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NECESSITATING THE UTILIZATION OF ICT IN TEACHING LEARNING SYNERGISM FOR SUSTAINABLE DEVELOPMENT

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Abstract: This study assessed the Proficiency in Teaching through ICT-Integration of the Elementary School Teachers in identified school for SY 2020-2021 as basis for strategic plan. The study also explores. The data obtained were analyzed using percentage, and weighted mean on their response on their proficiency in using ICT in teaching and learning. Based on the findings, teachers were more confident when they integrate ICT especially in teaching and learning process but it was also perceived that there is a time constraint in attaining the learning objective when using ICT. It can also be concluded that both teachers and administrators must do adjustment in teaching and learning while integrating ICT on it. However, giving more weight to teachers, that is, if teachers can look for a more suitable strategy in encouraging and motivating pupils to learn through the integration of ICT, more or less, problems encountered by the teachers will be lessened if not be eradicated.

Keywords: ICT Utilization, Teaching & Learning, Synergism, Development

1. Introduction

Teaching and learning in the midst of the covid-19 epidemic has been tough for both teachers and students, especially in primary school. Keeping up with the changing world is thus a shared responsibility both instructors and students (Ali, 2020). Otherwise, teachers with little knowledge of ICT would be unable of providing vital and relevant instruction to their students (Schibeci et al., 2008). In the same way, students who are less educated, if not completely illiterate, in information and communication technologies may fall behind their peers (Jin et al., 2020; Gull et al., 2020; Capuno et al., 2022).

Quality education plays an essential role in ensuring that individuals are informed and prepared to tackle the challenges of globalizations (Lopes & Mckay,

2020). To easily adapt to the modern way of life and education, students must have access to and the ability to comprehend contemporary scientific knowledge, identify important scientific questions, draw evidence-based conclusions, and make decisions regarding how human activity affects the natural world (OECD, 2007; Peconcillo et al., 2020). In addition, functionally literate kids can quickly grasp fundamental ideas, comprehend the nature of the objects around them, and see the significance of what they learn in school to their own life (National Research Council [NRC], 2000). Otherwise, it is essential for all students to become functionally literate at all times and for all reasons (Feinstein, 2011; Roberts, 2007; Suson, 2020), therefore keeping up with the global system of education is a must in today's society. Thus, the moment has come to include Information and Communication Technology into the Teaching-Learning endeavor.

Science and technology education has been one of the priorities of the government's initiatives through the Department of Education (Shawe et al., 2019). One of which is the Department of Education Computerization Program (DCP) which aims to provide public schools with appropriate technologies that would enhance the teaching-learning process and meet the challenges of the 21st century. In other words, the modern way of teaching Science considers the integration of Information and Communication Technology (ICT) in one's teaching styles and strategies in order to upgrade learners' knowledge and style of learning as well. Likewise, the section 2 in the Rules and regulation for the implementation of Republic Act No. 9155 (Governance of Basic Education Act of 2001) states that "it shall optimize the use of alternative and indigenous learning system, popular communications media and appropriate technology to impart knowledge, skills, and values and to instill in the heart of all a cultural excellence, pride in himself labor, and sense of nationhood. This clearly imposes the significance of the use of technology in the classroom or in any teaching and learning process.

Nevertheless, despite the efforts and initiatives both of the Government and the Department of Education in ensuring optimum learning for the Filipino learners, yet low performance is explicitly shown through their different examination results. One of these is the Program for International Student Assessment (PISA) of the Organization for Economic Cooperation and Development (OECD) results in 2018. It revealed that out of 79 participating countries all over the world in Science, Mathematics, and Reading, the Philippines scored 353 in Mathematics, 357 in science, and 340 in Reading (PISA results, 2018), all of which were below the average of participating OECD countries. These results have brought the country to humiliation in terms of education. And that, this serves as a call for the educational authorities to still continuously do interventions and innovation that would significantly effect change in lifting up the performance of the Filipino learners bringing them later on to become globally competitive ready to face challenges in life.

