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Information and Communication Technology Coordinators' Competence in Public Elementary Schools

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Abstract

This study aimed to determine the level of competence of Information Communication Technology Coordinators in Elementary Schools of Ramon District, Isabela during the School Year 2019-2020. This study used descriptive method of research, employing the questionnaire checklist in gathering data. This method was adopted since the study aimed to find the level of competence of ICT coordinators. Mean was used to determine the level of competence of the ICT Coordinators. Results of the study shows that the respondents have an overall high level of competence on competencies related to technical operations and concepts, and productivity of various ICT tools. The respondents have an overall high level of competence on the standard 2. This implies that the ICT coordinators assumed they were highly skilled in using appropriate office and teaching productivity tools. Moreover, the respondents have an overall high level of competence related to social, ethical, legal and human issues, and community linkage, which means that the ICT coordinators acknowledge they were highly skilled in recognizing and practicing ethical use of technology in both personal and professional level. To effectively assess the level of competence of ICT coordinators, their roles, duties, and functions must be properly defined based on their job description in the Position Description form that every permanent government official obtained upon appointment for a permanent position. Therefore, the position ICT Coordinators should not remain as designation, but, should be included in the Plantilla of Personnel as a new regular item position. The findings of this study may be best translated through the conduct of trainings and seminars to update the ICT Coordinators with new trends and techniques in teaching. Likewise, the Department of Education may craft a policy to clearly define the roles and functions of ICT Coordinators in schools.

Keywords: Information and Communication Technology, ICT Coordinators, competence, domains and functions

INTRODUCTION

Information and Communication Technology (ICT) had been established in the literature as an effective tool to facilitate students' learning, improve teaching, and enhance institutional administration [1,2]. However, the researcher learned that the training of ICT Coordinators is inadequate and needs improvement. Reasonably, it varies from person to person, and from situation to situation as [3] claimed that competency level of the school ICT coordinator varies far and wide between different schools in different towns, or cities, or indeed countries. In such a growth area as technology, the competency of ICT Coordinator is of key importance to the proper integration of ICT in the school.

While there have been many studies carried out in relation to ICT in schools, fewer studies have been done dealing specifically with ICT Coordinators. This research examined the level of competence of ICT Coordinators in carrying out their day-to-day duties, their suitability for the position and their general opinion of their level of competency.

The position of ICT Coordinator in the world of advanced technology recently is quite relevant with regards to his role. The Department of Education and Science (DES) in Ireland conducted a survey in 2008

in relation to the integration of ICT in primary and secondary schools. The survey was not based on the level of competence. However, it examined the integration of ICT into teaching which the researcher calls the level of expertise in this vast area.

More recent studies (British Educational Communications and Technology Agency, 2002) reveaed that in the current practice, the most predominant roles assumed by the ICT coordinator include technical support and supporting children during the learning process. In this context, the tasks carried out by the ICT coordinator include teaching ICT skills, coordinating the development of an ICT curriculum, managing hardware, and technical support, and giving training. Further, British Educational Communications and Technology Agency (2002) emphasizes the ICT leadership role to facilitate proper use of ICT.

Major ICT competencies required by teachers were highlighted by [2] to include competency in making personal use of ICT; mastery of a range of educational paradigms that make use of ICT; competency in making use of ICT as mindtools; competency in using ICT as tool for teaching, competency in mastering a range of assessment paradigms which involves use of ICT; and competency in understanding the policy dimensions of the use of ICT for teaching and learning.

Successful integration of ICT in the school system depends largely on the competence of teachers towards the role of modern technologies in teaching and learning. Thus, experienced teachers and newly qualified need to be competent in using ICT effectively in their teaching [4].

[5] as cited by [6] revealed that ASEAN countries planned to develop their ICT infrastructure and ICT manpower for economic transformation, innovation, people empowerment and engagement, human capital development, infrastructure development, and bridging the digital divide to deliver 4 key outcomes: 1) ICT as an engine of growth for ASEAN countries, 2) recognition for ASEAN as a global ICT hub, 3) enhanced quality of life for peoples of ASEAN, and 4) contribution towards ASEAN integration.

