Computer Literacy and Attitude of Elementary and Secondary School Teachers in Ilocos Sur

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Abstract

The study aimed to determine the level of computer literacy and attitude of the elementary and secondary school teachers in Ilocos Sur. It also looked into the relationship between level of computer literacy and attitude and selected personal/professional factors.

This study used the descriptive-correlational research design. The Computer Literacy and Attitude Scale (CLTAS) developed by Kim (1995) was adopted. The related information were elicited through a Personal Information Sheet constructed by the researchers. The respondents of the study were 90 elementary and 70 secondary teachers of 32 schools located along the national highway from Sinait to Tagudin, Ilocos Sur.

Findings revealed that the elementary and secondary school teachers of the Division of Ilocos Sur have a "low" level of computer knowledge and skills. The teachers have a "moderately positive" attitude towards the use of computers. The secondary school teachers have a significantly higher level of computer literacy than the elementary school teachers. However, both had the same attitude towards the use of computers. Significant relationships exist between level of computer literacy and age, length of service, attendance in computer-related trainings/conferences, educational attainment, and position/rank. No significant relationship was found between the respondents' attitude towards the use of computers and the teachers' personal/professional characteristics. Likewise, no significant relationship was obtained between level of computer literacy and attitude towards the use computers.

Introduction

Background of the Stndy

In this age of computers, educators must be literate, at least, with the most basic computer operation. Complete ignorance with the use of computers will hold anyone behind the professional race. Almost all the basic necessities in life is already governed by computers. The high competitiveness of the computer business made possible the rapid decline in the cost of computers. This opens the chance for everybody to own a computer, in both first world and developing countries, big business or more households, and from the most to the least educated individual.

One of the aims of education is to develop a computer literate citizenry. The school is the base for that endeavor. Here, school teachers should be the first to be trained and developed to exploit the advantages of the computer and not them to be used by the computer. They must be able to harness the effectiveness of the computer as a teaching and learning tool. Computers in education can be interactive. Misconceptions of students can be checked immediately, thereby, reducing instruction time. Abstract concepts can easily be simulated and animated. Difficult mathematical calculations can be simplified. Computers also have an infinite patience for slow learners. But most important, the use of computers increases student achievement.

According to Talisayon (1989), the teacher factor is critical in introducing any innovation in the classroom, including the use of computers. Use of computers in teaching requires technical and attitudinal training. If a teacher is not highly motivated to use computers, it follows that the students will not derive any benefit from computer-based lessons.

Many teachers hesitate to use computers in their classrooms because they have fear of the "robotization" of education. They perceive computers as threats to their position, that someday computers will take over their jobs. Teachers also fear of the possible misuse, abuse, and overuse of the computers in school. Computer use is also foreseen to decrease teacher-student and student-student interaction.

In reality, the use of computers in the classroom can only be one of the vast repertoire of teaching aids at the disposal of the teachers. Teachers should instead exploit the advantages brought about by the computers to develop the teaching-learning situation. It should be noted that the role of the teachers in the classroom can never be replaced by the computers.

With the importance of computers in education, the question arises: Are teachers ready or are they computer literate and do they possess the right attitude to meet these challenges? Hence, this study.

Objectives of the Study

This study aimed to detennine the level of computer literacy and attitude of the elementary and secondary school teachers in the Division of Ilocos Sur.

Specifically, it sought to:

1. Describe the personal/professional characteristics of the respondents;
2. Detennine the level of literacy of the respondents along computer knowledge and skills;
3. Determine the attitude of the respondents towards the use of computers;
4. Find out whether the level of computer literacy and attitude of the elementary school teachers differ from the secondary school teachers;
5. Look into possible relationship between the level of computer literacy and attitude of the respondents and their personal/professional characteristics; and between the level of computer literacy and attitude.

Significance of the Study

With the advent of technology, computers are now widely used as a tool in teaching and learning in most schools. The data gathered in this study can provide information whether teachers are prepared to meet the needs of the time – to make use of computer technology in developing their students to become globally competitive.

