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# LEVEL OF COMPETENCY AND EXTENT OF TRAINING NEEDS ON TECHNOLOGY LITERACY AMONG THE STAFF OF GOVERNMENT OFFICES IN CATANDUNAES

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## Abstract

The study assessed the level of competency and the extent of training needs for technology literacy among the staff of the government offices in Catanduanes, Philippines. Along the areas of Computer Operation, WordProcessing, Spreadsheet, Database Management Systems, Internet Services, Computer Programming, Management Information Systems, Systems Analysis and Design (SAD) and Network Design and Management or Administration. This study made use of a descriptive-survey method wherein a questionnaire was used to determine the level of competencies of the staff on computer literacy and the extent of their training needs on the specified technology literacy areas. Level of Competency and Extent of Training Needs were measured using a 5-point Likert Scale. Result of the study showed that the staff of the government offices in Catanduanes evaluated themselves as "slightly competent" on the first four technology literacy skills that include: (a) computer operation skills, (b) word processing, (c) spreadsheet, (d) database management and "not competent" on the next five technology literacy skills that were: (a) using the Internet Services, (b) computer programming, (c) SAD/Software Engineering, (d) MIS and (e) network design & management which means that the staff on the average, have a little knowledge and skills along technology literacy needed by an office worker hence these staff felt they needed much training for technology literacy. The development and improvement of the knowledge and skills of the government staff in their literacy on the specified technology areas should be the done by the management of the government offices since office transactions nowadays are automated and dependent on information system applications and use of computing resources. Likewise, productivity is enhanced in employing technologies as tools in doing office transactions. Improvement of government staff's performance would mean satisfied clientele and achievement of the mission, vision, goals and objectives of the organization

***Keywords**: level of competency, extent of training needs, technology, technology literacy, and information and communication systems*

## 1.0 Introduction

Information and communications technology (ICT) is recognized as the powerful and positive force in the social, political and economic progress of nations. It has a deep impact to the country's economy and environment because the working expansions of ICT resulted to increase production and utilization of ICT products and services all over the country. It has invaded in all aspects of human activities and people cannot function effectively without the aid of technology in doing personal to professional functions (Plepys 2002). Technology and computers enable citizens to communicate effectively and obtain information that could persuade or manipulate government decisions. Citizens who understand not only its concepts but also its competent use can acclimate better to the fast pace of social and technological developments. The technological knowhow of the country's human resources serves as a basis for the country's adoption of globalization and knowledge-based economy.

The powerful influence of computers in all sectors of the government made organizations of today impose a notion that technology literacy is a pre-requisite for getting local, national and even international employment. People who are not academically trained to become ICT literate professionals must now take the initiative in acquiring at least the basic skills in computer operation. There are many cases of fresh graduates who couldn't find a job because of technology illiteracy. It can also be a reason to encourage even those already in the workforce to pursue added training that have to do with information technology know-how and enhancement. There is really a demand for individuals who are to join the workforce and those who are already in the workforce to be knowledgeable and well equipped with the necessary computer skills and competencies because this is a requirement for the nation's growth and development. This could be a means to achieve effective and quality performance among the employees at all levels. Hence retooling of staff in terms of the necessary knowledge and skills needed to improve the productivity of their work is necessary.

Colorado Department of Education defines technology literacy as the "ability to responsibly use the appropriate technology to: (a) communicate, (b) solve problems, (c) access, manage, integrate, evaluate, design and crate information to improve learning in all subject areas, (d) acquire lifelong knowledge and skills in the 21$^{st}$ century".

The term technology literacy has evolved since 1970's when it was defined as knowledge and understanding of computer hardware and software (Hickman 1995),

The early 1980's witnessed the development of personal computers and software for management purposes. Word Processing, Spreadsheets, Database Management Systems and application programs became widespread in business and emerged in the educational scene as productivity tools for learning process. During this period, being computer literate means that the person must be knowledgeable with this software and can use this in daily tasks (Higdon 1994). From the early 1990's technology literacy also involves communicating using mobile phones, whereas the 1995's technology literacy is focused on knowledge of software productivity tools such as word-processing and spreadsheets and hosting information over the net, to the present time by which computers have proliferated in our daily needs from withdrawing salaries through automated teller machines, purchasing items using credit cards to online shopping to electronic payment of bills.

Westfall (1997) pointed out that information technology literacy must include: (a) extensive understanding about the present IT concept (b) fresh knowledge and skills acquired relating to IT is applied in practical situations, (c) an insight of what makes a particular IT essential than other technologies; (d) knowledge of cost-effective features of IT that makes some technologies rise and others

become obsolete (e) a considerate judgement about the association between the choice of profession and the technology needs; (f) upgrading the level of knowledge and skills possessed relating to IT.