In the Philippines, a recent study reveals that most teachers have basic knowledge on ICT and needs improvement (Las Johansen *et al.*, 2017). According to [7], the key factor of teacher's successful integration of ICT in the classroom teaching is professional development. The importance of ICT competence has been presented in the study to determine Thailand's ICT readiness for the ASEAN economic community. With competency in ICT and skills to support the growth of the ICT sector, human capital will be established. Thus, it will turn to support the progress of the other segments of the economy. ICT knowledge and skills are needed to help in promoting the country's competitiveness [8].

While there have been many studies carried out in relation to ICT in schools, fewer studies have been done dealing specifically with ICT Coordinators. This research examined the level of competence of ICT Coordinators in carrying out their day-to-day duties, their suitability for the position and their general opinion of their level of competency. However, the researcher learned that the training of ICT Coordinators is inadequate and needs improvement. Reasonably, it varies from person to person, and from situation to situation as [9] claimed that competency level of the school ICT coordinator varies far and wide between different schools in different towns, or cities, or indeed countries. In such a growth area as technology, the competency of ICT Coordinator is of key importance to the proper integration of ICT in the school.

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Successful integration of ICT in the school system depends largely on the competence of teachers towards the role of modern technologies in teaching and learning. Thus, experienced teachers and newly qualified need to be competent in using ICT effectively in their teaching [4].

This study anchored to the Input-Process and Output model.

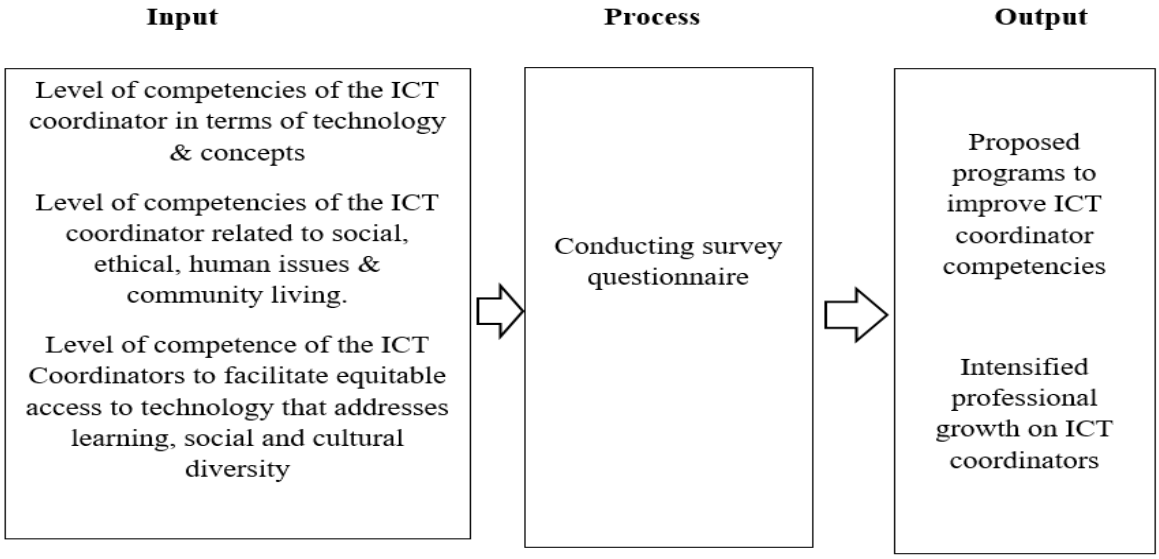

Figure1. Paradigm of the Study

OBJECTIVES OF THE STUDY

Generally, this study aimed to identify the level of competence of ICT Coordinators among elementary Schools in Ramon District School Year 2019-2020. Specifically, it sought to answer the following questions:(1) What is the level of competence of the ICT Coordinators in terms of technology & concepts along with the parameters: knowledge and skills; using of appropriate office and teaching productivity tools; use of internet and network applications; and knowledge and skills in information and data management? (2) What is the level of competencies domains of the ICT Coordinator in terms of social, ethical, legal, human issues and community living? (3) What is level of competence of the ICT Coordinators to facilitate equitable access to technology that addresses learning, social and cultural diversity?

