

Computer Literacy among Employees of Government and Non-Government Agencies: Basis for the Formulation of Computer Training Program

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Abstract:- This study was undertaken to determine the computer literacy among government and non-government agencies in the province of Antique to be able to formulate a computer training program.

The subjects of the study were the 304 randomly selected employees coming from the various offices from southern to northern parts of the province. The data for the comparative descriptive research were obtained through a researcher-made instrument. Both descriptive and inferential statistics were used. The mean was used to describe the level of computer literacy.

For analysis of difference in computer literacy between two groups of respondents, t-test was used. One way analysis of variance (ANOVA) was used to determine whether computer literacy was significantly different among respondents categorized into three or more groups. The alpha level for inferential tests was set at 0.05.

The findings of the investigation revealed that the computer literacy among employees of government and non-government agencies as a whole group was quite low. Both male and female employees had moderate level of computer literacy.

In the light of those findings, the generally low level of computer literacy among employees of government agencies provides a strong reason for another cycle of computer literacy training among these employees.

I. INTRODUCTION

The advent of computer technology had transformed enormously the world that man lives in. Almost every aspect of human life has been influenced by the rapid advancement of computers providing novel opportunities and fresh challenges. People have become dependent upon digital electronic information that results from computer processing. Computers promote better and efficient systems that are not only fascinating but also provide endless opportunities for innovations.

The feats accomplished with the help of computer are endlessly surprising that their complexity can be marveled upon. These made people assume that the machine is difficult to understand and use. There are those who believe that a rapidly advancing computer technology exhibit little regard for the future of the human race. They contend that computer are overused, misused, and generally detrimental to society. However, it has been realized that computer are simple

device which have a great deal in common (Weinberger, 2017).

With computers significantly affecting numerous function in society, it is increasingly important for all individuals to possess that least a conceptual understanding of the processing involved. The speed with which computer facilitate operation is reflected in the elimination of backlogs resulting in enormous increase in output and accelerated progress. Ignorance of computer operation delay day to day operation, therefore, it is a must for everybody to learn and take advantage of the endless use of computer technology in their work.

In the Philippines, it is evident that one of the reasons for the accelerate progress is the development of computer technology which provide interconnection and network not only within the archipelago but throughout the whole word. To give more impetus on this development, computer literacy program in the country was initiated and started during the school year 1983-1984 when few colleges and universities had offered computer course at the tertiary level (Management Dynamics, Inc. 1983) although some private schools had been giving computer lessons even among preschoolers. In that same year, the Department of Education, Culture and Support (DECS before the creation of the CHED), recognized the need for computer literate graduates and required the inclusion of at least two computer courses in the college curriculum starting school year 1984-1985. However, it was realized that these course are a must if the intention is for the citizens to understand the capabilities and limitations of computer and their proficient use, and consequently, to adapt better to the fast pace of social and technology developments. Some economics and even predicted that Filipinos because of their culture and proficiency in the English language could be a major resource in the development of computer software for improving operation in the office in the future.

II. STATEMENT OF THE PROBLEM

The major purpose of this study was to determine the computer literacy among employees of government and non-government agencies in the Antique.

Specifically, this study had sought to answer the following questions:

- What is the level of computer literacy among the employees of government agencies in the province of Antique when the respondents are taken as a whole group and when classified according to age, gender, education attainment, and family monthly income?

- What is the level of computer literacy among the employees of non-government agencies in the province of Antique when the respondents are taken as a whole group and when classified according to age, gender, educational attainment, and family monthly income?
- Is there a significant difference in the level of computer literacy among the employees of government agencies in the province of Antique when classified according to age, gender, educational attainment, and family monthly income?
- Is there a significant difference in the level of computer literacy among the employees of non-government agencies in the province of Antique when classified according to age, gender, educational attainment and family monthly income?
- Is there a significant difference in the level of computer literacy among the employees of government and non-government agencies in the province of Antique

III. NULL HYPOTHESES

Based on the foregoing question, the following hypotheses were tested.