Charp (2016) explains that technology has a deep influence on how employees carry out their duties in their respective offices. Further, she reported the following advantages of technology: (a) the students could study anytime and anyplace and at their own pace; (b) students could also learn outside of their classrooms, (c) students could gain access to information tools, (d) 10 to 12 percent of the workforce is focused on the blue collar jobs and main function of the contemporary professions is focused on "knowledge worker"; (e) employers demand that their employees should have computer training; (f) employees are dependent on computer units in doing their jobs (Charp 2016).

Technology literacy therefore in this study would mean the level of knowledge and skills and the extent of appropriate use of technology specifically on areas of: (a) computer operation, (b) software productivity tools, (c) internet use, (d) management information system, (e) computer programming, (f) systems analysis and design, (g) database management and (h) network design and management of the government employees in carrying out their daily office tasks.

Information Technology (IT) training will develop and promote staff's competency, productivity and quality service. To the administrators and supervisors, the outcome of the IT training could help them: (1) access information easily from the company's databases and information systems that are needs for decision making process; (2) devote more work to planning and directing subordinates because they will be relieved of some routine works or clerical works, (3) maintain better control over economic resources, (4) keep abreast of IT innovations, news and information, (5) delegate some authorities to subordinates, (6) establish linkages with other offices and departments through office local area network or internet, (7) effectively implement programs, policies and projects of the government, (8) promote strong community ties and (9) could easily respond to the needs of the clientele. To the technical and clerical staff, the outcome of the computer training could help them: (1) use IT to search and find relevant information that can simplify their task, (2) increase work output, (3) minimize waste, (4) value IT and incorporate them to their life, (5) effectively process information and communicate the result to their superiors, (6) eliminate routine tasks and repetitive operation and (7) give them greater opportunity for career advancement and (8) device an information system that could automate their manual transaction.

Level of Competency and Assessment of the Extent of Training Needs is used therefore to determine the gap between what is the true requirements of a given job and the present capabilities of the incumbent.

The proliferation of computer literacy training programs in the different government and business organizations had prompted the researcher to get concerned about the impact of the training programs on the individuals who attended such. The researcher also believes that there should be reliable measures that can readily assess the result of computer training programs so that the time, knowledge and resources could be put to maximum. Assessment is important to determine whether the training programs met the stated objectives and if modifications are necessary to ensure that the desired outcomes are obtained. Computer literacy training needs assessment for government offices particularly in Catanduanes is imperative

This study therefore determined the level of competency and extent of training needs of the government employees in Catanduanes on technology literacy specifically for the areas of (a) Computer Operation; (b) Word Processing; (c) Spreadsheet; (d) Database Management; (e) Internet Use; (f) Computer Programming; (g) Systems Analysis and Design; (h) Management Information Systems and (i) Network Design and Management.

The finding of this study that the staff of the government offices in Catanduanes were slightly competent on all the areas of technology literacy cited in this study and needed much training of these skills would serve as basis for public administrators to conduct the necessary training program among these staff in order for them to become competent in their job. A highly competent workforce which has a thorough knowledge on computer system in their offices would mean greater productivity, prompt and better service to the clientele. This study has significance also to the policy makers in order to give emphasis on the importance of having those who will be entering the workforce to be technologically literate.

## 2.0 Literature Review

Technology Literacy means being conscious of the computer concepts and the information technology innovations as well as the aptitude to do computing using the state-of-the-art technology. It is the familiarity of the device that will enhance one's capability to cope with the modern world.

The use of products of technology has also affected the office work. The computer and other electronic gadgets have replaced some office systems and procedures and reduced man-hours needed to accomplish a job or a routine task. There is now a less need for men since some jobs especially in factories can be done by robots, administrative entities have to be restructured with computer's help, supervisors can easily oversee the work of a large number of subordinates. This is primarily a development worth looking forward to as this will raise the question on the impact of technology on employment. This could be the reason why computer literacy has become an important feature of in-service training programs in almost all organizations.

The researcher came across several literatures and studies that cited the importance of automating the processes in the offices and stresses the importance of assessment of training needs of the government employees.

Report 2001 of the United Nations Development Program cited the following benefits and limitations of ICT: (a) gains from investment in technology now trickle down to poor nations; (b) it equips people with better tools and make them more productive and prosperous; (c) it provides powerful new ways for citizens to demand accountability from their government and in the use of public resources; (d) India's revenues gained form the ICT industries increased from $150 Million in 1990 to $4 Billion in 1999; (e) Technology however still remains unevenly diffused in the world, since 79% of Internet users come from the rich countries; (f) Access to funding is also concentrated in North America where venture capitalists have thrived. In developing countries, there is a little access to funding; (g) Huge inequalities exist between countries on access to skills and education for effective use of technology.