METHODOLOGY

This section presents the research design, respondents, research environment, research instruments, gathering procedure and statistical treatment of data to be utilized in this study.

The researcher used the descriptive method of research, employing the questionnaire checklist in gathering data. This method would be adopted since the study aimed to find the level of competence of ICT coordinators among elementary schools in Ramon District.

Descriptive method would not only confine in gathering and tabulating of data but also included an element of analysis and interpretation of the meaning or significance of what is to be described. The description would combine with classification and comparison, analysis and interpretation of data.

The population of the study includes the ICT coordinators of the 19 public elementary schools of Ramon District School Year. 2019-2020 using total enumeration technique.

Ethical clearance was obtained from the District of Ramon. In addition to that, permission was sought from the Schools District Supervisor. The researcher administered the initial questionnaire to the teachers and school heads with the help of the district supervisors during a scheduled time hat suited the majority of the school heads and teachers. At each school the researcher explained verbally the purpose of the study to the principal, and teachers were told that the information given would help improve the working conditions in the teaching profession. Thereafter the researcher collected all completed questionnaires from the teachers for analysis.

The researcher ensured that the participants knew what the research is all about and that they give permission to be part of the study. Since it is expected from the participants to answer all questions truthfully and pointing out where the school is lacking which may cause discomfort, the researcher informed the participants that they could withdraw from the process at any time if they wanted to. After completion of the study, the researcher aims to share the findings and recommendations with schools and other stakeholders in the Department of Education.

The researcher used a single set of questionnaire with 3 domains. The first domain includes the profile and competencies related to technical operations and concept, and productivity of various ICT tools like computers and communication devices as well as application available on-line or offline.

The second domain focuses on the competencies related to social, legal and human issues, and community linkage while the third domain includes the competencies of the ICT coordinators related to professional growth and development, research, innovation and collaboration.

Experts with substantial knowledge and experience on validation and reliability were consulted to validate the instrument. They evaluated whether the questions effectively captured the information needed for the topic under investigation. A copy of the instrument was provided to language experts as well to scrutinize the questions, comment on and suggest improvements in terms of form and substance.

Before the actual research commenced, the researcher selected a pilot sample of ten teachers at one secondary school head in the Ramon District since the focus of the study in in the elementary level. This would probably ensure that the instrument understood and to eliminate any misinterpretations and biases that could occur. Questionnaires were administered to a total number of ten teachers at the selected secondary school head. The teachers were asked to read and complete the questionnaire. When the teachers had completed the questionnaire, they would be asked to notify the researcher which questions are vague. The teachers and school head were also being asked to make suggestions in order to improve the quality of the instrument.

This assisted the researcher in deciding whether the questions asked were pertinent and suitable. The results of the said dry run would be subjected to the reliability testing. The final instrument for actual administration developed based from the comments, feedbacks and suggestions of language and content experts.

After the gathering of the questionnaires, data from the respondent's answers were retrieve and encoded using excel and analyze using Statistical Package for Social Sciences (SPSS). Mean was used to determine the degree of the occurrence of the level of competence of the ICT coordinators of Ramon District.