- There is no significant difference in the level of computer literacy among the employees of government and non-government agencies in the province of Antique.
- There is no significant difference in the level of computer literacy among the employees of government agencies in the province of Antique when classified according to age, gender, educational attainment, and family monthly income.
- There is no significant difference in the level of computer literacy among the employees of non-government agencies in the province of Antique when classified according to age, gender, educational attainment, and family monthly income

IV. THEORETICAL FRAMEWORK

This study was anchored on the Multiple Response Theory by Zulueta and Maglaya (2004) which advocates a mode of learning which involves the cognition of patterns involving the acquisition of knowledge or skill on response to mastering a task that is in learning a skill and sensory motor activities. In this study, computer literacy is considered a mastery of operating a computer by learning the patterns by which the machine works. Before a task is completed in computer operation, a series of commands in a program has to be satisfied.

Complementing the multiple response theory is the constructivist theory of J. Bruner as cited by Cobb (1994). Constructivism stems from the idea that learning is a constructive process, in that learners do not passively receive information but instead actively construct knowledge as they strive to make sense of their world. The theory is supported by empirical studies which demonstrate that what students acquire in instructional situations is often different from what the teacher intended. Three general instructional implications that follow from constructivism are (a) priority should be given to the development of meaning and understanding rather than the training of behavior; (b) researchers and teachers should assume that students' actions are rational, given the way that they currently make sense of things, and (c) students' errors and unanticipated responses should be viewed as occasions to learn about students' understanding

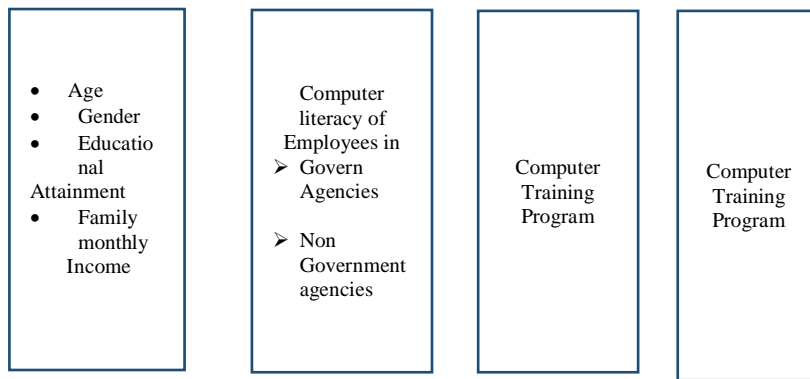
(Glassersfeld, 1989). On the other hand, Sudzina (1997) argued that, in order for constructivism to work, learners should use their experience to actively construct understanding that makes sense to them, rather than acquire understanding by having it presented in an already organized fashion. Sudzina (1997) further states that with constructivism, new knowledge is determined in part by how well ideas fit within an accepted community practice. As new ideas are introduced, currently practiced may be questioned and even overturned, but until such a major shift occurs, currently practiced shape what is considered useful. Bruner had proven in this framework that learning is an active process wherein learners construct new ideas or concepts based upon their currently/past knowledge. Cognitive structure provides meaning and organization to experience that allows the individual to go beyond the information given. His recent work expanded to include social and cultural aspects of learning.

Relating the theory to computer literacy, an individual before he can be considered computer literate has to go through a series of lectures and formal instructions to gain theoretical knowledge before "given hands-on" experience to apply what had been learned. Looking at the constructivist theory, instruction is the beginning, providing experiences and contexts that make the student willing and able to learn (readiness). In this case, instruction must be structured so that it can be easily grasped by the student. It should also be designed to facilitate extrapolation or fill in the gaps. In literacy class, instructions are structured for the student to follow, as far as possible, the instructor who tries to encourage the student to discover principles by themselves. The instructor also tries to translate information that would be appropriate for the learner to understand what he has already learned. Since computer operation requires both knowledge and skills, constructivism works with both the development of knowledge and the honing of skills in computer use based on the knowledge acquired.

