Cultural Perceptions and Leadership Style of School Administrators: The Effects on the Maturity Level of ICT Usage among Public Secondary Schools

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Abstract - *This study determined the effects of cultural perceptions and leadership styles of administrators on maturity level of ICT usage among public secondary schools of Misamis Oriental, Philippines. This descriptive method of research employed the three sets of adapted research instruments and sampling size was determined using Slovin's formula. Descriptive statistics used were mode and mean. The findings revealed that cultural perceptions of the administrators on relevance to ICT usage were positive and it significantly affect the management, administrators, infrastructures and teachers domains to the ICT maturity level. Administrators applied transactional leadership style in managing ICT in school as perceived by both the administrators and teachers and it affects the ICT maturity level of students. The maturity level of ICT usage among public secondary schools in Misamis Oriental was categorized as defined level. Finally, it was anticipated that the data obtained from the study will open new lines of inquiry about the crucial roles of administrators in the adoption of ICT and will contribute to the decisions about future developmental needs towards preparedness for further changes in ICT.*

Keywords: *administrators, cultural perceptions, ICT maturity level, leadership style*

INTRODUCTION

ICT has pervaded almost every facet of our society. Around the world, ICT is ubiquitous in the business world, the workplace and at home. It is now used in education sector in various ways and has changed the way it earlier looked to a great degree [1]. For almost one decade the accent was on ICT as a new curricular domain targeted at computer literacy. Only in the early nineties the real impact of ICT on didactics and learning strategies became evident. At the same time we noticed that the missionary ambience of how to superimpose ICT on existing practices faded away; a sudden awareness was awoken that we do not prescribe craftsmen when to use a certain tool; likewise we do not want to prescribe teachers when to use a certain ICT tool or method [2].

Anantha [1] added further that to ensure that schools keep pace with this development in the larger society and to tap the enormous potential of ICT in teaching and learning, many countries have invested considerable amount of resources to integrate ICT into education. Koro, said that positive attitudes related specifically to ICT as a useful tool for teaching and learning and a strong sense of self-efficacy in using computers in education seem to influence the use of ICT the most. It is also suggested that positive attitudes to ICT generally do not seem to contribute very much to teachers' use of ICT in classrooms. Moreover, the 'Everest Syndrome' also resulted in many believing that computers should be brought into the education arena simply 'because they are there' and the resultant perpetuation of the myth that students would benefit qualitatively from computers by simply providing them with the software and hardware [3].

ICT has the potential to "bridge the knowledge gap" in terms of improving quality of education, increasing the quantity of quality educational opportunities, making knowledge building possible through borderless and boundless accessibility to resources and people, and reaching populations in remote areas to satisfy their basic right to education. As various ICTs become increasingly affordable, accessible, and interactive, their role at all levels of education is likely to be all the more significant in

making educational outcomes relevant to the labor market, in revolutionizing educational content and delivery, and in fostering "information literacy [4][10]." The Philippines for example had invested a quite amount of money for the ICT integration. Since 1996, an annual appropriation has been provided for the procurement of computer hardware, software and courseware for teacher-training. In calendar year 2002, this allocation amounted to P 155 millions (US$ 3.1 million). Recently, each school in the Division of Misamis Oriental received a package of computers for E-classroom.

Deped SecretaryLuistro explained that we have to set up our ICT thrust as we gradually implement the K to 12 Basic Education Reform Program. Since, ICT plays a very important role in administrative functions as well as in the teaching and learning process [5].

Almost all of the schools in Misamis Oriental have computers and other ICT equipment. Otto and Albion [6] reported that although ICT are now widely available in schools, the schools did not integrate fully into teaching and learning. Huge educational investments have produced little evidence of ICT adoption and use in teaching and learning.

Thus, this study assessed the maturity level of ICT usage of the schools in Misamis Oriental by identifying the extent of ICT usage in every school by the students and teachers in teaching-learning process, administrator's ICT management and school's ICT infrastructure and maturity level of ICT usage.

OBJECTIVES OF THE STUDY

This study aimed to determine the relationship of cultural perceptions and leadership style of school administrators towards the maturity level of ICT usage among public secondary schools of Misamis Oriental, Philippines.

Hypothesis

The cultural perceptions and leadership styles of school administrators towards ICT usage were positive and it affect the management, administrators, infrastructures and teachers domains towards ICT maturity level.

METHOD

The descriptive research design was used in the investigation. The investigation was conducted in the Division of Misamis Oriental, Philippines. A total of Sixty three (63) public secondary schools, 63 administrators, 1,804 teachers and 9,260 Grade 10 students participated in the study. The Slovin's formula was used to obtained the sample size of 280 teachers and 305 students as the participants of the study. All administrators took part in the study.

