School's Implementation of Information and Communication Technology (ICT) Integration

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ABSTRACT

The study highlighted the implementation of ICT integration that reflects how it influences to the educational system of the school. Qualitative approach was applied in which case study was the principle in gathering data. The Pakwan Integrated School of Lanuza District, Division of Surigao del Sur was the subject of the study. The least learned competencies of students in ICT are evident in their socio-economic background that affects millennial teachers in implementing ICT integration. The demographic profile of school as to distance, means of transportation and road features, communication and internet inaccessibility greatly affects to educators' attitudes and emotions that result to the delay of updates and submission of reports, and to any organizations (government or non-government) in delivering school's support and services to ICT implementation and projects. Thus, concreting the road may the first priority that government or any concerned agencies or organizations take an action to address the needs of the school in implementing ICT.

Keywords: ICT Integration, School's Demographic Profile, Socio-economic Background

INTRODUCTION

The Department of Education (DepEd) drafted a five–year ICT strategic plan that seeks to link learners to global resources. The plan emphasizes the Departments' vision for ICT in education which is the 21st Century Education For All Filipinos (Camacho and Pintor, 2015; UNESCO, 2008), a framework of educational interventions that greatly influences the curriculum development. Thus, it is significant to conduct this study to determine how the schools implement technology integration, and to examine how it influences to educational system.

As technology is introduced to the framework of education, there is a trouble perception of how it affects to the adoption and implementation to schools' pedagogy. This issue has been identified and acknowledged by different studies; Hong and Songan (2011), Fullan (2013), Ajos (2011), Shah (2013),and Sahim and Thompson, (2006) , of how it influence to schools' performance. Hong and Songan (2011) emphasized the interest of educational institutions must be the welfare of the learners that need appropriate knowledge, skills, and aptitudes in a competitive economy. Educators should not only focus in innovating pedagogy but value also the adapting skills of students for the 21st century preparation (Fullan, 2013) because there is a significant relationship of the ICT integration on the level of achievement of the pupils (Ajos, 2011). Shah (2013) concluded that Management and Information System (MIS) can contribute to school manager in determining the aims of the school, formulating strategic plans, distributing resources, and evaluating staff performance as well as organizational success. Though, the success of any initiatives in implementing

instructional computer technology in curriculum depends upon teachers (Sahim and Thompson, 2006) and administrators involved.

The ideas claimed by different authors support and reinforce the vein of targets in this study that ICT influences the educational trends. *The implementation of 2002 Revised Basic Education Curriculum (RBEC) of Philippine government recognize ICT as paramount of alleviating poverty and achieving competitive advantage in the global economic ground. Its salient features is the inclusion of basic learning competencies in computer skills both elementary and secondary education* (Camacho and Pintor, 2015). The implementation of ICT integration brought challenges to schools' management for it created issues to the administrators, teachers, and students. Particularly, in the District of Lanuza, Division of Surigao del Sur, four secondary schools works collaboratively,

aiming for an excellent performance of the district. Besides mobile communication, educators used online communication, and Group Chat (GC) box was applied as a strategic action in meeting up reports deadline, but, one school affects the performance of the entire district. This study attempts to examine the factors influencing the performance of the school in implementing ICT integration.

The implementation of ICT to educational system is still needs investigation to deepen the understanding on its application to schools' performance and management. This study was undertaken to examine how the school implement ICT integration, and to determine the factors influence its performance. Thus, the study implies to give perception and understanding as basis for continual improvement of the entire educational system.

Plate No. 1 The Site of the study (Photo courtesy by Rudy F. Daling)

THEORITICAL AND CONCEPTUAL FRAMEWORK

The theory Technology Acceptance Model (TAM) is anchored in this study. It was

Davis (1989), as cited by Long (2009), presented a theoretical model that predict and explain ICT usage behavior that causes potential adopters to accept or reject the use of information technology. TAM focuses two

fundamental determinants of system use, "the perceived usefulness" and "the perceived ease of use", which predict attitudes toward user's willingness to use the system. "Perceived usefulness" refers to the degree to which a person believes that using a particular system would enhance his or her job performance, and "perceived ease of use" refers to the degree to which a person believes that using a particular system would be free of effort. Thus, teachers and administrators integrate ICT to have efficient and effective job performance for the success of the organization.