Findings of the study could be used as a baseline information for school administrators in planning for teacher-training activities particularly in improving computer literacy, and developing more positive attitude on the use of computer in education among their teachers. Furthermore, more trainings to prepare the teachers to become more skilful along Information and Communication Technology (ICT) can be structured. Moreover, the findings could also help curriculum planners initiate changes in the curriculum that will include the use of computers in the teaching process.

Review/Survey of Related Literature

Back in the early days of the computer, basically the only people who dealt with computers were those whose jobs required its direct use. Nowadays, even the typical grandmother can compose and send an e-mail. Computers are now commonplace in most households; the definition of the term "literate" can now be defined as anyone who has a basic understanding of their computer and can effectively use it to their advantage (Luehenmann, 1986).

Aiken and Braun (1980) stated:

> *"Unless teachers acquire an elementary understanding of how computers work and are convinced that they can improve their teaching, any attempt to use microcomputers and computer-assisted learning materials will fail."*

According to Youn, et al. (1991), the basic elements of a school computer education are the hardware, the software, and the teacher. As one of the basic elements of computer education, the teacher is an important factor in producing computer-literate students in tenns of attitude as well as knowledge about computers. Teachers who use computers are role models for their students, helping to produce positive student attitudes toward computer technologies (Kim, 1995).

Youn, et al (1991) as mentioned by Kim (1995) also emphasized that the success of a school computer education depends on how much computer knowledge school teachers have and how positive the teachers' attitude toward computers is.

The research findings of Oh, et al (1990) found out that the rate of completion of computer training for general school teachers has reached more than 20%. Nevertheless, the researchers said that the computer-illiterate teachers still remain as one of the urgent educational problems that need to be solved.

Scope and Limitation

The study was limited to the assessment of the computer literacy and attitude of the elementary and secondary school teachers in Ilocos Sur. The computer literacy of the teachers was measured in tenns of computer operation knowledge and skills, educational use of computers and computer tenns, general computer awareness, and basic programming knowledge. Likewise, the attitude of the teachers towards the use of computers was measured along emotional, cognitive, and behavioral dimensions.

In addition, it looked into the relationship between the teachers' level of computer literacy and attitude and personal/professional characteristics. The personal/professional factors were limited to age, sex, educational attainment, civil status, length of service, position/rank, computer-related trainings, and conferences attended.

As regards the respondents of the study, it was limited to the elementary and secondary teachers of schools located along the national highway from Sinait to Tagudin, Ilocos Sur. The questionnaire used in gathering the pertinent data needed in the study was limited to the Computer Literacy and Atttiude Scale (CLTAS) developed by Kim (1995) and the Personal Information Sheet constructed by the researchers.

Methodology

The study used the descriptive-correlational research design. Ninety (90) elementary and 70 secondary teachers of 32 schools (18 elementary and 14 secondary) located along the national highway from Sinait to Tagudin, Ilocos Sur comprised the respondents of the study. Representativeness of the different districts was considered in the study, hence, not all schools located along the national highway are part of the study. Considering the number of elementary and secondary teachers, only five teachers per school were purposedly taken as respondents of the study.

The data gathering instrument composed of two parts: Part I-- Personal Information Sheet constructed by the researchers to gather information on personal/professional profile of the respondents. Part II – IV, Computer Literacy Test and Attitude Scale developed by Kim (1995) to gather information on the computer literacy of the teachers along knowledge and skills, and attitude towards computer and its use for instruction purposes.

Data processing made use of the following statistical tools: frequency count and percentages for the profile the respondents; mean to determine the level of computer literacy and attitude through the use of a norm; and the Simple Linear Correlation Analysis to find out whether the level of computer literacy and attitude of the teacher-respondents is significantly related to selected personal/professional factors.