The data gathering instrument was three sets of adapted questionnaires. The questionnaires in maturity level of ICT usage in school was adapted from Solar, M., Sabattin, J., Parada, V. [7], the cultural perception was adapted from Abdulkafi Albirin [8] and the leadership style as perceived by the administrators was adapted from Avolio and Bass [9] The first set gathered information that assesses the maturity level of ICT usage in school, cultural perception and leadership style as perceived by the administrators. The second set assess on maturity level of ICT usage in the school and cultural perceptions of the administrators as perceived by the teachers. The third set was the maturity level of ICT usage in school as perceived by the students.

In order to test the validity of the assessment tool, the questionnaires were administered randomly in the Division of Cagayan de Oro City. School personnel in the Division of Cagayan de Oro City assisted the administration of questionnaires.

Cronbach's alpha was used to test the validity of the questionnaires. The first set of questionnaire that determines the cultural perception of the administrator about ICT obtained 0.69 degree of validity, the second set of questionnaire that determines the leadership style of the administrator obtained 0.91 degree of validity and the last set of questionnaire that assessed the maturity level of the school obtained 0.945 Cronbach alpha index of validity.

To ensure that the respondents understood what to do, the researcher personally administered the instrument. The questionnaire was personally administered and these were immediately retrieved, scored and tabulated. Data were processed using the SPSS. Mode and mean were descriptive statistics used while inferential statistics employed chi-square and multiple regression analysis set at .05 level of significant.

RESULT AND DISCUSSION

Table 1 shows the cultural perception of the administrators on the relevance of ICT. The perception was focused on the contribution of ICT in the development of our society and most especially to their work.

The table shows an over-all mean of 3.75, which means that the respondents believed that ICT is

relevant to their work function as an administrator. In other words, administrators had positive perceptions of the value, relevance, and impact of ICT to fulfill their several administrative responsibilities efficiently and effectively. Since the workload of the administrators is enormous, it is important for administrators to be ICT literate and the school to have functional ICT equipment in order to make it easy and handy.

Table 1. Cultural Perceptions of the Administrators on the Relevance of ICT (N=63)

Statements	Mean	SD	VI
1. Knowing about ICT earns one the respect of others.	3.54	1.06	A
2. We need ICT that suit better to our culture and identity.	4.19	0.84	A
3. ICT will improve our standard of living.	4.26	0.68	A
4. Using ICT would not hinder new generations from learning their traditions.	3.81	0.95	A
5. ICTs are proliferating too fast.	4.29	0.58	A
6. People who are skilled in ICTs have privileges not available to others.	3.78	0.96	A
7. ICT will increase our dependence to other countries.	3.40	1.12	U
8. Computers dehumanize society.	3.46	1.03	U
9. Working with ICT does not diminized relationship with others.	3.35	0.97	U
10. ICTs encourage unethical practices.	3.43	0.66	U
Over-all mean	**3.75**	**0.43**	**F**

A-Agree; U-Uncertain; F- Favorable

A mean of 4.29, shows that most of the administrators agreed that ICT is proliferating so fast. It means that ICT is very in demand and a trend in the workplace nowadays. However, the administrators are doubtful whether ICT dehumanize society (3.46). It is probably because the administrators were not sure if most of the people or only few people were affected by the negative effects of ICT.

Leadership Styles of Administrators and Teachers

The administrators assessed themselves as to what type of leadership style they practiced. It focused on the following leadership styles: transformational, transactional and laissez faire. Leadership style plays important role in the success of every organization.

Table 2 shows that administrators and teachers perceived that the leadership style of the administrators in the division of Misamis Oriental is transactional leadership. It simply means that the administrators work as a leader who strictly follows what is the standard. These exchanges allow leaders to accomplish their performance objectives, complete required tasks, maintain the current organizational situation, motivate followers through contractual agreement, direct behavior of followers toward achievement of established goals, emphasize extrinsic rewards, avoid unnecessary risks, and focus on improve organizational efficiency. In turn, transactional leadership allows followers to fulfill their own self-interest, minimize workplace anxiety, and concentrate on clear organizational objectives such as increased quality, customer service, reduced costs, and increased production [11].

Table 3 shows that among the indicators of organization and ICT management, the administrators, teachers and students has the same perception regarding IT infrastructure planning. Maturity level of ICT usage in schools has five (5) domains such as: management, infrastructure, administrators, teachers and students. These domains are used to measure the maturity level of the schools.