The Five-point Likert was utilized to analyze the data. The rating scale used is reflected in the below:

Range	**Verbal Interpretation**
4.21-5.00	Very much competent
3.41-4.20	Very competent
2.61-3.40	Competent
1.81-2.60	Least competent
1.00-1.80	Not competent

RESULTS AND DISCUSSION

I. The level of competence of the ICT Coordinators in terms of technology & concepts

Knowledge and Skills. The table 1 shows that the respondents have an overall high level of competence on the standard 1 under the competencies related to technical operations and concept, and productivity of various ICT tools with a mean of 4.71. Moreover, all the criteria confirmed high level of competence where "Identify and define the functions of the main components (i.e. monitor, CPU, keyboard, mouse) of the computer" ($\bar{x} = 4.91$) was the most developed skill while "Use online and offline help facilities for troubleshooting, maintenance and update of applications" ($\bar{x}$=4.51) was the least.

Table 1. Demonstrate knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance

Indicators	Mean	D	Rank
1. Identify and define the functions of the main components (i.e. monitor, CPU, keyboard, mouse) of the computer	4.91	HL	1
2. Identify and define the functions of computer peripherals (i.e. printer, scanner, modem, digital camera, speaker, etc.)	4.81	HL	2.5
3. Properly connect main components, configure peripherals and install drivers when required	4.74	HL	4
4. Configure computer settings of various software and hardware	4.65	HL	7
5. Understand the basic functions of the operating system	4.81	HL	2.5
6. Organize and manage computer files, folders and directories	4.72	HL	5
7. Use storage devices (i.e. hard disk, diskette, CD, flash memory, etc.) for storing and sharing computer files. Create back-ups of important files	4.67	HL	6
8. Protect the computer from virus, spyware, adware, malware, hackers etc.	4.56	HL	8
9. Use online and offline help facilities for troubleshooting, maintenance and update of applications	4.51	HL	9
Overall	**4.71**	**HL**	

The result of the study is similar with the study of Cruz (2016) that the ICT coordinators must be competent in handling technical operations. It is also notable that the ICT coordinators should master the skills in technology operations. Likewise, they should know how to utilize the basic technology and operations as ICT coordinator.

This implies that the ICT coordinators believed they were highly skilled in demonstrating knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance. Also, as ICT coordinators, they believed that they were highly competent in operations and technology.

Using of appropriate office and teaching productivity tools. Table 2 above shows that the respondents have an overall high level of competence on the standard 2 under the competencies related to technical operations and concept, and productivity of various ICT tools with a mean of 4.59. Additionally, all the criteria confirmed high level of competence where "Enhance slide presentations by adding sound, customizing animation and inserting images" ($\bar{x} = 4.84$) was the most developed skill while "Attach and configure scanners, cameras, cell phones to acquire digital images Store digital images using optical media (CD, DVD, flash disk) and online repositories" ($\bar{x}$=4.37) was the least.

Table 2. Use appropriate office and teaching productivity tools

Indicators	Mean	D	Rank
1. Use a word processor to enter and edit text and images	4.67	HL	3.5
2.Format text, control margins, layout and tables	4.60	HL	8.5
3. Print, store and retrieve text documents from a word processor	4.63	HL	6.5
4. Use a calculation spreadsheet to enter data, sort data and format cells into tables	4.60	HL	8.5
5. Make computation, use formula and create graphs using spreadsheets	4.56	HL	11
6. Print and store data tables using a spreadsheet application	4.67	HL	3.5
7. Use a presentation package to add text and sequence a presentation	4.72	HL	2
8. Enhance slide presentations by adding sound, customizing animation and inserting images	4.84	HL	1

9. Print presentation handouts and store slide presentations	4.63	HL	6.5
10. Make effective class presentations using the slides and LCD projector	4.47	HL	13
11. To acquire digital images and other media from web sites, CD, flash drives, etc.	4.65	HL	5
12. Crop, scale, color correct and enhance digital images	4.40	HL	14
13. Play various media files using appropriate media players	4.58	HL	10
14. Stitch together video footages and sound tracks and add simple enhancements -transitions, titles, etc.	4.51	HL	12
15. Attach and configure scanners, cameras, cell phones to acquire digital images Store digital images using optical media (CD, DVD, flash disk) and online repositories	4.37	HL	15
Overall	**4.59**	**HL**	

As ICT Coordinators, they should master and knowledgeable about the usage of the appropriate office and teaching productivity tools. The result coincided with the result of the study indicates that mastery of the skills in using productivity tools shall be considered.