According to Trends in International Mathematics and Science Study (TIMMS) conducted from March until June 2019, the Philippines scored 297 in Mathematics and 249 in science. These scores, compared to other participating countries, are "significantly lower" than their counterparts (TIMMS, 2019). These results actually have brought Filipino students to lowest in rank among 58 countries in an International Assessment for Science and Mathematics for Grade 4 students (TIMSS, 2019).

Meanwhile, failure of the learners could not solely be blamed to teachers. For, most of the teachers explicitly are showing eagerness and enthusiasm in pursuing maximum learning of their pupils, particularly in science. There is no such thing as irresponsible teacher only that, some of them are becoming novice because of the

presence of those digital-native learners at present whose wants, likes, ways, and styles of learning are perfectly contradicting to that of traditional teachers. Therefore, if there is one thing which can be done and changed in teaching, it is the way how the teacher delivers the lesson with the aid of modern technology.

Using varied and relevant strategies has been one of the teachers' skills for the learners to learn effectively (Hsu et al., 2018). However, devising strategies remains futile if it only makes nothing to motivate learners to learn. In other words, Information and Communication Technology integration in teaching Science is timely and relevant strategy in order to solicit interest from among the leaners and cater their needs as well. In fact, according to Savvidis (2019), integration of ICT in the classroom improves engagement among learners, enhances knowledge retention, encourages individual learning or collaboration, and students can learn useful life skills through technology.

The integration of Information and Communication Technology (ICT) in teaching Science includes the use of multimedia such as charts, model LCDs, and PowerPoint presentations. Other forms of ICT integration in teaching include the utilization of virtual lesson plans, grading software, and online assessments. Despite the existence of these materials, devices, and other technological applications in the classroom, instructors continue to face obstacles (Bereczki & Karpati, 2021). Lack of understanding of how to use and operate these materials and devices is one of these obstacles. According to Zhu et al. (2015) and Suson (2019), Information and Communication Technology (ICT) integration in teacher education and teaching practices of instructors is a complex and hard subject. As a teacher and enthusiast, the researcher views this as a chance to examine and establish the teachers' degree of competency in teaching Science via ICT-Integration and how it would be influenced by the various aspects from their own points of view. This is also to develop a relevant intervention essential for increasing their knowledge and abilities as science instructors through the use of ICT into the classroom.

2. Purpose of the Study

This research aimed at finding out the Proficiency in Teaching through ICT-Integration of the Elementary School Teachers. level of Proficiency in Teaching Through ICT-Integration in terms of time allotment and teaching approaches were included While the level of proficiency in terms of using ICT on ENSCIMA competencies were also included in the research focused.

3. Research Methodology

This study utilized the Descriptive-Correlational Research Design through describing the present status or conditions regarding the research variables of the study. Most particularly, it assessed and described the level and teachers' proficiency in teaching through ICT-integration. In terms of the instrument of the study. This first part was composed of different statements that gathered responses from the respondents useful in determining the teachers' proficiency in teaching through ICT-integration, which adapted from the study of Donguines (2004) on her study which titled "Teachers' Difficulties in Teaching Science and Technology III and IV by Using Information and Communication Technology (ICT) Integration. Part III. This part of the questionnaire was composed of statements regarding problems encountered by the teachers in teaching through ICT-integration.

4. Results and Discussions

Table 1. Time-allotment

Time Allotment	Teachers		Administrator	
	Mean	VD	Mean	VD
Given enough time for class discussion	3.38	MA	3.43	A
Facilitate group activities in a given time	3.54	A	3.48	A
Assess pupil's performance at a specific time.	3.28	MA	3.26	
Achieve the objectives using these domains in a given time.	3.16	MA	3.22	MA
Achieve specific skill/s to be developed in process approach in a given time.	3.26	MA	3.17	MA
Conduct varied activities to arouse pupils' interests in a given time.	3.42	A	3.29	MA
State problem to be answered accurately by the pupils.	3.22	MA	3.12	MA
Grand Mean	3.23	MA	3.28	MA