In addition, the ICT based technological and pedagogical framework helps engage students' curiosity and initiate learning to critical and analytical thinking. ICT-based learning linked to constructivism paradigm today (Kharade & Thakkar, 2012). Constructivism is originated from Bruner (1977). Bruner (1977) emphasizes that the curriculum should be designed from simple to complex and requires revisiting prior

knowledge. Its knowledge is considered to be socially as well as individually constructed. The focus of schools' management should be on the development of a suitable environment for constructing knowledge rather than for its transfer.

Thus, the efficiency and effectiveness of schools' management and students' academic performance in integrating ICT are the basis of schools' performance.

RESEARCH DESIGN AND METHODS

The study utilized qualitative approach in which case study type of research was applied. The actual teaching as means of immersion of the researcher to the site was an opportunity to give insights and reveals in this study. It involved collecting qualitative data through actual survey and observation, and informal interview. To address the objectives of the study, data were presented through photos of actual experiences and observations.

Plate No. 2 The Teachers and the researcher going to the site of the study (Photo courtesy by PIS Faculty)

RESULTS AND DISCUSSIONS

ICT in Curriculum Development

The persisting fact of ICT in economic development greatly contributes how ICT transform and influence the society and educational system of Lanuza District, Division of Surigao del Sur. The rapid growth of modern

advances in technology and global competition initiated and motivated the educators to adapt this advances to meet and to succeed the demand of time. On the other hand, the effective utilization of intangible assets, such as knowledge, skills, and innovative potential are the key resources of Economic success (Economic and Social Research Council, 2005). As part of curriculum development schools' administrators need to consider ICT integration to prepare students in "a knowledge society" (Ghavifekr, et. al., 2012). It aims to capacitate individuals in a new set of skills that known as the 21st Century Skills.

Many educators in the District of Lanuza are challenge to design and employ a unique skills and learning through the use of technology which known as the 21st Century Skills that enhances greater collaboration, efficiency, effectively, flexibility and innovative, and assimilates a changing perspectives and new technologies that equip everybody in the 21st Century. The lack of infrastructure for connectivity and accessibility, and teachers need for more training on ICT integration in curriculum are major task in current educational system in Philippines (Daling, 2016). The full implementation of the K to 12 curriculum in 2016 offers students more opportunities to experience technology-supported learning that is interactive, interdisciplinary, collaborative and authentic (UNESCO, 2008). Particularly, the Division of Surigao del Sur conducted ICT training for ICT coordinators, who could give technical assistance to its respective school, to capacitate every educator in teaching-learning process with ICT integration, and planning responsibilities and duties that ICT requires in achieving goals.

Plate No. 3 Teachers on Division Training of Trainers for ICT, Taken last September 2016 (Photo courtesy by Jonathan Cale Villason)

This implies in the claim of theory Technology Acceptance Model (TAM), "the perceived usefulness, and "the perceived ease of use". Aiming and capacitating the educators in ICT skills is the claim of "the perceived usefulness", and adapting the required ICT skill, as it helps in teaching and job performance as efficient and effective, is the assertion of "the perceived ease of use". Thus, the claims are the affirmation of teachers' attitudes in embracing technology in his/her job performance.

Teachers' Profile

Plate No. 4 Teachers and Administrator of Pakwan Integrated School, Date taken October 2016 (Photo courtesy by Pakwan IS Staff)

As shown in image, there are more young professionals than classic teachers. These young teachers are locally known as the millennial educators. It is evident in the study of Daling (2016) showed that most of the teachers were still new in teaching profession and more female teachers integrate ICT to lessons than male teachers. It stresses that new teachers were efficient and effective in delivering ICT because they are exposed to modern trends. Millennial educators are evidently equipped and exposed ICT knowledge and skills. Daling (2016) added that seasoned teachers were more on traditional instruction that greatly affect to effectiveness in employing ICT to job performance

The institution should provide educators with trainings and enhancements for they are the agents in the process of educational innovation and the implementation of ICT. The changes of

Teachers' Competency

teachers training depict a profile of development and ongoing changes that have taken place in different training programs in the perceived role of the teacher and in the field of the teaching profession (Back, 2012; Avidov-Ungar, & Iluz, 2014).