This implies that the ICT coordinators assumed they were highly skilled in using appropriate office and teaching productivity tools.

Use of internet and network applications. Table 3 shows that the respondents have an overall high level of competence on the standard 3 under the competencies related to technical operations and concept, and productivity of various ICT tools with a mean of 4.47. Furthermore, all the criteria confirmed high level of competence where "Configure and use Web Browsers and Help applications" ($\bar{x} = 4.60$) was the most developed skill while "Connect to the internet via dial-up or LAN" ($\bar{x}$=4.30) was the least.

The result of the study denotes that as ICT coordinator, it is necessary to master the utilization of the internet and knows on how to operate internet connections. It is also underscores that ICT coordinators should be knowledgeable in internet applications, network resources and effective usage of the internet.

The result implies that the ICT coordinators presumed they were highly skilled in understanding and using the internet and network applications and resources effectively.

Table 3. Understand and effectively use the Internet and network applications and resources

Indicators	Mean	D	Rank
1. Connect to the internet via dial-up or LAN	4.30	HL	7
2. Configure and use Web Browsers and Help applications	4.60	HL	1
3 .Send and receive emails with attachments, manage emails and use LAN and Web-based mail servers	4.47	HL	4
4. Effectively use synchronous and asynchronous web based communication tools like instant messengers, voice and teleconferencing	4.37	HL	6
5. Connect and use shared printers, shared folders and other devices within a network	4.58	HL	2
6. Effectively use search engines, web directories and bookmarks	4.53	HL	3
7. Download and install relevant applications including freeware, shareware, updates, patches, viewers and support applications	4.42	HL	5
Overall	**4.47**	**HL**	

Knowledge and skills in information and data management. Table 4 above shows that the respondents have an overall high level of competence on the standard 4 under the competencies related to technical operations and concept, and productivity of various ICT tools with a mean of 4.50. Also, all the criteria confirmed high level of competence where "Properly acknowledge information sources - online and offline" ($\bar{x} = 4.67$) was the most developed skill while "Search and collect textual and non-textual information from online and offline sources" ($\bar{x}$=4.40) was the least.

Distribute, share, publish and print information via print or web, efficiently store and organize collected information using directories, drives, or databases, and effectively use search engines, directories, crawlers and agents to locate information sources obtained the means of 4.58, 4.44, and 4.42, respectively. This means that ICT coordinators were highly competence in demonstrating the knowledge and skills in acknowledging sources of information.

The result is stressed out that in acknowledging information sources shall be considered. It is very important to know the sources of the information. Most of the ICT coordinators should know how to acknowledge sources of information [10].

This implies that the ICT coordinators acknowledged they were highly skilled in demonstrating knowledge and skills in information and data management.

Table 4. Demonstrate knowledge and skills in information and data management

Indicators	Mean	D	Rank
1. Effectively use search engines, directories, crawlers and agents to locate information sources	4.42	HL	4
2. Search and collect textual and non-textual information from online and offline sources	4.40	HL	5
3. Efficiently store and organize collected information using directories, drives, or databases	4.44	HL	3
4. Distribute, share, publish and print information via print or web	4.58	HL	2
5. Properly acknowledge information sources - online and offline	4.67	HL	1
Overall	4.50	HL	

Level of competencies domains of the ICT Coordinator in terms of social, ethical, legal, human issues and community living

Understand and observe legal practices in the use of technology. Table 5 shows that the respondents have an overall high level of competence on the standard 1 under the competencies related to social, ethical, legal and human issues, and community linkage with a mean of 4.52. Besides, all the criteria confirmed high level of competence where "Understand and explain the basic concepts of Intellectual Property Rights" ($\bar{x} = 4.67$) was the most developed skill.