Table 1 shows the data on teachers' and administrators' perception on time allotment in using ICT in teaching. Data shows that the statement refers to facilitate group activities in a given time got the highest weighted mean of 3.54 which verbally described as agree, while the statement refers to achieve the objectives using these domains in a given time got the lowest weighted mean of 3.16 got the lowest weighted mean of 3.16 which verbally described as moderately agree. Administrators on the other hand, the statement refers to facilitate group activities in a given time got also the highest weighted mean of 3.48 which verbally described as agree, while the statement refers to state problem to be answered accurately by the pupils got the lowest weighted mean of 3.12 which verbally described as moderately agree. This indicates that teachers and administrators perceived ICT in teaching as important in facilitating group activities, while in terms of achieving objectives and stating problem accurately it was perceived as less effective. This implied that time in using ICT was never enough in attaining the learning objectives, hence, additional time will be needed to meet the learning objectives.

Table 2. Process Approach

Process Approach	Teachers		Administrator	
	Mean	VD	Mean	VD
Understanding	4.28	SA	3.22	MA
Analyzing	3.82	A	3.80	A
Evaluating	3.32	MA	3.18	MA
Communicating	3.56	A	3.62	MA
Inferring	3.52	A	3.28	MA
Grand Mean	3.71	A	3.28	MA

Table 2 shows the data on teachers' and administrators' perception on process approach in using ICT in teaching. Data shows that understanding got the highest weighted mean among the indicators in terms of using ICT in process approach. While evaluating got the lowest weighted mean of 3.32 which verbally described as moderately agree. Administrator on the other hand, rated analyzing with the highest weighted mean of 3.80 which verbally described as agree, while evaluating got the lowest weighted mean of 3.18 which verbally described as moderately agree. The results indicate that using

ICT in teaching leads to a better understanding of the students, however, it was not perceived by the respondent groups the impact of ICT in evaluating the content. This implied that there is a need to further develop a strategy in using ICT in teaching in order to attained the learning objectives.

Table 3. Inquiry Based Approach

Inquiry Based Approach	Teachers		Administrator	
	Mean	VD	Mean	VD
I develop the ability to question more and to tell less (starts from the "what: to the "how" and the "why" questions).	3.62	A	3.55	A
I can vary the question-asking pattern-thus providing more opportunities to pupils to respond to questions that call for analysis, interpretation, evaluation and judgment.	3.46	A	3.68	MA
I can make the inquiry session very interesting to pupils by utilizing questions that certain degree of conceptual conflict.	3.18	MA	3.25	MA
Teach pupils on how to ask good questions and how to raise questions logically.	3.26	MA	3.52	MA
I can assure during the process of inquiry, pupils may come out with certain new ideas, alternatives, and even solutions to a problem	3.42	MA	3.27	MA
I can easily guide the pupils to draw out the humanistic implications and prospective of the lesson.	3.48	MA	3.46	MA
I can readily assist the pupils in understanding the concept.	3.26	MA	3.22	MA
I can easily bring out fresh and relevant points that will sustain the whole period of inquiry once the process bogs down.	3.16	MA	3.17	MA
Grand Mean	3.36	MA	3.39	MA

Table 3 shows the data on teachers' and administrators' perception on inquiry-based approach in teaching using ICT. Data shows that the statement refers to I develop the ability to question more and to tell less (starts from the "what: to the "how" and the "why" questions) got the highest weighted mean of 3.62 which verbally described as agree. While the statement refers to, I can easily bring out fresh and relevant points that will sustain the whole period of inquiry once the process bogs down got the lowest weighted mean of 3.16 which verbally described as moderately agree. Administrators on the other hand, the statement refers to I can vary the question-asking pattern-thus providing more opportunities to pupils to respond to questions that call for analysis, interpretation, evaluation and judgment got the highest weighted mean of 3.68 which verbally described as agree, while the statement refers to I can easily bring out fresh and relevant points that will sustain the whole period of inquiry once the process bogs down got the lowest weighted mean of 3.17 which verbally described as moderately agree. The results indicate that using ICT in inquiry-based approach leads to a better discussion and understanding, however, it was not perceived by the respondent groups the impact of ICT in bringing out fresh and relevant points that will sustain the whole period of inquiry. This implied that there is a need to further develop a strategy in using ICT and inquiry-based approach in teaching.