Results and Discussion

Profile of the Respondents

The profile of the respondents in terms of age, sex, civil status, educational attainment, length of service, position/rank, and computer-related trainings and conferences attended is presented on Table 1.

Table 1. Profile of the teacher-respondents in terms of personal/professional factors

PERSONAL PROFESSIONAL FACTORS	ELEMENTARY SCHOOL TEACHERS		SECONDARY SCHOOL TEACHERS		AS A WHOLE	
	F (N-90)	%	F (N=7o)	%	F	%
Age						
Above 50	14	15.60	4	5.70	18	11.30
46–50			3	4.30	3	1.90
41- 45	14	15.60	II	15.70	25	15.60
36–40	20	22.20	16	22.90	36	22.50
31–35	20	22.20	17	24.30	37	23.10
30 and below	22	24.40	19	27.10	41	25.60
Sex						
Male	22	24.40	16	22.90	38	23.75
Female	**68**	75.60	54	77.10	122	76.35
Educational Attainment						
Doctorate degree						
MA w/ Doctoral units	6	6.70	2	2.90	8	5.00
Master's degree			3	4.30	3	1.90
Bachelor w/ MA units	72	80.00	52	74.30	124	77.50
Bachelor	12	13.30	13	18.60	25	15.60
Civil Status						
Widower	I	1.10	1	1.40	2	1.30
Married	**68**	75.60	46	65.70	114	71.30
Single	21	23.30	23	32.90	44	27.50
Length of Service						
More than 25 years	13	14.40	3	4.30	16	10.00
21–25			7	10.00	7	4.40
16–20	4	4.40	12	17.10	16	10.00
11–15	17	18.90	6	8.60	23	14.40
6–10	36	40.00	20	28.60	56	35.00
Less than years	20	22.20	22	31.40	42	26.30

Table 1 continued

PERSONAL PROFESSIONAL FACTORS	ELEMENTARY SCHOOL TEACHERS F (N=90)	%	SECONDARY SCHOOL TEACHERS F Ne7o)	%	ASA WHOLE F	%
Position/Rank						
Master Teacher JI	2	2.20			2	1.30
Master Teacher I	8	8.90	9	12.90	17	10.60
Teacher3	19	21.10	10	14.30	29	18.10
Teacher2	28	31.10	8	11.40	36	22.50
Teacher l	33	36.70	43	61.40	76	47.50
Computer-Related Trainings and Conferences Attended (MR)						
- International	1	1.10	2	2.86	3	1.90
- National	2	2.20	5	7.10	7	4.40
- Regional	3	3.30	7	10.00	10	6.25
• Provincial	9	10.00	11	15.70	20	12.50
• District	11	12.20	3	4.30	14	8.70
- School	2	2.20	11	15.70	13	8.10

Age. A greater percentage (25.60%) of the respondents, as a whole, belonged to the age range 30 and below. There were only three (1.90%) who belong to the 46-50 age range.

By type of respondent, a greater percentage of the elementary (24.40%) and secondary (27.10%) teachers belonged to the 30 and below age range. Nobody among the elementary teachers and only three (4.30%) among the secondary teachers belonged to the 46-50 age range.

Sex. The majority of the respondents, as a whole, (76.35%) and by group (elementary, 75.60%; secondary, 77.10%) were females. As a whole, there are 23.75 percent males, while there were 24.40 percent male elementary teachers and 22.90 percent male secondary teachers.

Educational attainment. The majority (77.50%) of the respondents, as a whole, were bachelor's degree holders with master's units. There were only 1.90 percent master's degree holders.

By type of respondent, the majority of the elementary teachers (80.00%) were bachelor's degree holders with master's units. There were 6.70 percent who are master's degree holders with doctorate units. On the other hand, the majority of

the secondary school teachers (74.30%) were bachelor's degree holders with master's units but there were only 2.90 percent who were master's degree holders with doctorate units.