According to Glassersfeld's (1987) theory, knowledge is only useful and relevant if it stands up to the test of experience enabling one to make predictions and to bring about or to avoid certain phenomena. If knowledge does not serve this purpose, it becomes questionable, unreliable, useless, and is devaluated as superstition. In other words, the idea that one derived from the world is constantly undergoing the process of being exposed to the experiential world and they either get affirmed or they do not. Therefore, it does not provide any clue as to what the object world should be. The cognitive organism, as exemplified by man, evaluates its experiences the outcomes of which are used to repeat some and avoid others. Glassersfeld (1987) built on other constructivist theories by attempting to answer two questions. First, what are the conditions under which a new construct will be considered compatible with that which has already been constructed? Second, why should any organism undertake the task of cognitive construction? It is because there is the realization that knowledge cannot be the result of a passive receiving but originated as the product of an active subject's activity.

V. THE RESEARCH PARADIGM

Independent Variables Dependent Variables



VI. METHODOLOGY

A. The Research Design

This study made use of the comparative descriptive research design. According to Creswell (2002), with a comparative descriptive design, the research collects data in order to describe and compare two or more groups of participants or entities. Padua and Santos (1996) recommended descriptive research design for describing the status of people or subjects as they exist. It can be used to make some comparison, contrast or correlation and to some extent cause-effect relationships may be established.

The comparative research design is appropriate for this study which aimed to determine the computer literacy among government and non-government employees in the province of Antique.

B. Respondents of Study

The respondents of the study were the permanent employees of 17 government and 9 non-government agencies in the province of Antique. Of these agencies, only 15 government and 9 non-government agencies were used to draw the sample respondent's form. The other three agencies, two from the government and one from non-government organization have few employees to effect a precise sampling. As of December 2007 data, there were 83 non-government and 1,182 permanent government employees giving a total population of 1,265. Since this population was too large to manage, a sample was used, the size of which was computed using the Slovin's formula shown below(Pagoso, et al, 1996):

$$n = \frac{N}{1+N(.05)^2}$$

where:

- n = sample size
- N = population size
- e = desired margin of error (.05)

Based on this formula, the computed sample size is 304 which were proportionately distributed between the government and non-government employees. To determine the sample distribution for government and non-government employees, ratio and proportion was used.

$$n = \frac{N^1}{N}$$

- where: N¹ = population of GA and NGA employees
- N = total population
- n¹ = sample size of GA and NGA employees
- n = total sample

Based in this formula the sample for NGA employees was 20 and there were 284 GA employees.

OFFICES	N	n
A. Government		
1. Office of the Governor		
a. Provincial Administrator	42	10
b. Office of the Provincial Warden	41	10
c. Provincial Information Office	10	2
d. Human Resource Management Division	10	2
e. Binirayan Sports	8	2
f. Provincial Cooperative Development Division	5	1
2. Provincial Planning and Development Office	42	10
3. Sangguniang Panlalawigan	33	8
4. Provincial Library	7	2
5. Provincial General Service Office	36	9
6. Provincial Treasure Office	44	11
7. Provincial Accountant's Office	40	10
8. Provincial Assessor's Office	32	8
9. Provincial Budget Office	17	4
10. Office of the Provincial Agriculturist	59	14
11. Provincial Engineer's Office	200	48
12. Provincial Veterinarian	23	6
13. Provincial Social Welfare and Development Office	11	3
14. Provincial Health Office		
a. Delegate Angel Salazar Memorial General Hospital	183	44
b. Pres. Diosdado Macapagal District Hospital	40	10
c. Roman Maza, Sr. Memorial District Hospital	48	12
d. Culasi District Hospital	41	10
e. Justice Calixto O. Zaldivar Memorial General Hospital	37	9
f. Bugasong Medical Community Hospital	37	9
g. Pedro L. Gindap Memorial Hospital	28	7
h. Valderrama Municipal Hospital	25	6
15. Provincial Population Office	32	8
16. Environmental and Natural Resource Office (ENRO)	30	6
<i>SUBTOTAL</i>	1182	284
B. Non-government Organization		
1. AFON	6	1
2. AFCCUI	15	4
3. AHDP	6	1
4. ADI	7	2
5. HICHE	7	2
6. PPSA	8	2
7. PROCESS	5	1
8. ASHI	11	3
9. TSKI	15	4
<i>SUBTOTAL</i>	83	20
TOTAL	1265	304