The use of technology of the employees in the workplace assumed that there is a primary association between "facilitating conditions" and IT adoption such as training of IT users, availability of the IT resources and technical support. (Gallivan, et al. 2005). According to them "the facilitating conditions are important however they do not provide a complete explanation of the employees' IT usage". Their study showed that IT usage in the workplace is influenced by peers and evaluating the individual-level aspects for the employee exhibit more unexceptional results. Therefore employee's use of IT in their work is not because they are aware that technologies could be used as tools for facilitating their works and improving their performances but because of the pressures from peers.

The paper of Bruce (1999) sum up the results of an inquiry about the proficiency of information literacy amidst different types of professionals; and searches the possible variances and associations between individual and organizational information literacy. Different ways of proficiencies on

information literacy were known. These are (a) environmental scanning, (b) information man-agement, (c) corporate memory, (d) research and development; (e) confirming that information literacy should be considered a significant part of the character of learning organizations as well as being a key characteristic of the organisation's employees. Implications of individual and organizational information literacy for beginning and continuing professional education are explored in her study.

Ezziane (2007) study discussed the role and impact of information technology on the future and existing style of learning and teaching. The present study reviewed stresses the significance of obtaining computer skills and being knowledgeable in IT in areas of education on instruction and training to develop IT knowledge for both faculty and students. Ezziane's study emphasizes that IT literacy is vital to the contemporary enablement of individuals and education is the best groundwork of this enablement.

The studies of Davies (2011) and Markauskaite (2006) outlines a framework of emphasizing technology literacy in the school's environment. According to Davies, the federal statute in the United States directs that technology literacy should be employed in school's programs since technology augments the teaching and learning process. His study summaries the structure of technological literacy necessary for educators to adopt, stimulate, gauge and appreciate technology integration in a classroom. Markauskaite study outlines a methodical framework for the analysis of today's understanding of information and communications technology (ICT). Three (3) analytical dimensions of ICT literacy had been emphasized in this study: (1) intended; (2) implemented and (3) achieved. The result of this study revealed association between: (1) the conceptual approaches and initial aims of ICT literacy policies, proposed at the top-level of policy-making; (2) teaching and learning practices, implemented at the middle-level of educational system; and (3) ICT literacy learning experiences and students' outcomes, expected at the base level of educational system. Markauskaite concluded that the analytical framework proposed can be useful for an integrated analysis of ICT literacy. Further the framework offers a conceptual structure for discovering inconsistencies in the understanding of ICT literacy at different stages of teaching and learning process.

Finally, Barnard, et al (2003) study focused on the language and technology literacy barriers to accessing government services. These barriers are cultural background, language, literacy and level of technology experience. They proposed a solution through doing several field experiments through a service delivery framework and technology where service delivery is tailored to the needs and language preference of the every citizen in accessing government service.

There was also a study reviewed that is related to the present study in terms of effective administration of government employees. This is the study of Nierras (1994).

Nierras study determined the perceptions on role effectiveness of administrators of government agencies and determined its relationship to some selected socio-demographic profile of the officials concerned. His respondents were the employees in the government agencies in Virac, Catanduanes who were holding administrative/ supervisory positions such as chiefs of offices and agency heads. His findings revealed that the ages of the respondents ranged from 41 to 51 years and above, males, married mostly with bachelor's degree and with masteral units, majority are first line and middle level supervisors, with permanent appointment status, and mostly had been in the government service from 11 to 30 years, with salaries per annum ranging from P50,000 to 110,000, mostly are administrators of national government agencies and with satisfactory efficiency ratings.

Results of his study further disclosed that administrators of government agencies in Virac, Catanduanes have parallel perceptions with the rank and file employees. Their perceptions on role effectiveness showed slight differences in ranks, however, statistical tests revealed an insignificant difference in their perceptions. The results further revealed that perceptions on role effectiveness have no

significant association with the socio-demographic profile of the respondents. Their perceptions on role effectiveness were independent of their socio-demographic characteristics and vice versa.

Nierras further stated that the evaluation of training effectiveness connotes many interpretations and different perceptions of usefulness to different people. To trainors and of training institutions, it could mean finding out whether or not the program is serving the needs of their clienteles. To the public enterprise, the civil service government planners, budgeting and auditing heads and officials of training institutions, evaluation of training serves many purposes, especially if it yields finding on how training leads to improvement in individual behavior and performance on the job.