Table 2. Perceived Leadership Styles of Administrators

Leadership Styles	Administrators		Teachers		Total	
	N	%	N	%	N	%
Transformational	15	23.8	56	20.0	71	20.7
Transactional	29	46.0	105	37.5	134	39.1
Lassiez-faire	7	11.1	58	20.7	65	19.0
Both transformational and transactional	5	7.9	28	10.0	33	9.6
Both transformational and lassiez-faire	1	1.6	3	1.1	4	1.2
Both transactional and lassiez-faire	0	0	10	3.6	10	2.9
All	3	4.8	19	6.8	22	6.4
No response	3	4.8	1	0.3	4	1.1
Total	**63**	**100.0**	**280**	**100.0**	**343**	**100.0**

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Table 3. ICT Maturity Level of the School on the Organization and ICT Management As Perceived by Administrators, Teachers and Students

Indicators	Maturity Level of the School		
	Administrators	**Teachers**	**Students**
1. Planning guidance IT infrastructure	Managed (36.5)	Defined (34.6)	Defined (31.8)
2. IT infrastructure planning.	Defined (34.9)	Defined (33.2)	Defined (33.1)
3. Organizational structure.	Managed (42.9)	Developing (34.3)	Defined (35.4)
4. IT process roadmap.	Defined (42.9)	Developing (35.4)	Defined (26.6)

Table 4. ICT Maturity Level of the School on Infrastructure As Perceived by Administrators, Teachers and Students

Indicators	Maturity Level of the School		
	Administrators	**Teachers**	**Students**
Software			
1. Operating system.	Defined (34.9)	Defined (34.3)	Defined (29.2)
2. Educational software.	Defined (38.1)	Defined (33.9)	Defined (31.1)
3. Administrative software.	Defined (41.3)	Defined (29.6)	Defined (31.8)
Networks			
1. Internet	Initial (46.0)	Initial (52.1)	Defined (26.6)
2. Wi-fi	Initial (54.0)	Initial (55.7)	Defined (24.6)
3. Intranet	Initial (79.4)	Initial (64.3)	Initial (25.9)
Hardware			
1. Access to the computer room.	Managed (41.3)	Developing (32.5)	Defined (27.9)
2. Quality of technological equipment for educational use.	Managed (47.6)	Defined (34.6)	Defined (33.1)
3. Access to equipment deployment information multimedia.	Defined (41.3)	Developing (33.9)	Defined (40.0)
4. Computers are available for education.	Defined (34.9)	Defined (28.6)	Defined (29.8)
5. Access equipment information capture.	Managed (39.8)	Defined (37.1)	Defined (35.1)
Maintenance Plan			
1. Maintenance of the equipment.	Defined (36.5)	Developing (38.6)	Defined (32.5)
2. Operational maintenance supplies.	Defined (46.0)	Developing (45.0)	Defined (31.8)
3. Presence of maintenance plan.	Defined (41.3)	Developing (37.5)	Defined (32.1)
Security			
1. Condition safety.	Managed (47.6)	Defined (41.1)	Managed (26.2)
2. Insurance contracts.	Defined (50.8)	Defined (38.2)	Defined (34.4)
3. Health conditions.	Defined (41.3)	Defined (40.4)	Defined (29.5)
4. Personnel for security work.	Defined (41.3)	Defined (32.1)	Defined (34.1)
5. Backup information.	Defined (42.9)	Defined (34.6)	Defined (29.2)

It's in a *defined* level. It means that school outlined activities that help the school organize and manage ICT. Designating of technical support is an example. Every school should have an ICT coordinator to look-out the E-classroom and do the ICT related works. An example activity is the scheduling the use of E-classroom. It is indicated in the class program. To maximize the use of the E-classroom every class has an schedule when to use the E-classroom.

Table 4 shows that administrators, teachers and students perceived that all indicators for software are in a *defined* level. Software like Microsoft word, excel, powerpoint, publisher and note are installed free in the computers. It is included in the package.

Software were used both in the administrative and instructional works. The Corel software can be used in making tarp, ID, invitations and programs. It implied that software are essential to make the work easier and accurate.

As for the network, the administrators, teachers and students have the same perception that intranet is on an *initial* level. It means that most of the schools do not installed local networking. It is probably because the schools have difficulty in the accessibility of the network due to its location. Some schools are in the hinterland while some are in lowland. However, it won't guarantee that if the school is in the lowland it has network. So, the schools have problem in the network connections. It is either the internet or intranet. It implied that telecommunications infrastructure is so poor in our countries.