The findings divulges that in managing data and other documents as ICT coordinator, ethical considerations should be practice. It is necessary to practice legal and ethical aspect in keeping all the data and information. Besides, as ICT coordinator, planning and monitoring data shall be accompanied with ethics and legal bases.

This implies that the ICT coordinators believed they were highly skilled in understanding and observing legal practices in the use of technology.

Table 5. Understand and observe legal practices in the use of technology

Indicators	**Mean**	**D**	**Rank**
1. Understand the legal implications of Software Licenses and Fair Use	4.44	HL	2.5
2. Understand and explain the basic concepts of Intellectual Property Rights	4.67	HL	1
3. Differentiate and identify the Copyright, Trademark, Patent of various products	4.44	HL	2.5
Overall	**4.52**	**HL**	

Recognize and practice ethical use of technology in both personal and professional levels. Table 6 shows that the respondents have an overall high level of competence on the standard 2 under the

competencies related to social, ethical, legal and human issues, and community linkage with a mean of 4.67. Moreover, all the criteria confirmed high level of competence where "Be an Anti-Piracy advocate for all products with IPR like music, data, video and software" ($\bar{x} = 4.77$) was the most developed skill while "Advocate the responsible use of various technologies like computers, cell phones, etc." ($\bar{x}$=4.51) was the least.

The results shows that intellectual property shall be protected by the law. All the skills in protecting the technology both for personal and professional levels should be known by the ICT coordinators to avoid any conflicts, problems and related issues.

This implies that the ICT coordinators acknowledged they were highly skilled in recognizing and practicing ethical use of technology in both personal and professional levels.

Table 6. Recognize and practice ethical use of technology in both personal and professional levels

Indicators	Mean	D	Rank
1. Detect plagiarism in student work	4.53	HL	3
2. Properly acknowledge sources used in own work	4.74	HL	2
3. Be an Anti-Piracy advocate for all products with IPR like music, data, video and software	4.77	HL	1
4. Advocate the responsible use of various technologies like computers, cell phones, etc.	4.51	HL	4
Overall	**4.67**	**HL**	

Plan, model and promote safe and sound technology-supported learning environment. Table 7 above shows that the respondents have an overall high level of competence on the standard 3 under the competencies related to social, ethical, legal and human issues, and community linkage with a mean of 4.70. Furthermore, all the criteria confirmed high level of competence where "Demonstrate proper handling of computer devices and use of applications" ($\bar{x} = 4.81$) was the most developed skill while "Maintain a clean and orderly learning environment for students" ($\bar{x}$=4.60) was the least.

Accurately report malfunctions and problems with computer software and hardware obtained a mean of 4.74 which denotes that ICT coordinators are highly competent while promote and implement rules and regulations on properly using computers and monitor how students use the computer specifically on software, hardware, computer games, and internet activities were both obtained the means 4.67 which means "highly competent."

The result of the study incriminates that demonstrating proper handling of computer devices and using of applications is very important competencies as ICT Coordinator. Likewise, it is also notable that accurate report on malfunctions and problems with computer software and hardware shall be considered to become an efficient ICT coordinator [11].

This implies that the ICT coordinators perceived they were highly skilled in planning, modelling and promoting safe and sound technology-supported learning environment.

Table 7. Plan, model and promote safe and sound technology-supported learning environment

Indicators	Mean	D	Rank
1. Demonstrate proper handling of computer devices and use of applications	4.81	HL	1
2. Monitor how students use the computer specifically on software, hardware, computer games, and internet activities	4.67	HL	3.5
3. Maintain a clean and orderly learning environment for students	4.60	HL	5
4. Promote and implement rules and regulations on properly using computers	4.67	HL	3.5

5. Accurately report malfunctions and problems with computer software and hardware	4.74	HL	2
Overall	**4.70**	**HL**	

Level of competence of the ICT Coordinators to facilitate equitable access to technology that addresses learning, social and cultural diversity

Facilitate equitable access to technology that addresses learning, social and cultural diversity. Table 8 shows that the respondents have an overall high level of competence on the standard 4 under the competencies related to social, ethical, legal and human issues, and community linkage with a mean of 4.52. Additionally, all the criteria confirmed high level of competence where "Adapt activities using specialized hardware and software for physically disadvantaged students" ($\bar{x} = 4.93$) was the most developed skill while "Distribute, share, publish and print information via print or web" ($\bar{x}$=4.35) was the least.