Other studies reviewed were focused on the areas of organizational management and public administration. There was no record on the level of competency and extent of training needs on technology among the staff of government offices particularly in Catanduanes. This was the gap observed that is addressed by the present study.

## 3.0 Methodology

Descriptive survey method using questionnaire, ocular visits by the researcher to each participating government offices, conducting informal and formal interviews were the primary instruments used to gather the data and other necessary information relevant to this study. Descriptive survey method was employed in this research using questionnaire as a data gathering instrument to determine the level of competency and extent of training needs on technology literacy of the government employees in Catanduanes. There were 438 total respondents from the 21 government offices present in Catanduanes and they were randomly interviewed through convenient method. The survey questionnaire made use of a 5-point Likert Scale of 5, 4, 3, 2 and 1, (5 being the highest and 1 being the lowest). This survey questionnaire primarily assessed the level of competence and extent of training needs on technology literacy. They were determined through survey, ocular observations and interview approach.

**Table 1:** Population and Sample Size by Agency or Office

| Government Offices | Population | Sample Size |
|---|---|---|
| A. Provincial Government Offices | | |
| 1. Human Resources Management Office | 3 | 1 |
| 2. Provincial Planning & Development Office | 15 | 7 |
| 3. Provincial General Services Office | 9 | 4 |
| 4. Provincial Budget Office | 6 | 3 |
| 5. Provincial Assessors Office | 15 | 7 |
| 6. Provincial Engineers Office | 34 | 16 |
| 7. Provincial Social Welfare & Development Office | 2 | 1 |
| 8. Integrated Provincial Health Office | 65 | 31 |
| 9. Provincial Treasurers Office | 21 | 10 |
| 10. Provincial Accounting Office | 7 | 4 |
| 11. Provincial Agriculturist Office | 38 | 18 |
| 12. Governor's Office | 31 | 15 |
| 13. Sangguniang Panlalawigan | 17 | 6 |
| B. National Line Agencies | | |
| 1. Department of Labor & Employment | 1 | 1 |
| 2. Department of Science & Technology | 1 | 1 |
| 3. Department of Agrarian Reform | 67 | 32 |

| | | |
|---|---|---|
| 4. Department of Interior & Local Government | 8 | 4 |
| 5. Department of Environment & Natural Office: | | |
| a. CENRO | 19 | 9 |
| b. PENRO | 11 | 5 |
| 6. Department of Public Works & Highways | 57 | 27 |
| 7. Department of Justice (Provincial Prosecutor Office) | 7 | 3 |
| 8. Department of Trade & Industry | 9 | 4 |
| **T O T A L** | **438** | **209** |

The responses were elicited from the 438 employees from the 21 government offices present in the province. From the universe of 438, the responses were elicited from the 209 sample population of the study. This is shown in Table 1 below. The sample was obtained using the Slovin's formula with the desired error margin of 5%. The research instrument utilized the 5-point Likert Scale (Brown 2016) to measure the level of competency and extent of training needs wherein the respondents rate a list of items to measure the staff's level of competency and the corresponding training needs on the computing literacy area categories. The respondent's level of competency was measured according to the scale of "5" that could be interpreted as "Very Competent", "4" is "Competent", "3" is "Moderately Competent", "2" is "Slightly Competent" and "1" is "Not Competent". On the extent of training needs, the respondents rated themselves as "5" that is interpreted as "Very Much Needed", "4" is "Much Needed", "3" is "Needed", "2" is" Slightly Needed" and "1" is "Not Needed". Validation of the questionnaire was done through asking ten Information Technology faculty members at the Catanduanes State University and their suggestions were incorporated in the pretest questionnaire. A test and re-test method was conducted among the 21 government employees one for each office. After incorporating the suggestions for the improvement of the questionnaire in the pre-test and post-tests, the final copy of the questionnaire was produced and the actual data gathering for the 209 sample were done next.

Descriptive statistics of frequency count and weighted mean arithmetic mean and percentage were utilized in analyzing the data of the research. Chi-square statistic was used to test the relationship between the level of competency and the extent of training needs on technology literacy among the government employees in Catanudanes.

## 4.0 Results and Discussion

Table 2 and Table 3 below show the level of competency and extent of training needs in computing literacy among the staff of the government offices in Catanduanes along the areas of Computer Operation, WordProcessing, Spreadsheet, Database Management Systems, Internet Services, Computer Programming, Management Information Systems, Systems Analysis and Design (SAD) or Software Engineering and Network Design and Management or Administration. The respondents in this study were requested to honestly indicate the level of their competency for the different computer literacy skills identified. Their level of competency was rated as "Very Competent – (5)" described as 91% to 100% knowledgeable, "Competent – (4)" described as 61% to 90% knowledgeable, "Moderately Competent – (3)" described as 31% to 60% knowledgeable, "Slightly Competent – (2)" described as 1% to 30% knowledgeable, "Not Competent – (1)" described as 0% knowledgeable.