ICT usage depends first on whether there are enough ICT facilities. Lack of basic infrastructure such as classrooms and Internet connectivity are hindrances in effective implementation of ICT curriculum standards in the Philippines.

For the hardware, the administrators, teachers and students perceived that computers are available for education and it is a *defined* level. DepEd aimed to provide every school with a package of computers. The number of computers differs on the size of the school population. It is stipulate in DepEd Order # 78 s.2010. It shows that DepEd is committed to upgrade the system to cope up with the demands of 21st century learners. More secondary schools now have computers; however, student-to-computer and teacher-to-computer ratios remain extremely poor. Moreover, the predominant use of computers was in computer classes taken by students in their junior and senior years in secondary schools. Using computers for other content areas such as math and science is still difficult for most public schools.

For the security, most of the indicators are in *defined* level. It means that DepEd make sure that the computers given to every school are secured. The teachers are trained how to use the computers. They're oriented on what to do in case there is a problem with the computers. They can even communicate with the service provider. The computers had 3-years warranty. It also back-up with anti-virus software.

Continuous Improvement Program (CIP) -based Action Research are implemented in the schools. Through CIP-based action research the administrators and teachers are able to address school problems appropriately with the help of their research.

Table 5. ICT Maturity Level of the School on the Administrators' Leadership, and Vision Learning and Teaching

Indicators	Maturity Level of the School		
	Administrators	Teachers	Students
Leadership and Vision			
1. Facilitate the shared development by all stakeholders of a vision for technology use and widely communicate that vision.	Managed (44.4)	Defined (42.1)	Defined (33.4)
2. Maintain an inclusive and cohesive process to develop, implements, and monitor a dynamic, long range and systemic technology plan to achieve the vision.	Defined (50.8)	Defined (33.2)	Defined (35.1)
3. Foster and nurture a culture of responsible risk-taking and advocate policies promoting continuous innovation with technology.	Managed (41.3)	Defined (33.2)	Defined (29.8)
4. Used attain making leadership decisions.	Defined (47.6)	Defined (31.8)	Defined (37.4)
5. Advocate for research-based effective practices in use of technology.	Defined (41.3)	Defined (40.7)	Defined (26.9)
6. Advocate on the state and national levels, for policies, programs, and funding opportunities that support implementation of the district technology plan.	Defined (41.3)	Managed (31.8)	Defined (29.5)
Learning and Teaching			
1. Identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement.	Defined (39.7)	Defined (36.8)	Developing(28.9)
2. Facilitate and support collaborative technology-enriched learning environments conducive to innovation for improved learning.	Defined (44.4)	Defined (39.6)	Defined (28.2)
3. Provide for learner-centered environments that use technology to meet the individual and diverse needs of learners.	Managed (36.5)	Defined (39.6)	Defined (34.4)

Table 5 (cont). ICT Maturity Level of the School on the Administrators' Leadership, and Vision Learning and Teaching

Indicators	Maturity Level of the School		
	Administrators	**Teachers**	**Students**
4. Facilitate the use of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills.	Defined (47.6)	Defined (41.8)	Defined (30.6)
5. Provide for and ensure that faculty and staff take advantage of quality professional learning opportunities for improved learning and teaching with technology.	Managed (44.4)	Defined (38.9)	Defined (30.5)

For learning and teaching, the administrators, teachers and students perceived that in terms of facilitating and supporting collaborative technology-enriched learning environments conducive to innovation for improved learning and facilitating theuse of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills, the administrators are in a *defined* level. It means that the administrators acknowledge that ICT has positive impact to the performance of the students. It shows that administrators support the integration of ICT and make sure that it is effectively used by the teachers and students.

It implies that the administrators are ICT literate. Moreover the administrators supported the use of technology in teaching and learning in the school.

A technological leader must develop a vision of how school reform will be affected by technology. Planning and establishing resources for staff development are the most important responsibilities of a technological leader, followed by ICT tools and infrastructure support and evaluation and research. Effective technological leaders must administer procedures for measuring the growth of each individual teacher.