Thus, in collaboration of preparing students for the 21st Century skills, administrators and teachers are expected as the innovators in using ICT in their schools' curriculum. This is due to the capability of ICT in providing dynamic and proactive teaching-learning environment (Arnseth & Hatlevik, 2012). Hence, it is observed in the study that teachers using ICT in delivering curriculum, students expect and motivate to seek new sources of knowledge as skills in using ICT which learning is a meaningful process.

Plate No. 5 Teachers coping the deadline reports at night, despite in the lacking source of electricity. Photo courtesy by Nikki John S. Bruzon

The adoption of modern technologies is one of the reformation processes in an existing environment in order to provide learners knowledge in specific subject areas, to promote meaningful learning, and to enhance professional productivity (Tomei, 2005, as cited by Buabeng-Andoh, 2012). Teachers' competencies have an important role to bridge this adoption. According to Plair (2008), as cited by Daling (2017), teachers' competencies in ICT strongly influence the efficiency and effectiveness of teachers towards his/her works that constantly develop through actualization.

In factual observation teachers are trying to apply a unique teaching-learning process with the use of ICT just to change traditional teaching approaches (teacher-centered) to modern approaches (student-centered). This implies the broadening development of technology is inevitable because each function is very important in different fields such as entertainment, business, engineering, commerce, research, and education (Gever, 2012; McDermott & Gormley, 2015). In connection, administrators and teachers must be capacitated enough to introduce and utilize these different technology in administerial and curricular aspect.

Learners' Competency in ICT

Plate No. 6 Students on the process of learning
(Photo courtesy by Rudy F. Daling)

Learners' illiteracy in ICT affects also in teachers' ICT integration. Teachers find difficulty in giving performance task through ICT integration. As it claims in the theory of constructivism, school should design a curriculum that processes simple to complex opportunity of learning (Bruner, 1977). Though, learners are oriented in modern gadgets but observation shows that they have least competency in computers, such as computer encoding. Investigation reveals that students are least competency in ICT because ICT was not introduced during their early learning. Computers were not introduced in the absence of electricity, it was not relevant to their daily living because the main source of living of their family is farming, and previous teachers failed to integrate ICT. Hence, the influences of ICT could be observe in socio-economic background of individuals

Basically, schools cannot truly prepare students to function within society if the curriculum fails to cover the equipment and skills that can actually use in the real world.

Schools cannot expect a higher academic or school performance of the programs without sufficient and effective integrating technology; everybody must be digitally literate, both educators and learners, to be a productive citizen (Semih Summak and Samancıoğlu, 2011). Thus, administrators, staffs, teachers, students, and stakeholders may use technology if they want to work successfully in an increasingly complex and information-driven society.

The abovementioned scenario is one of issues that Philippine government realizes the national policies. Philippine DepEd mandated the integration of ICT in all learning areas, both hardware and software. Hence, electronic-learning and the use and application of ICT were encouraged in all subjects as most viable intervention in educational reform. It was expected that all public elementary schools in the country would have computer laboratories (Mansagca and Londerio, 2008). Recently, the absence of ICT infrastructure is very much evident in far flung schools.

School's Geography

Plate No. 7 From left: Kilometer 13, a road going to site of the study, and teachers' riding on *Habal-habal* (Photo courtesy by Cheryl B. Agustin)

In actual experience, teachers stay in school in whole weekdays and stay in their homes during weekends or holidays. Teachers find tired if they will use to get back home every day. The profile of school as to distance, means of transportation and road features, communication's and internet inaccessibility, and armed conflict greatly affects to educators' attitudes and emotions that result to the delay of submission of reports (print and online), and to any organizations (government and non-government) in delivering school's support to ICT implementation.

The Southern part of the municipality of Lanuza, Surigao del Sur, Philippines, riding through "Habal-habal" (motorcycle), about 22 kilometer and 2 hours to travel from Barangay Puyat of Carmen, the neigboring municipality of Lanuza, people can reach Barangay Pakwan, Lanuza, Surigao del Sur where Pakwan Integrated School (PIS) is located. Among the four secondary campuses of Lanuza District, Pakwan Integrated School (PIS) is located in remote and most risky place because of its rocky, rough, and slippery road. It takes 3 kilometers from the barrio before you can reach the area with phone signal. Different Non-Government Organizations provided electricity of this place through solar, such as MERALCO Foundation, and PAMANA Project (Daling, 2016). As to experience, the road going to the site is prone to landslide when rainy season.