Properly acknowledge information sources - online and offline obtained the mean of 4.70; Prepare lessons and activities appropriate to the level of learning and cultural background of students obtained the mean of 4.60; Search and collect textual and non-textual information from online and offline sources with 4.56; Efficiently store and organize collected information using directories, drives, or databases with the mean of 4.51; Effectively use search engines, directories, crawlers and agents to locate information sources with the mean of 4.47; Design class activities to minimize the effect on students being disadvantaged or left-out obtained the mean of 4.40; and Help minimize the effects of the digital divide by providing access to digital materials for all students obtained the mean of 4.37. This means that all the ICT coordinators are highly competent in terms of facilitating equitable access to technology that addresses learning, social and cultural diversity.

The result of the study pointed out to facilitate the technology, the ICT personnel should know the access of technology that address the learning, social and cultural diversity. In the organization, all of the members have different needs and access to technology [12].

This implies that the ICT coordinators presumed they were highly skilled in facilitating equitable access to technology that addresses learning, social and cultural diversity.

Table 8. Facilitate equitable access to technology that addresses learning, social and cultural diversity

Indicators	Mean	D	Rank
1. Design class activities to minimize the effect on students being disadvantaged or left-out	4.40	HL	7
2. Help minimize the effects of the digital divide by providing access to digital materials for all students	4.37	HL	8
3. Prepare lessons and activities appropriate to the level of learning and cultural background of students	4.60	HL	3
4. Adapt activities using specialized hardware and software for physically disadvantaged students	4.93	HL	1
5. Effectively use search engines, directories, crawlers and agents to locate information sources	4.47	HL	6
6. Search and collect textual and non-textual information from online and offline sources	4.56	HL	4
7. Efficiently store and organize collected information using directories, drives, or databases	4.51	HL	5
8. Distribute, share, publish and print information via print or web	4.35	HL	9
9. Properly acknowledge information sources - online and offline	4.70	HL	2
Overall	**4.52**	**HL**	

CONCLUSIONS

In the light of the findings of the study, the following conclusions are deduced: (1)The respondents have an overall high level of skills on the different competences related to technical operations and concept, and productivity of various ICT tools and they presumed that they were highly skilled in demonstrating knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance, using appropriate office and teaching productivity tools, understanding and using the internet and network applications and resources effectively and information and data management; (2) The respondents have an overall high level of competence under the different competencies related to social, ethical, legal and human issues, and community linkages. Moreover, the ICT coordinators of Ramon District believed they were highly skilled in understanding and observing legal practices in the use of technology, recognizing and practicing ethical use of technology in both personal and professional levels, planning, modelling and promoting safe and sound technology-supported learning environment and in facilitating equitable access to technology that addresses learning, social and cultural diversity; and (3) The programs to be implemented to increase the competencies of the ICT coordinators of Ramon District were attendance to in-service trainings, workshops, informal education and development of district screening of ICT coordinators.

RECOMMENDATIONS

Based on the findings and conclusions, the following are hereby recommended; (1) The school administrator should craft a policy to clearly define the roles and functions of ICT Coordinators in schools; (2) Inventory of ICT equipment and monitoring of its proper use should be conducted; (3) The conduct of trainings and seminars to update the ICT Coordinators with new trends and techniques in teaching should be implemented; (4) It is also recommended that future researchers who wish to know the ICT Coordinators level of competence on Information Communication Technology in secondary schools of Ramon District.

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