Table 6. ICT Maturity Level of the School on the Administrators' Productivity, Professional Practice, Support Management and Operations as Perceived by the Administrators, Teachers and Students

Indicators	Maturity Level of the School		
	Administrators	**Teachers**	**Students**
Productivity and Professional Practice			
1. Model the routine, intentional, and effective use of technology.	Defined (42.9)	Managed 30.4)	Defined (29.2)
2. Employ technology for communication and collaboration among colleagues, staff, parents, students, and the larger community.	Managed (42.9)	Defined (40.7)	Defined (36.4)
3. Create and participate in learning communities that stimulate, nurture, and support faculty and staff in using technology for improved productivity.	Managed (42.9)	Defined (46.4)	Defined (35.7)
4. Engage in sustained, job-related professional learning using technology resources.	Defined (46.0)	Defined (40.7)	Defined (37.0)
5. Maintain awareness of emerging technologies and their potential uses in education.	Defined (39.7)	Defined (38.2)	Defined (31.5)
6. Use technology to advance organizational improvement.	Defined (42.9)	Defined (43.9)	Defined (30.2)
Support, Management and Operations			
1. Develop, implement, and monitor policies and guidelines to ensure compatibility of technologies.	Managed (34.9)	Defined (38.6)	Defined (33.4)
2. Implement and use integrated technology-based management and operations systems.	Defined (36.5)	Defined (42.9)	Defined (32.1)
3. Allocate financial and human resources to ensure complete and sustained implementation of the technology plan.	Defined (47.6)	Defined (45.0)	Defined (32.8)
4. Integrate strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources.	Defined (50.8)	Defined (39.3)	Defined (35.1)
5. Implement procedures to drive continuous improvements of technology systems and to support technology replacement cycles.	Defined (60.3)	Defined (33.9)	Managed (26.9)

In the class program there was a specified time for computer use. It is an implication that the administrators encouraged the use of ICT in teaching.

Table 6 shows that among the indicators of productivity and professional practice, the administrators, teachers and students perceived that in engaging in sustained, job-related professional learning using technology resources, maintaining an awareness of emerging technologies and their potential uses in education and in using of technology to advance organizational improvement, the administrators are in a *defined* level.

Most probably because the administrators are committed in the integration of ICT so they have to enhance their technological skills. Since the use of ICT by an individual can be encouraged by training, scholars note that school administrators should be provided with ICT training specifically targeted at technology integration into the curriculum.

For support, management and operations, the administrators, teachers and students' perception is *defined* level for the implementation and use integrated technology-based management and operations systems, allocation of financial and human resources to ensure complete and sustained implementation of the technology plan, and integration of strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources. It means that administrators carried out the plans of DepEd regarding the integration of ICT.

Originally, plans and allocations of financial for every school are all from the department. The school is just an end-user. DepEd Order # 78 s. 2010 embodied some of the processes of implementing ICT integration by the department.

Table 7 shows that administrators, teachers and students perceived that among the indicators of assessment and evaluation, the use multiple methods to assess and evaluate appropriate uses of technology resources for learning, communication, and productivity and the use of technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and student learning by the administrators are in a *defined* level.

Table 7. ICT Maturity Level of the School on the Administrators' Assessment and Evaluation, Social, Legal, and Ethical Issues As Perceived by Administrators, Teachers and Students

Indicators	Maturity Level of the School		
	Administrators	**Teachers**	**Students**
Assessment and Evaluation			
1. Use multiple methods to assess and evaluate appropriate uses of technology resources for learning, communication, and productivity.	Defined (50.8)	Defined (40.7)	Defined (33.8)
2. Use technology to collect and analyse data, interpret results, and communicate findings to improve instructional practice and student learning.	Defined (42.9)	Defined (45.0)	Defined (31.1)
3. Assess staff knowledge, skills, and performance in using technology and use results to facilitate quality professional development and to inform personnel decisions.	Managed (39.7)	Defined (39.3)	Defined (33.1)
4. Use technology to assess, evaluate, and manage administrative and operational systems.	Defined (33.3)	Defined (42.9)	Developing (30.5)
Social, Legal and Ethical Issues			
1. Ensure equity of access to technology resources that enable and empower all learners and educators.	Defined (33.3)	Defined (36.4)	Defined (29.5)
2. Identify, communicate, model, and enforce social, legal, and ethical practices to promote responsible use of technology.	Defined (50.8)	Defined (37.5)	Defined (32.5)
3. Promote and enforce privacy, security, and online safety related to the use of technology.	Defined (39.7)	Defined (37.9)	Defined (31.5)
4. Promote and enforce environmentally safe and healthy practices in the use of technology.	Defined (46.0)	Defined (36.4)	Defined (29.5)
5. Participate in the development of policies that clearly enforce copyright law and assign ownership of intellectual property developed with district resources.	Defined (41.3)	Defined (33.2)	Defined (30.5)

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It simply means that the assessment and evaluation process is not taken for granted. The administrators do not just stop in the implementation but go through until the end of the process to make sure that the ICT plans of the DepEd will succeed. Supervisory plans, class observations, evaluation of classroom structuring, and Performance Appraisal System of Teachers (PAST) are some of the assessment and evaluation methods of the administrators that evaluate the uses of ICT in the school.