Table 1: Distribution of Respondents

C. Research Instrument

The research instrument was a two-part researcher-prepared questionnaire. Part I included personal profile of the respondents specifically age, gender, educational attainment, and monthly family income. Part II include a list of tasks in computer usage which measured computer literacy of the respondents expressed in the level of computer literacy. Each item was rated by the respondents according to their personal assessment of their literacy level in the actual operation of the computer, "1" being, not literate and "5" very highly literate. The mean for each item was computed and from the value obtained the level of computer literacy was described.

D. Content Validity of the Questionnaire

Fraenkel and Wallen (1994) consider validity as the most important aspects to consider when preparing and selecting an instrument to use. This is so because researchers want the information obtained through the use of an instrument to serve their purposes.

The questionnaire used in this study was subjected to content validity which is the degree to which the items in the questionnaire represent the essence, the topics and the areas that the test has been designed to measure. Content Validity is a crucial procedure because it sets pace for the succeeding reliability measures. Content validity of the questionnaire

was initially done by the adviser and later by a panel of three jurors. The process was done as follows:

After preparing the draft of the questionnaire, it was submitted to the thesis adviser for corrections and suggestion. Once the corrections and suggestions were taken care of, the draft of the revised questionnaires was given to the three jurors for content and face validation. The jurors were chosen for their expertise in educational technology, computer, research and/or statistics. The juror's suggestions and recommendations to further improve the questionnaires were strictly followed and integrated in the final draft of the instrument which is now ready for reliability test. The major revisions to the questionnaire included the provision of predefined ranges for monthly family income and change of the description from level of difficulty to level of literacy.

E. Reliability of the Questionnaire

After the questionnaire was validated and revised, it was pretested for reliability. Reliability refers to the consistency of the scores obtained, that is, the consistency of the scores given by each individual to whom the questionnaire was administered. To do this, the questionnaire was administered to 30 randomly chosen employees of any government and non-government agencies who were not included in the final sample. The consistency of scores given to the items in the questionnaire was determined based on the responses of these 30 respondents to the various items in the questionnaire.

The Cronbach alpha or alpha coefficient was used to determine the reliability coefficient of the instrument. Each item in the instrument should have an alpha coefficient of at least 0.07 to be considered reliable. Based on the results, the computed reliability coefficient was 0.98.

F. Data Collection and Processing

After the validity and reliability of the research instruments were ascertained, the questionnaire was reproduced for the defined number of sample respondents. Approval to administer the questionnaire was secured from various heads of government and non-government agencies in the Province of Antique. A communication was prepared for this purpose signed by the researcher and noted by the research adviser.

The researcher personally administered the questionnaire among the respondents and accordingly retrieved the documents after it had been duly accomplished. Upon retrieval of the questionnaire, the data were tallied and electronically processed with the aid of Statistical Package for Social Science (SPSS) program.

G. Statistical Tools Used

Certain computer-processed statistics called for by each statement of the problem was used. The data were statically analyzed to answer the problems stated in the study and to test the null hypothesis.