Civil status. The greatest percentage of the respondents, as a whole, (71.30%) and by type (elementary, 75.60%; secondary, 65.70%) are married. Moreover, as a whole, 1.30 percent of the respondents are widowers, one from the elementary and another one from the secondary.

Length of service. A greater percentage (35.00%) of the respondents, as a whole, have been in the service for 6-10 years already, while seven (4.40%) for 21-25 years.

By type of respondent, a greater percentage of the elementary teachers (40.00%) were in the service for 6-10 years, while the least are in the service for 16-20 years. On the other hand, most of the secondary school teachers (31.40%) are in the service for less than 5 years, while the least (4.30%) are in the service for more than 25 years.

Position/Rank. As a whole, most of the respondents (46.50%) were Teacher I while the least (1.30%) Master Teacher II position.

Among the elementary teachers, a greater percentage (36.70%) were Teacher I while the least (2.20%) were Master Teacher II. On the part of the secondary teachers, the majority (61.40%) were Teacher I while the least (12.90%), Master Teacher I.

Computer-related trainings and conferences. As a whole, most (12.50%) of the respondents have attended computer-related trainings and conferences in the provincial level while the least (1.90%) have attended international computer-related trainings and conferences.

By type of respondent, 12.20 percent of the elementary teachers have attended computer-related trainings and conferences in the district level, whereas only one (1.10%) teacher has attended international computer-related trainings and conferences. On the other hand, 15.70 percent of the secondary teachers attended computer-related trainings and conferences in the school and provincial levels. Furthennore, there were two (2.86%) secondary teachers who have attended international computer-related trainings and conferences.

Level of Computer Literacy

The level of computer literacy of the elementary and secondary school teachers in the Division of Ilocos Sur is presented on Table 2.

The teachers of the Division of Ilocos Sur have a "low" level of computer literacy. They only obtained 27.64 percent of the total number of items in the test. They have a "low" level of computer literacy along computer operation knowledge and skills, educational use of computer and computer terms, and general computer awareness. Moreover, they have a "very low" level of computer literacy along basic programming knowledge. Both the elementary and secondary school teachers have "low" level of computer literacy. This is based on the mean percentage scores of 17.50 and 32.60 percent, respectively.

Table 2. Computer literacy of the elementary and secondary school teachers in the division of Ilocos Sur

COMPONENTS OF COMPUTER LITERACY	ELEMENTARY		SECONDARY		ASA WHOLE	
	Mean % Score	DR	Mean % Score	DR	Mean % Score	DR
Computer Operation Knowledge and Skills	28.89	Low	48.98	Average	38.94	Low
Educational Use of Computers end Computer Terms	21.35	Low	28.47	Low	24.91	Low
General Computer Awareness	26.92	Low	34.40	Low	30.66	Low
Basic Programming Knowledge	13.09	Very Low	21.90	Low	17.50	Very Low
Total	**22.68**	Low	**32.60**	Low	**27.64**	Low

It should be noted that the secondary school teachers obtained an average level of perfonnance in the test of computer operation, knowledge and skills. But these teachers obtained low scores in the aspects of the test. For the elementary school teachers, they were found very weak in basic programming.

. The findings imply that the teachers of the Division of Ilocos Sur lack adequate knowledge in computers. This could be due to the unavailability of computers and computer references in their school. It can also be due to the minimal number of computer-related seminars/trainings conducted. Or if there are any computer-related seminars/trainings, it might have been offered only to a chosen few.

Attitude on the Use of Computers

The attitude of the respondents towards the use of computers was measured along three dimensions; namely, emotional, cognitive and behavioral.

Emotional **Attitude.** The emotional attitude of the respondents towards the use of computers is presented on Table 3.