As for the use technology in collecting and analyzing data, interpretation and communication of the finding, administrators used only technology for encoding and presentation purposes.

Table 8 shows that in terms of facilitating the student learning and creativity by the teachers, the administrators, teachers and students' perception is in a *defined* level. It means that the teachers are committed in using their knowledge and skills about ICT in teaching and learning to facilitate experiences that advance student learning, creativity and innovation in both face-to-face and virtual environments. ICT provides motivation to learn, such as videos, television and multimedia computer software that combine text, sound, and colorful moving images can be used to provide challenging and authentic content that will engage the student in the learning process.

It indicates that teacher is full aware of their responsibilities in facilitating and inspiring students to learn and be creative. Lesson plans of the teachers are the strong evidence of how the teachers performed such commitments. It is also justified in the Performance Appraisal System of Teacher (PAST).

Table 8. ICT Maturity Level of Teachers in Facilitating and Inspiring Student Learning and Creativity

Indicators	Maturity Level of the School		
	Administrators	Teachers	Students
1. Promote, support, and model creative and innovative thinking and inventiveness.	Defined (42.9)	Defined (39.3)	Defined (27.9)
2. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources.	Defined (50.8)	Defined (41.8)	Defined (32.8)
3. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes.	Defined (41.3)	Defined (40.4)	Defined (37.0)
4. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.	Defined (42.9)	Defined (40.0)	Defined (36.4)

Table 9. ICT Maturity Level of Teachers in Designing and Developing Digital-Age Learning Experiences and Assessment

Indicators	Maturity Level of the School		
	Administrators	Teachers	Students
1. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity.	Defined (41.3)	Defined (42.1)	Defined (33.8)
2. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.	Defined (50.8)	Defined (44.3)	Defined (35.1)
3. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources.	Defined (54.0)	Defined (44.3)	Defined (36.1)
4. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching.	Defined (54.0)	Defined (47.9)	Defined (41.0)

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Table 10. ICT Maturity Level of Teachers in Modeling Digital-Age Work and Learning

Indicators	Maturity Level of the School Administrators	Teachers	Students
1. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.	Defined (57.1)	Defined (44.6)	Developing (32.5)
2. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.	Defined (50.8)	Defined (36.8)	Defined (33.4)
3. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats	Defined (52.4)	Defined (40.0)	Defined (32.1)
4. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning	Defined (46.0)	Defined (45.0)	Defined (33.4)

Table 10 shows that the administrators, teachers and students perceived that in designing, developing and evaluating digital-age learning experiences and assessments of the teachers is in a *defined* level. It means teachers design, develop and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills and attitudes of the pupils. It is evident to the provided teaching guides and manuals of the teachers. It is also documented in the lesson plans.

Among the indicators of model digital-age work and learning the students perceived that in terms of demonstrating fluency in technology systems and the transfer of current knowledge to new technologies and situations, the teachers is in a *developing* level. It means the students are not satisfied with the expertise of their teachers about technologies. Probably some of their teachers are not particular with the use of ICT because teachers are hesitant of using it. Their teachers do not exhibit knowledge, skills and work processes representative of an innovative professional in a global and digital society. It is possible because not all teachers possess an expertise in using technologies or they are not in favor of ICT integration.

The attitudes of teachers towards technology greatly influence their adoption and integration of computers into their teaching. Attitudes might be influenced by concerns, confidence, and so forth. For example, pre-service teachers' attitudes toward a technology are affected by their confidence in using it. Even though technology is available, and teachers have the requisite skills and knowledge, if they are not confident in using technology for teaching, they might be unwilling to do so.

Table 11. ICT Maturity Level of Teachers in Promoting and Modeling Digital Citizenship and Responsibility

Indicators	Maturity Level of the School Administrators	Teachers	Students
1. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.	Managed (41.3)	Defined (41.1)	Defined (32.5)
2. Address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources.	Defined (47.6)	Defined (39.3)	Defined (34.1)
3. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.	Defined (46.0)	Defined (42,1)	Defined (33.1)
4. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools.	Managed (44.4)	Defined (33.2)	Defined (29.5)

Table 12. ICT Maturity Level of Teacher in Engaging in Professional Growth and Leadership

