technology enabled them to deliver more material to students. This technology also eliminated several basic problems, such as: poor hand writing, poor artistic skill, contrast, lighting and visibility. Another teacher made extensive use of software programs to help teach science subjects. Finally, the data showed that the science teachers initiated ICT and included ICT during the discussion in teaching science. This also supported by Gracia-Reyno (2009) who disclosed that the teachers were able to integrate ICT into their lessons. It is also indicates that the teachers putr more emphasis on tool literacy. This is the ability to understand and to use the practical and conceptual tools of current information technology relevant to education.

4 Conclusions

Based on the findings, the teacher-respondents assessed the extent on implementation in ICT of teaching English and Science at moderate extent. This means that teachers did not always implement the integration of ICT in their classroom discussions. This was because some have limited knowledge of ICT coupled with the lack of ICT tools. However, they were confident of applying ICT in order to facilitate student learning. Whereas, the implementation of Mathematics teachers was at great extent, the teachers were skilled and have their personal computers. They bring their computer in school and used in presentation of subject matter. The students find it interesting and could make the classroom interactive with the use of ICT. The study affirmed the claim of Tinio (2002) that the teachers are critical in success of technology integration in the classroom. A school's capacity to use technology to enhance the learning process depends not only on its level of development in terms of ICT infrastructure and resources, but equally on the level of teacher ICT competencies in both technical and pedagogical aspects.

5 References

[1]. Chamacho, JV, et.al. (2009). Some Imperatives of ICT Integration in the Philippine Educational System: Towards Modernization and Relevance in a Highly Globalized Economy. Philippines.

[2]. Charron, Claude-Yves, et. al. (2009). ICT for Development in the Asia Pacific Region: Riding the Waves of Change in a Flat World. Malaysia.

[3]. del Maria, CM. (2006). Teaching Training in ICT-based learning settings: Design and implementation of an on-line instructional model for English Language Teachers. A Doctoral Dissertation, Tarragona.

[4]. Garcia-Reyno, H. (2009). Assessment of Public Secondary School Teachers' Information and Communication Technology Lietracy Level. A master thesis, Bukidnon State University, Malaybalay City.

[5]. Pimping, C. (1996). The Feeder schools of Mindanao State University- Marawi City, 1985- 1994: An Assessment. A Doctoral Dissertation, Xavier University, Cagayan de Oro City.

[6]. Tinio, V. (2002). Survey of Information and Communication Technology Utilization in Philippine Public High Schools' Foundation for Information Technology Education and DEvelopemnt (FIT-ED). Makati City.

Author Profile

Received BS Business Economics from Mindanao State University, Marawi City in 2005, Master of Educational Management on 2011 from Bukidnon State University, Malaybalay City and conferred the degree of Doctor of Philosophy major in Educational Management in Capitol University, Cagayan de Oro City (2013) and earned units of Doctor in Public Administration from Xavier University, Cagayan de Oro City. The Pioneer Director of Mindanao State University- Senior High School, former OIC Superintendent of MSU-LNCAT and currently Associate Professor V from Mindanao State University- Lanao National College of Arts and Trades.