Table 3. Item mean ratings showing the emotional attitude of the respondents towards the use of computers

EMOTIONAL ATTITUDE	ELEMENTARY		SECONDARY		ASA WHOLE	
	Y	DR	Y	DR	y	DR
1. I don't feel easy when talking about computers with others (-)	2.80	u	2.49	D	2.66	u
2. I am afraid of sitting in front of a computer. (-)	2.20	D	1.67	SD	1.97	D
3. A computer is an object of existing one.	3.31	u	3.49	A	3.39	u
4. Computers make me excited	3.71	A	4.03	A	3.85	A
5. I feel comfortable if I work with computers.	3.40	u	**3.86**	A	3.60	A
6. I am afraid of making mistakes when using computers. (-)	2.68	u	2.37	D	2.54	D
7. I think I am good in computing	2.81	u	3.07	u	2.93	u
8. I feel bored of computing.-)	2.40	D	2.31	D	2.36	D
Overall	**2.89**	Neutral	3.20	**Neutral**	3.03	Neutral

Note:

A – Agree
U – Undecided
D – Disagree
SD -- Strongly Disagree

As a whole, the respondents had a "neutral" (Y=3.03) emotional attitude towards the use of computers. They "agree" that computers make them excited; and they feel comfortable if they work with computers. However, they were "undecided" whether they do not feel easy when talking about computers with others; that computer is an object of existing one; and whether they think they are good in computing or not.

By type of respondent, both the elementary (=2.89) and secondary (g3.20) school teachers have a "neutral" emotional attitude towards the use of computers.

The respondents' neutral emotional attitude towards the use of computers is an indication that they were not sure whether they feel comfortable, confident or whether they feel it easy to employ computers in their teaching.

Cognitive attitude. Table 4 shows the cognitive attitude of the respondents towards the use of computers.

The respondents, as a whole, have a "moderately positive" (Y=4.09) cognitive attitude towards the use of computers. They "strongly agree" that all students should be computer literate" (Y=4.42), computers can contribute to school education, computers in the classroom can be excellent learning aids, and that computer education is important to school teachers.

Table 4. Item mean ratings showing the cognitive attitude of the respondents towards the use of computers

COGNITIVE ATTITUDE	ELEMENTARY		SECONDARY		ASA WHOLE	
	RY	DR	FT	DR	TY	DR
9. Computer education is important to schoolteachers.	4.31	SA	4.41	SA	4.36	SA
10. All school classrooms need to have computer.	4.00	A	4.27	SA	4.12	A
11. The use of a computer makes school work much more confusing.	2.13	D	2.11	D	2.13	D
12. Computers can contribute to school education	4.30	SA	4.51	SA	4.39	SA
13. All students should be computer literate.	4.24	8A	4.64	SA	4.42	SA
14. Computers in the classroom can be excellent learning aids.	4.13	A	4.64	SA	4.36	SA
Overall	3.98	MP	4.23	EP	4.09	MP

Legend:

SA – Strongly Agree
A – Agree
D – Disagree

EP - Extremely Positive
MP - Moderately Positive

The secondary school teachers have contrastingly an "extremely positive" cognitive attitude towards the use of computers. The elementary school teachers had a "moderately positive" attitude.

The moderately positive attitude of the respondents is a manifestation of a high view that computers are valuable tools for school education.

Behavioral attitude. The behavioral attitude of the respondents towards the use of computers is presented on Table 5.

Table 5. Item **mean ratings showing the behavioral attitude of the respondents towards the use of computers**

BEHAVIORAL ATTITUDE	ELEMENTARY		SECONDARY		AS A WHOLE	
	T	DR	T	DR	T	DR
15. I would like to take an in-service training on computers	4.01	A	4.23	SA	4.11	A
16. I do not miss any information or news about computers in newspapers or magazines	3.04	U	321	U	3.12	U
17. If I have enough money, I will buy a computer or upgrade it.	4.03	A	3.87	A	3.96	A
18. I don't listen to someone who talks about computers.	2.18	U	1.66	SD	1.95	D
19. I just turn off the computer if I see any error messages.	223	U	1.81	D	2.05	D
20. I can hardly stop computing once I start.	2.94	U	2.79	U	2.88	U
Overall	3.27	Neutral	3.44	MP	3.35	Neutral

Note:

A – Agree
U – Undecided
D – Disagree
SD – Strongly Disagree
MP - Moderately Positive

As a whole, the respondents have a "neutral" (=3.35) behavioural attitude towards the use of computers. They "agree" that they would like to take an in-service training on computers; and if they have enough money, they will buy a computer or upgrade it. Moreover, they are "undecided" whether they do not miss any information or news about computers in newspapers or magazines; and they can hardly stop computing once they start.