Indicators	Maturity Level of the School		
	Administrators	Teachers	Students
1. Participate in local and global learning communities to explore creative applications of technology to improve student.	Managed (39.7)	Defined (46.1)	Defined (31.8)
2. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others	Managed (38.1)	Defined (40.7)	Defined (30.8)
3. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning.	Managed (41.3)	Defined (40.0)	Defined (32.8)
4. Contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community.	Managed (42.9)	Defined (35.7)	Defined (30.5)

Table 13. ICT Maturity Level of Student in Creativity, Innovation and Collaboration

Indicators	Maturity Level of the School		
	Administrators	Teachers	Students
Creativity and Innovation			
1. Design, develop and test a digital learning game to demonstrate knowledge and skills related to curriculum content.	Defined (41.3)	Defined (41.4)	Defined (26.9)
2. Create and publish an online art gallery with examples and commentary that demonstrate an understanding of different historical periods, cultures, and countries.	Defined (41.3)	Developing (37.9)	Defined (34.1)
3. Employ curriculum-specific simulations to practice critical-thinking processes	Defined (42.9)	Defined (39.3)	Defined (32.1)
4. Identify a complex global issue; develop a systematic plan of investigation, and present innovative sustainable solutions.	Defined (46.0)	Developing (42.9)	Defined (29.8)
5. Design a Web site that meets accessibility requirements	Defined (31.7)	Developing (43.9)	Defined (29.5)
6. Create media-rich presentations for other students on the appropriate and ethical use of digital tools and resources.	Defined (44.4)	Developing (36.1)	Developing (27.9)
Communication and Collaboration			
1. Create and publish an online art gallery with examples and commentary that demonstrate an understanding of different historical periods, cultures, and countries.	Defined (38,1)	Developing (41.4)	Defined (31.8)
2. Identify a complex global issue; develop a systematic plan of investigation, and present innovative sustainable solutions.	Defined (36.5)	Developing (46.8)	Defined (34.1)

Table 11 shows that among the indicators that promote digital citizenship and responsibility, in terms of addressing the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources and in promoting and modeling digital etiquette and responsible social interactions related to the use of technology and information, the teachers are in a *defined* level.

Table 12 shows that in terms of engaging in professional growth and leadership, administrators perceived that it is in a *managed* level. They believed that teachers continuously improve their professional practice, model lifelong learning and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Nowadays, number of teachers who pursue their post graduate degree increased. They continue schooling to explore new

ideas and update themselves to the latest trend in education. They also wanted to be promoted that is why they go on with their education.

Table 13 shows that among the indicators of creativity and collaboration, the students are in a *defined* level according the perceptions of the administrators, teachers and students in designing, developing and testing a digital learning game to demonstrate knowledge and skills related to curriculum content and in employing curriculum-specific simulations to practice critical-thinking processes.

It means that the students demonstrate creative thinking, acquire knowledge, and develop innovative products and processes using ICT. It shows that school supports the integration of ICT and well understood the vision and policies of ICT integration in the curriculum.

In all indicators of communication and collaboration, only the teachers perceived that it is in a *developing* level while the administrators and student agreed that it is a *defined* level. It means teachers believed that in terms of using digital media to communicate and work collaboratively at times long-distance and to support individual learning and contribute to the learning of others, the students are still in the process of learning and need to master such capabilities. It is because in communication there is an involvement of money. Internet and load is necessary in order to communicate using digital media which is very limited to most of the students.

Table 14 shows that of all indicators in research and information fluency, only the teachers perceived differently in terms of identifying a complex global issue, develop a systematic plan of investigation and present innovative sustainable solutions because for them it is in a *developing* level.

For the indicators of critical thinking, problem solving and decision making, the administrators, teachers, and students perceive that in terms of employing curriculum-specific simulations to practice critical-thinking processes and in analyzing the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs, the student are in a *defined* level.

Table 14. ICT Maturity Level of Students in Research, Information Fluency, Critical Thinking, Problem Solving and Decision

Indicators	**Maturity Level of the School Administrators**	**Teachers**	**Students**
Research and Information Fluency			
1. Select digital tools or resources to use for a real-work task and justify the selection based on their efficiency and effectiveness	Defined (44.4)	Defined (41.1)	Defined (30.8)
2. Identify a complex global issue; develop a systematic plan of investigation, and present innovative sustainable solutions.	Defined (57.1)	Developing(41.4)	Defined (30.5)
3. Model legal and ethical behaviors when using information and technology by properly selecting, acquiring, and citing resources.	Defined (46.0)	Defined (41.8)	Defined (38.4)
4. Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.	Defined (46.0)	Defined (43.9)	Defined (30.8)
Critical Thinking, Problem Solving and Decision Making			
1. Design, develop, and test a digital learning game to demonstrate knowledge and skills related to curriculum content.	Defined (47.6)	Developing (40.7)	Defined (30.5)
2. Employ curriculum-specific simulations to practice critical-thinking processes.	Defined (46.0)	Defined (37.5)	Defined (31.8)
3. Identify a complex global issue; develop a systematic plan of investigation, and present innovative sustainable solutions.	Defined (46.0)	Developing (42.1)	Defined (33.8)
4. Analyse the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.	Defined (47.6)	Defined (41.4)	Defined (36.1)
5. Configure and troubleshoot hardware, software, and network systems to optimize their use for learning and productivity.	Defined (49.2)	Developing (40.4)	Defined (34.1)