Both descriptive and inferential statistics were used. The descriptive statistics included means, frequency, and percentage. The mean was used to describe the level of the computer literacy after scaling as follows:

<u>Scale/Level</u>	<u>Description</u>
4.21-5.0	Very highly Literate
3.41-4.20	Highly Literate
2.61-3.40	Moderately Literate
1.81-2.60	Fairly Literate
1.00-1.80	Not Literate

For analysis of difference in computer literacy between two groups of respondents, t-test was used. One way analysis of variance (ANOVA) was used to determine whether computer literacy was significantly different among respondents categorized into three or more groups.

The hypotheses were tested at .05 level of significance.

VII. RESULTS AND DISCUSSION

Table 2 gives the profile of the respondents considering such personal characteristics as age, gender, highest educational attainment, and monthly family income.

Characteristics	Government Employees		Non-Government Employees		Total	
	f	%	f	%	f	%
Age						
Above 50	53	1.87	5	25.0	58	19.1
41-50	120	42.2	6	30.0	126	41.4
31-40	74	26.1	2	10.0	76	25.0
22-30	37	13.0	7	35.0	44	14.5
Total	284	100.0	20	100.0	304	100.0
Gender						
Male	96	33.8	7	35.0	103	33.9
Female	188	66.2	13	65.0	201	66.1
Total	284	100.0	20	100.0	304	100.0
Highest Educational Attainment						
High School Graduate	7	2.5	0	0.0	7	2.3
Bachelor’s Degree	254	89.4	19	95.0	273	89.8
Master’s Degree	16	5.6	1	5.0	17	5.6
Doctorate Degree	7	2.5	0	0.0	7	2.3
Total	284	100.0	20	100.0	304	100.0
Monthly Family Income						
P20,001 and above	33	11.6	0	0.0	33	10.9
15,001-20,2000	61	21.5	3	15.0	64	21.1
10,001-15,000	91	32.0	8	40.0	99	32.6
5,001-10,000	86	30.3	8	40.0	94	30.9
5,000 below	13	4.6	1	5	14	4.5
Total	284	100.0	20	100.0	304	100.0

Table 2: Profile of the Respondents

Table 3 shows that the computer literacy of government employees when taken as a whole was fairly literate. This connotes that a greater majority of the employees have little knowledge as far as computer use is concerned.

Characteristics	Mean	Description
As a Whole Group	2.42	Fairly Literate
Age		
Above 50	1.79	Not Literate
41-50	2.11	Fairly Literate
31-40	2.64	Moderately Literate
22-30	3.79	Very Highly Literate
Gender		
Male	2.30	Fairly Literate
female	2.48	Fairly Literate
Highest Educational Attainment		
High School Graduate	1.79	Not Literate
Bachelor’s Degree	2.38	Fairly Literate
Master’s Degree	2.99	Moderately Literate
Doctorate Degree	3.09	Moderately Literate
Monthly Income		
P20,001 and above	2.42	Fairly Literate
15,001-20,2000	2.34	Fairly Literate
10,001-15,000	2.28	Fairly Literate
5,001-10,000	2.56	Fairly Literate
P5,000 below	2.80	Moderately Literate

Table 3: Level of Computer Literacy Among Government Employees Taken as a Whole Group and Classified According to Identified Variables

Table 4 shows that the computer literacy of government employees when taken as a whole, was fairly literate. This connotes that a greater majority of the employees have little knowledge as far as computer use is concerned.

Characteristics	Mean	Description
As a Whole Group	3.32	Fairly Literate
Age		
Above 50	1.58	Not Literate
41-50	3.38	Moderately Literate
31-40	4.16	Highly Literate
22-30	4.28	Very Highly Literate
Gender		
Male	2.67	Moderately Literate
female	3.67	Highly Literate
Highest Educational Attainment		
Bachelor’s Degree	3.28	Moderately Literate
Master’s Degree	4.02	Highly Literate
Monthly Income		
15,001-20,2000	3.16	Moderately Literate
10,001-15,000	2.75	Moderately Literate
5,001-10,000	3.75	Highly Literate
P5,000 below	5.00	Very Highly Literate

Table 4: Level of Computer Literacy Among Employees of Non-Government Agencies Taken as a Whole Group According to Identified Variables

Table 5 shows the significant difference in computer literacy between employees of Government and Non-Government Agencies which states that the computer literacy level of employees in the non-government agencies was definitely higher than those in the government agencies.