Plate No. 8 Teachers on Text Mountain Site, 3 km. from the main site of the study (photo courtesy by Rudy Daling)

School's ICT Equipments, and Facilities and Infrastructure

Evidently, few teachers integrate teaching methods models that meet the progressive requirements for adapting teaching to the skills and needs of students of the 21st century (OECD, 2010; Avidov-Ungar & Iluz, 2014). In investigation, teachers and administrator are trying to apply the said requirements. Teachers are potential and competent in implementing teaching-learning process especially when they integrate ICT but the lack of equipments is still presence in the school. There are two big flat screen TV uses by teachers, one is use for media updates and TV programs, and another one is shared by different grade levels as intervention in the absence of Over Head Projector (OHP). There are few laptops that shared by teachers, and some have personal laptops in preparing lessons and paper works, such as monthly reports.

The area of the school is wide enough to build ICT facility and infrastructure. These ICT facility and infrastructure are presented already in School Development Plan (SDP). Thus, government may allocate budget for additional infrastructure such as computer laboratory or e-classroom which is strongly recommended (Daling, 2016). It is supported by the respondents' responses that these are attainable measures that advances in curriculum competitiveness. Furthermore, electricity is the main energy resources in operating ICT implementation, but the school depends only to the solar energy which is recently in needs of repair and maintenance. Government may link to the energy company (e.g.,SURSECO) to assess the electricity needs of the community.

Plate No. 9 A school building of Pakwan Integrated School installed with solar panel, Date taken Feb. 07, 2017(photo courtesy by Rudy Daling)

CONCLUSION

The evolution of technological age has certainly created an impact in school's educational system. Teachers are competent enough in integrating ICT but the least learned ICT competencies of the students were observed in their socio-economic background that affect to its school's academic performance. The school's profile as to distance, means of transportation and road features, communication and internet inaccessibility greatly affects to educators' attitudes and emotions that may result to the delay of updates and submission of reports, and to any organizations (government or non-government) in delivering school's support and services to ICT implementation and projects, such as building ICT infrastructures and facilities, and delivering ICT equipments. Thus, implementing ICT curriculum standards in the Philippines requires a long decision process, yet it is a need to the modern lives of Filipino as they are facing the challenges of globalization. As, ICT curriculum success lies in the hands of Filipino educators who are committed to make their education system work in the midst of many obstacles to learning.

REFERENCES CITED

Ajos, Ma. Teresa O. (2011). ICT Integration in Science Education and Its Relation to Pupils' Performance".Unpublished. Master of Arts Thesis, Saint Theresa College of Tandag Inc., pp. 69-70

Arnseth, H. C., & Hatlevik, O. E. (2012). ICT, teaching and leadership: How do teachers experience the importance of ICT-supportive school leaders.Nordic Journal of Digital Literacy,7(1), 55-69.

Avidov-Ungar, O., & Iluz, I. E. (2014). Levels of ICT integration among teacher educators in a teacher education academic college. *Interdisciplinary Journal of ELearning and Learning Objects, 10,* 195-216. Retreived from http://www.ijello.org/Volume10/IJELLO v10p195-216Avidov0892.pdf

Back, S. (2012). *Ways of learning to teach. A philosophically inspired analysis of teacher education programs*. Rotterdam: Sense publishers.

Buabeng-Andoh, C. (2012).Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology (IJEDICT),* 2012, Vol. 8, Issue 1, pp. 136-155.

Bruner, J. (1960/1977). The Process of Education. Cambridge, MA: Harvard University Press. Retrieved from https://edcomparative.wordpress.com/2014/04/08/th -role- of-jerome bruners-spiral-approach-in-thereformation on October 5, 2015.

Camacho, Jr. J. and Pintor, R. M."An Analysis of the Effect of ICT Integration in High School Test Performance in Masbate, Philippines"March, 2011. Retrieved fromhttp://ir.library.osakau.ac.jp/dspace/bitstream/110945319/1/28-019.pdf *on July 02, 2015.*

Daling, R. F. (2016). SECONDARY SCHOOL TEACHERS' COMPETENCY IN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT). Unpublished. Master of Arts Thesis, Saint Theresa College of Tandag Inc.