**Table 2:** Level of Competency for Computing Literacy of Staff of the Government Offices in Catanduanes

| Computing Literacy Skills | Average Rating | Quantitative Rating | Qualitative Rating |
|---|---|---|---|
| Computer Operation Skills | 2.20 | 2.0 | Slightly Competent |
| Word Processing | 2.10 | 2.0 | Slightly Competent |
| Spreadsheet | 1.70 | 2.0 | Slightly Competent |
| Database Management | 1.50 | 2.0 | Slightly Competent |
| Using the Internet | 1.48 | 1.0 | Not Competent |
| Computer Programming | 1.24 | 1.0 | Not Competent |
| Systems Analysis and Design (SAD) | 1.39 | 1.0 | Not Competent |
| Management Information Systems (MIS) | 1.39 | 1.0 | Not Competent |
| Network Design & Management | 1.28 | 1.0 | Not Competent |
| **Overall Rating** | **1.61** | **2.0** | **Slightly Competent** |

Table 2 above presents a summary of the level of competency on computer literacy of government employees in the provincial government offices and national line agencies in Catanduanes. The first column of the table presents the computer literacy skills, while the second and third columns represent the average rating and the quantitative rating respectively per skill, and the last column represents the qualitative rating. It could be gleaned from the table that the overall rating of the respondents on the computer literacy skills is only 1.61 which could be rounded off to a rating of "2.0", equivalent to a qualitative rating of "Slightly Competent". This means that the respondents were only 1% to 30% knowledgeable of the computer literacy skills needed by an office worker. This further suggests that the respondents have little background about the language but cannot operate the computer using the specified language. It was only on the first two areas where the Computing Literacy Skills of the employees on the average were above 2.0, the rest were all more than 1.0.

Table 3 reveals the extent of training needs on computing literacy of the employees in the government offices in Catanduanes. It could be gleaned from the table that the employees need much training on the nine areas presented as shown from the overall rating of 4.11 which is interpreted as "Much Needed".

**Table 3:** Extent of Training Needs on Computing Literacy Skills of the Government Offices in Catanduanes

| Computing Literacy Skills | Average Rating | Quantitative Rating | Qualitative Rating |
|---|---|---|---|
| 1. Computer Operation Skills | 3.74 | 4.0 | Much Needed |
| 2. Word Processing | 3.65 | 4.0 | Much Needed |
| 3. Spreadsheet | 4.04 | 4.0 | Much Needed |
| 4. Database Management | 4.22 | 4.0 | Much Needed |
| 5. Using the Internet | 4.21 | 4.0 | Much Needed |
| 6. Computer Programming | 4.33 | 4.0 | Much Needed |
| 7. Systems Analysis and Design (SAD) | 4.32 | 4.0 | Much Needed |
| 8. Management Information Systems (MIS) | 4.32 | 4.0 | Much Needed |
| 9. Network Design & Management | 4.35 | 4.0 | Much Needed |
| **Overall Rating** | **4.11** | **4.0** | **Much Needed** |

## 5.0 Conclusion and Implication of the Study

The staff of government offices have little knowledge on computing literacy and have only a little knowledge in operating the computer using the specified languages hence, they need much training on computing literacy. There is a need for the staff of the government offices in Catanduanes to upgrade their level of competency for computer literacy by attending training, seminars or seminar-workshops. Periodic and continuous upgrading of computer competencies is necessary for these staff to be competent in their jobs. The development of human resources must be the prime concern of management. Considering however, the limited resources of most government offices, the following measures may be undertaken: (a) one or two employees may be sent to a computer training, and be required them to conduct an echo-seminar to give other employees the opportunity to learn new skills and competencies; (2) coordination be made with the Information Technology (IT) faculty members of the Catanduanes State University and other schools offering computer courses in the province to give these government staff short-term computer courses or free training on computing literacy as part of their extension services to the community; (c) local and foreign Non-Government Organizations (NGOs) and other government agencies may be tapped for free computing literacy training as well as donation of computer units; (d) funds should be appropriated for periodic upgrading of the level of competencies on computer literacy of staff of government offices in Catanduanes and (e) employees should be motivated to enroll in the short-term computer courses given by any training institutions in the province or in the country.

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