Groups	f	Mean	t-value	p level	Comment
Government Employees	284	2.3512	-3.546	.000	Significant at .01 level
Non-Government Employees	20	3.3217			

Table 5: Test of Significant Difference in Computer Literacy Between Employees of Government and Non-Government Agencies

Table 6 shows that the computer literacy of female employees is higher compared to male employees in government offices.

Groups	f	Means	t-value	p level	Comment
Male	96	2.30	1.225	0.221	Not Significant at .05 level
Female	188	2.48			

Table 6: Test of Significant Difference in Computer Literacy Between Male and Female Government Agencies

Table 7 shows that age, educational attainment, and monthly family income are significant factors in determining the computer literacy of employees in government offices.

Variables	SS	df	Mean Square	F Value	P Level	Comment
<u>Age</u>						
Between Group	23.080					
Within Group	11.313	3	7.693	10.881	.000	Significant at.01 level
total	34.392	16	0.707			
		19				
<u>Educational Attainment</u>						
Between Group	0.516	1				Significant at.05 level
Within Group	33.877	18	0.516	0.274	0.607	
total	34.392	19	1.882			
<u>Monthly Family income (Php)</u>						
Between Group	7.015	3	2.338	1.367	0.299	Not Significant at.05 level
Within Group	27.377	16	1.711			
total	34.392	19				

Table 7: Test Significant Difference in Computer Literacy Among Employees of government Agencies Classified According Age, Educational Attainment and Monthly Family Income

Table 8 shows that there is no significant difference in computer literacy between male and female employees of Non-Government Agencies.

Groups	f	Mean	t-value	p level	Comment
Male	7	2.67	-1.651	0.116	Not significant at .05 level
female	13	3.67			

Table 8: T-test of Significant Difference in Computer Literacy Between Male and Female Employees of Non-Government Agencies

Table 9 shows that age, educational attainment, and monthly family income are significant factors in determining the computer literacy of employees in non-government offices

Variables	SS	df	Mean Squad	F Value	P Level	Comment
<u>Age</u>						
Between Group	95.994					Significant at.01 level
Within Group	289.125	3	31.1998	0.000		
total	385.122	280	1.036			
<u>Educational Attainment</u>						
Between Group	11.329	3	3.776	2.825	0.039	Significant at.05 level
Within Group	374.267	280	1.036			
total	385.597	283				
<u>Monthly Family income (Php)</u>						
Between Group	3.136	4	0.784	0.572	0.683	Not Significant at.01 level
Within Group	382.461	279	1.371			
total	385.597	283				

Table 9: Test of significant Differences in Computer Literacy Among Employees of Non-Government Agencies Classified According to Age, Educational Attainment, and Monthly Family

VIII. CONCLUSIONS

Based on the results and findings of the study, it can be concluded that

- The level of computer literacy among employees of government agencies in the province of Antique was lower than expected particularly among male employees and the bachelor's degree holders. The low level of computer literacy among older employees is expected since they no longer had the interest in the technology particularly those looking forward for their retirement.
- The level of computer literacy among employees of non-government agencies was relatively higher than their counterparts in the government agencies. The younger employees though still had higher computer literacy level than the older ones, and those with higher educational attainment had also higher computer literacy level.
- The employees of non-government agencies had significantly higher computer literacy level than those in the government agencies.
- Younger and more educated employees in the government agencies had significantly higher computer literacy level.
- Younger employees of the non-government agencies had significantly higher computer literacy level.

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