Table 15. ICT Maturity Level of Students in Digital Citizenship, Technology Operation and Concepts.

Indicators	Maturity Level of the School Administrators	Teachers	Students
Digital Citizenship			
1. Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.	Defined (55.6)	Defined (40.7)	Defined (27.5)
2. Design a Web site that meets accessibility requirements	Defined (38.1)	Developing(39.6)	Defined (31.5)
3. Model legal and ethical behaviors when using information and technology by properly selecting, acquiring, and citing resources.	Defined (50.8)	Defined (38.2)	Defined (28.2)
4. Create media-rich presentations for other students on the appropriate and ethical use of digital tools and resources.	Defined (47.6)	Developing (38.2)	Defined (32.8)
Technology, Operations and Concepts			
1. Select digital tools or resources to use for a real-work task and justify the selection based on their efficiency and effectiveness.	Defined (49.2)	Defined (47.1)	Defined (32.1)
2. Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.	Defined (55.6)	Defined (46.4)	Defined (31.5)
3. Configure and troubleshoot hardware, software, and network systems to optimize their use for learning and productivity.	Defined (55.6)	Defined (42.9)	Defined (31.1)

Table 15 shows that the administrators, teachers and student perceived that in digital citizenship indicators, the students are in a *defined* level in terms of analyzing the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.

It means the students understand the ICT issues and practice ethical behavior towards the use of ICT. It connotes that the teachers imparted to their students how to used ICT in proper manner. Aside from that, the students are properly guided by their parents. It implied that teachers and parents play important role in educating the students on the proper use of ICT.

For the technology, operations and concepts, all indicators are in a *defined* level according to the perceptions of the administrators, teachers and students. It means the students understand the concept of technology, operation and system because ICT is already part of the curriculum aside from being integrated. Lessons about computer are available already in a long run. As early as grade IV the students are taught about computer. ICT is introduced at the elementary level as a subject called Home Economics and Livelihood Education (HELE) and in the secondary level as Technology and Home Economics (THE). In the majority of cases, ICT materials such as software and multimedia, are used to supplement instruction.

CONCLUSION

Administrator plays an important role in ICT integration. Their cultural perceptions and leadership style were the factors that determined ICT integration in school. Most of the administrators were using ICT in their instructional management and administrative functions. It was indicated further that ICT integration was necessary for the improvement of the school performance.

In addition, the school maturity level in ICT usage focuses on the domains of management, infrastructure, administrators, teachers and students. It is important to look on these things in order to monitor the level of ICT usage.

The results explained further that most of the administrators use the transactional leadership style. Moreover, cultural perceptions and leadership style of the administrator affect certain domains of the maturity level of ICT. The results of the study were consistent with Rogers' premise regarding the role of

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social norms in the diffusion of innovations which posits that the acceptance of a new technology depends to a large extent on its compatibility with the existing culture. In this study, principals acknowledged the importance of ICT for their educational system and society. It reflects the influence of their cultural norms on their perception of ICT.

It simply means that open-mindedness of an administrator and considering all the possible things that can help them be a effective manager and leader for sake of their school is essential. They don't have to focus on a certain strategy but explore more options and use it according to its appropriateness in a certain situation.

RECOMMENDATION

Department of Education should come up with policies that will guide the use of ICTs in schools. Keep up with the provision of necessary infrastructure both physical and human resources. Implement an evaluation system that ensures schools are using ICT proficiently.

The top management should provide professional development for administrators, teachers, and students to be proficient in all the competency areas especially in using technologies.

Administrators must have an explicit role assigned in the IT strategy planning process. If administrators wanted to be successful in their work, they must understand the role of ICT in their work life and acquire appropriate skills to use this knowledge. They must be proficient in utilizing ICT to assist in their administrative and instructional functions.

Administrators should know their leadership style in order to manage the ICT implementation in their school effectively. In fact, their ability to manage and lead the school helps them to become more effective leader.

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