Table 4 present the results in terms of using ICT in teaching English subject. Data shows that all competencies achieved a rating of proficient. This indicates that using ICT in teaching English elevates the students understanding on the subject.

Table 4. English Competencies and Proficiency

English Competencies	Teachers	
	Mean	VD
interpret the meaning suggested in visual media through a focus on visual elements, for example, line, symbols, colour, gaze, framing and social distance.	3.36	P
recognize evaluative word choices to detect biases and propaganda devices used by speakers.	3.43	P
compare and contrast content of materials viewed to other sources of information (print, online and broadcast)	3.22	P
Grand Mean	3.48	P

According to Ammani and Aoaranjani (2016) because of its interactive and dynamic nature ICT has the stamina to meet the needs of the individual student by providing opportunities to direct their learning and to pursue information. With the usage of ICT students can learn any subject especially English with ease. In the context of the global exchange the role of ICT has become inevitable in the 21st century. The use of ICT has become essential in every day classroom teaching and learning. Its use gives a chance to teachers as well as students to increase the quality of education and meet the requirements set by the coeval knowledge society. CT has become essential tool for educational change and reform.

Table 5. Science Competencies and Proficiency

Science Competencies	Teachers	
	Mean	VD
describe techniques in separating mixtures such as decantation, evaporation, and filtering, sieving and using magnet	3.26	P
demonstrate how sound, heat, light and electricity can be transformed	3.40	P
differentiate between rotation and revolution and describe the effects of the Earth’s motions	3.26	P
Grand Mean	3.31	P

Table 5 present the results in terms of using ICT in teaching Science subject. Data shows that all competencies achieved a rating of proficient. This indicates that technology enhance the understanding of the students. Besides being essential to the science classroom, using current technologies can help all students engage in learning, leading to motivation to study the sciences more in depth. According to Isman et al. (2007) a key to the success of science education is the use educational technology which can greatly enhance a student's understanding of science concepts. The educational technology tools can take a difficult to learn science concept and change it from abstract to concrete to make it easier to understand.

Table 6 present the results in terms of using ICT in teaching Mathematics subject. Data shows that all competencies achieved a rating of proficient. This indicates that by using ICT in learning math it enhances the students understanding. According to Scharaldi

(2020) technology provides additional opportunities for learners to see and interact with mathematical concepts. Students can explore and make discoveries with games, simulations and digital tools.

Table 6. Mathematics Competencies and Proficiency

Mathematics Competencies	Teachers	
	Mean	VD
solves routine and non-routine problems involving addition and/or subtraction of fractions using appropriate problem solving strategies and tools.	3.21	P
defines and illustrates the meaning of ratio and proportion using concrete or pictorial models.	3.36	P
visualizes and describes the different solidfigures: cube, prism, pyramid, cylinder, cone,and sphere using various concrete and pictorial models.	3.41	P
Grand Mean	3.33	P

Table 7. Significant Difference

Area of Teachers' Teaching Proficiency	**Weighted Mean**		**t-Value**	**Significance Value**	**Interpretation**
	Teachers' perception	Administrator			
Time Allotment	3.22	3.28	-1.208	0.231	Not Significant
Process Approach	3.70	3.42	-1.162	0.249	Not Significant
Inquiry Based Learning Approach	3.36	3.39	-1.167	0.247	Not Significant

Specifically, the t-test for two independent samples was utilized to determine the difference between the responses of the two sets of respondents. The t-computed value and significance value, interpreted as not significant, implied that responses of the teachers and school heads were found not significantly different in this area. This indicates that teaches and administrators perceived that teacher were approaching to proficiency in using ICT in different areas.

5. Conclusion

Conclusion was drawn from the findings of the study that teachers had better perception than administrators in terms of application of ICT in teaching and learning. This further means that teachers were more confident when they integrate ICT especially in teaching and learning process but it was also perceived that there is a time constraint in attaining the learning objective when using ICT. It can also be concluded that both teachers and administrators must do adjustment in teaching and learning while integrating ICT on it. However, giving more weight to teachers, that is, if teachers can look for a more suitable strategy in encouraging and motivating pupils to learn through the integration of ICT, more or less, problems encountered by the teachers will be lessened if not be eradicated.

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