Daling, R. F. (2017).Secondary School Teachers' Competency in Information and Communication Technology. *International Journal of Education and Research Vol. 5 No. 11 November 2017*

Davis, F. D. (1989) "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," MIS Quarterly (13:3), 1989, pp. 319-339.

Economic and Social Research Council (2005). "Knowledge Economy Fact Sheet". Swindon, UK: Author. (2005)

Fullan, M. (2013). *The New Pedagogy: Students and Teachers as Learning Partners*. 2013. Retrieved September 4, 2015 from

http://www.learninglandscapes.ca/images/documents/ll no12/fullan.pdf

Ghavifekr, S.,et.al., 2012. "ICT Integration InEducation: Incorporation for Teaching & LearningImprovement". The Malaysian Online Journal of Educational TechnologyVolume 2, Issue 2. Retrieved fromhttp://www.kiperonline.com/volume/volume-2-issue-2 on September 20,*2015.*

Gever, E. (2012).Technology and art: Engineering the future. BBC News. Retrieved from *http://www.bbc.com/news/entertainment-arts-19576763*

Hong, K. S., & Songan, P. (2011). ICT in the changing landscape of higher education in Southeast Asia. Australasian Journal of Educational Technology, 27(8), 1276-1290

Kharade, K. & Thakkar, R. (2012). Promoting ICT enhanced Constructivist Teaching Practices among Pre-services Teachers: a case Study. International Journal ofScientific and Research Publications Vol. 2, Issue 1, Jan. 2012. Retrieved from http://www.ijsrp.org/research_paper_jan2012/ijsrp-jan-2012-20.pdf

Long, L. (2009). Why do people use or not use an information technology: an interpretive investigation on the adoption and use of an electronic medical records system. Virginia Commonwealth University, VCU Scholars Compass. Retrieved from *https://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=2744&context=etd*

Mansagca, J.T & Londerio, N.M., 2008. "Teachers 'Perspective on the Integration of Information and Communication Technologies in School Counselling "International Journal of Education and Development Using ICT, Vol. 4, No. 4. Retrieved from http://ijedict.dec.uwi.edu/viewarticle.php%3Fid%3D593

26layout%3Dhtml *on June 30, 2015.*

McDermott, P. & Gormley, K.A. (2015).Teachers' Use of Technology in Elementary Reading Lessons

OECD [Organisation for Economic Co-operation and Development]. (2010). *Inspired by technology, driven by pedagogy: A systemic approach to technology-based school innovations*. Retrieved from http://www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=9789264094789

Plair, S. (2008). Revamping Professional Development for Technology Integration and Fluency. *The ClearingHouse*, Vol. 82, no .2, pp. 70-74

Sahim, I. and A. Thompson, 2006. Using Rogers' Theory to Interpret Instructional Computer Use by COE Faculty. Journal of Research onTechnology in Education, 39(1): 81–104. (2006)

Shah, M. (2013).Impact of management information systems (MIS) on school administration: What the literature says . 5th World Conference on Educational Sciences - WCES 2013 . P r o c e d i a - S o c i a l a n d B e h a v i o r a l S c i en c e s 1 1 6 (2 0 1 4) 2 7 9 9 – 2 8 0 4. Available online at www.sciencedirect.com

Semih Summak, M. and Samancıoğlu, M. (2011) Assessment of technology integration in vocational education and training schools. *International Journal of Education and Development using Information and Communication Technology (IJEDICT),* 2011, Vol. 7, Issue 1, pp. 68-85

Sharples, M.,et.al. (2013).*Innovating Pedagogy 2013: Open University Innovation Report 2. Milton Keynes: The Open University*. Retrieved July16,2015 from Levels of ICT integration among Teacher Educators http://www.open.ac.uk/personalpages/mike.sharples/Reprts/Innovating_Pedago_report_2013.pdf

Tomei, L. A. (2005). *Taxonomy for the technology domain*. USA: Information Science Publishing.

UNESCO (2008). Five-year information and communication technology for education strategic plan: DepED ICT4E Strategic Plan [with summary].Retrieved from http://planipolis.iiep.unesco.org/upload/Philippines/ICT4E_Strategic_Plan_summary.pdf *on July 19, 2015.*