The secondary school teachers have a 'moderately positive" behavioural attitude towards the use of computers while the elementary school teachers have a neutral" attitude.

The above findings indicate that the teachers do not access actively on computers. When the teachers were asked about their computer skills, most of them responded *"I am not skilful at all"*. When asked whether they are using computers in school, the majority answered, *"I never use it"*.

Summary. The respondents, as a whole, had a "moderately positive" (=3.49) attitude towards the use of computers. They viewed computers as a very important leaming tool in education particularly in the classroom. However, they were uncertain whether they are confident or not in using it due to their insufficient knowledge about computers and their lack of access to computers.

Table 6. Summary of respondents' attitude towards the use of computers

INDICATORS OF ATTITUDE	ELEMENTARY T	DR	SECONDARY X	DR	ASA WHOLE Y	DR
Emotional	2.89	Neutral	3.20	Neutral	3.03	Neutral
Cognitive	3.98	MP	4.23	EP	4.09	MP
Behavioral	3.27	Neutral	3.44	MP	3.35	Neutral
Overall	**3.38**	Neutral	3.62	**MP**	3.49	**MP**

Note:
EP - Extremely Positive
MP - Moderately Positive

Comparative Computer Literacy Between Elementary and Secondary School Teachers

The results of the t-test of significant difference in the computer literacy between the elementary and secondary school teacher in Ilocos Sur is presented on Table 7.

Table 7. Differences in the computer literacy between the elementary and secondary school teachers in Ilocos Sur using t-test

COMPUTER LITERACY COMPONENTS	MEAN ELEM	MEAN SEC	MEAN DIFF	t-value	t-prob
Computer Operation Knowledge and Skills	2.31	3.91	1.60	4.017	p<.01
Educational Use of Computer and Computer Terms	2.99	3.99	1.00	2.310	p<.05
General Computer Awareness	3.50	4.47	0.97	2.288	p<.05
Basic Programming Knowledge	1.18	2.00	0.82	3.141	p<.01
Overall	**9.98**	**14.34**	**4.36**	**3.337**	<.01

It can be seen from the table that there is a significant difference in the level of computer literacy between the elementary and secondary school teachers in Ilocos Sur (p<.01), and in all components of computer literacy. The secondary school teachers have a significantly higher level of computer literacy than the elementary school teachers. They are more knowledgeable about computer operations and skills, computer tenns, computer awareness, and in basic programming.

The results may be due to the greater number of computer-related trainings and conferences attended by the secondary school teachers. Elementary school teachers were generally older (aged 46 and above) than the secondary school

teachers. Old teachers are less interested in learning how to use the computer. Further, the secondary schools have basic computer as one of the components of their Technological and Livelihood Education Program which could be one of the reasons why the secondary school teachers have significantly higher computer literacy than the elementary school teachers. Computers donated by politicians or benefactors to the schools are often placed at the principal's office for office use.

Comparative Computer Attitude Between Elementary and Secondary School Teachers

The results of the t-test on the attitude towards the use of computers between the elementary and secondary school teachers in Ilocos Sur is exhibited on Table 8.

Table 8. Differences in the attitude towards the use of computers between the elementary and secondary school teachers in Ilocos Sur using t-test

Attitude	X (Elem)	Y (Sec)	FT Ditr	t-value	t-prob
Emotional	2.92	2.91	-0.01	0.034	p>.01
Cognitive	3.85	4.10	0.25	-2.558	p<.05
Behavioral	3.07	2.93	-0.14	1.544	p>.05
Overall	**3.28**	**3.31**	**0.03**	**-0.465**	**p>.01**

There is no significant difference in the attitude towards the. use of computers between the elementary and secondary school teachers in Ilocos Sur (p>.01), and also along emotional (p>.05) and behavioral (p>.05) dimensions. However, a significant difference was obtained along cognitive dimensions. This implies that the elementary and secondary school teachers have the same feelings, manners or actions about the use of computer in education but they differ in their views regarding the valuable *tools* of computers for school education. The secondary school teachers have higher regard on the value of computers than the elementary school teachers.

This may be due to the greater exposure of secondary school teachers on computer-related trainings and conferences than the elementary school teachers. The secondary school teachers also had basic computer subjects during their college days aside from the basic computer component of their Technological and Livelihood Education Program.

Relationship Between Computer Literacy and Personal/Professional Factors

The correlation coefficients showing the relationship between the respondents' computer literacy. and personal/professional factors is exhibited on Table 9.

Table 9. Correlation coefficients showing the relationship between the respondents' computer literacy and personal/professional factors

PERSONAL PROFESSIONAL FACTORS	COMPUTER LITERACY				
	COKS	EUCCT	GCA	BPK	OVERALL
Age	-.261	**-.188**	-.246	-.195	-258
Sex	.048	.107	-017	.064	.056
Civil Status	-.059	-.133	-.115	-.074	-.1112
Educational Attainment	-.141	-.147	.013	-.219+	-.129
Length of Service	-.219	-.220°	-.268	-,37	-270
Position/Rank	-.120	-.098	-.129	-.174	-.144
Computer Related Trainings/Conferences Attended	.463	.357	198	.332	.386

Note:

COKS - Computer Operation Knowledge and Skills
EUCCT - Educational Use of Computer and Computer Terms
GCA - General Computer Awareness
BPK- Basic Programming Knowledge

There is a significant relationship between age and the computer literacy of the respondents (r=0.258), and along the different indicators like computers operation knowledge and skills (r=-0.261), educational use of computers and computer terms (r=0.188), general computer awareness (r=-0.246), and basic programming knowledge (r=-0.195). The younger the respondents are, the greater is the tendency for them to have higher level of computer literacy. Younger teachers are more inclined to learning about computers than the older ones. Younger teachers recognize the value of computers not only in the computation of grades but also as an aid in the teaching-learning process.

A significant relationship exists between length of service and level of computer literacy (r=-0.270), and along the different indicators like computer operation knowledge and skills (r=-0.219), educational use of computers and computer terms (r=0.220), general computer awareness (r=-0.268), and basic programming knowledge (r=-0.370). Teachers who are new in the service tend to be more computer literate than their older counterparts. This could be due to the basic computer knowledge they learned in college, and most likely are still fresh in

their minds. They are also exposed more to computers than the older ones in the service. They may also want to learn more about computers as a way of upgrading their capabilities as teachers.

Attendance in computer-related trainings/conferences is significantly related with the computer literacy of the respondents (r=0.386), as indicated by computer operation knowledge and skills (r=0.463), educational use of computer and computer terms (r=0.357), general computer awareness (r=0.198), and basic programming knowledge (r=0.332). More computer-related trainings/conferences attended by the teachers contribute to higher level of computer literacy. Attendance in computer-related trainings/conferences further enhances their knowledge about computers and accorded updates on the recent developments in computers. Attendance in computer-related trainings/conferences can also give new insights on how to use computers in the classroom.

Educational attainment (r=-0.219) and position/rank (r=0.174) are significantly related with basic programming knowledge. Teachers with low educational attainment and rank/position tend to have a higher knowledge on computer programming. Teachers with low educational attainment and rank/position are usually the younger ones. Hence, they are expected to be more knowledgeable in computer programming than the older ones. The correlation coefficients obtained with the other personal/professional factors failed to attain significance.

Relationship Between Attitude Towards the Use of Computers and Personal/Professional Factors

Table 10 presents the correlation coefficients on the relationship between the respondents' attitude towards the use of computers and personal/professional factors.

There is no significant relationship between the respondents' attitude towards the use of computers, including the emotional and behavioral aspects, and the different personal/professional factors of the respondents. This indicates that whether the respondents are young or old in age or in the service, male or female, single or married, with high or low educational attainment and position/rank, and with many or few compute-related trainings/conferences attended, their emotional and behavioral attitude towards the use of computers is more or less the same.

A closer look at the table reveals that there is a significant relationship between the respondents' attitude towards the use of computers along cognitive aspects and age (r=-0.196), educational attainment (r=0.163), and length of service (r=-0.233). The younger (age and service) and the lower the educational attainment of the respondents, the higher is their cognitive attitude towards the use of

computers. The results imply that their being young in age and in service means that they are still considered fresh graduates. Hence, they still carry with them the idea that the use of computers in school is very important for the development of the students/pupils.

Table 10. Correlation coefficients showing the relationship between the respondents' computer attitude and personal/professional factors

PERSONAL' PROFESSIONAL FACTORS	COMPUTER ATTITUDES			
	EMOTIONAL	COGNITIVE	BEHAVIORAL	OVER-ALL
Age	.016	-,196°	-.069	-.114
Sex	.067	.034	.044	.065
Civil Status	.034	-.097	.093	.011
Educational Attainment	-.052	-.163	.111	-.048
Length of Service	-.004	-.233	-.051	-.131
Position/Rank	-.035	-.109	-.029	-078
Computer-Related Trainings/ Conferences	-.105	.026	-.044	-.051

Relationship Between Computer Literacy and Attitudes

The correlation coefficients showing the relationship between the respondents' computer literacy and attitudes is shown on Table 11.

Table 11. Correlation coefficients showing the relationship between computer literacy and attitudes

COMPONENTS OF COMPUTER LITERACY	CORRELATION COEFFICIENT (r)	r-prob
Comp. Operation Knowledge & Skills	0.140	p>.05
Educational Use of Comp. & Comp. Terms	0.039	p>.05
Gen. Computer Awareness	0.118	p>.05
Basic Programming Knowledge	0.023	p>.05
Overall	0.098	p> .05

It can be seen from the table that there is no significant relationship between overall computer literacy and overall attitude towards the use computers (r=-0.098). This implies that whether the overall attitude towards the use of computers is high or low, the overall computer literacy is more or less the same. The table further

reveals that the correlation coefficients obtained between the four components of computer literacy and computer attitude failed to attain significance ($p > .05$).

As a whole, attitude does not have any influence on computer literacy along educational use of computers and computer terms. The respondents may have the fervor to use computers in their classroom but the lack of computers in their schools prevents them from doing so. They may have the enthusiasm to study computers but the lack of computers in their schools deprive them the chance to learn computers. It can also be the lack of time to study computers because of the so many curricular and extra-curricular activities in school. The positive behavior of the respondents towards the use of computers is no guarantee that they also have high level of computer literacy.

Summary and Conclusions

Profile of the Respondents

The majority of the elementary and secondary school teachers are females, bachelor's degree holders with master's units, married, and holding a position/rank of Teacher I. Further, a greater percentage of the respondents belong to the 30 and below age bracket, with 6-10 years of service, and have attended computer-related trainings and conferences in the provincial level.

Level of Computer Literacy of the Respondents

The teachers of the Division of Ilocos Sur have a "low" level of computer knowledge and skills. They lack adequate knowledge in computers due to the unavailability of computers and computer references in school as well as due to the minimal number of computer-related seminars/trainings conducted. Computer-related seminars/trainings, if ever offered, is only for a chosen few.

Attitude of the Respondents Towards the Use of Computers

The elementary and secondary school teachers have a "moderately positive" attitude towards the use of computers especially along cognitive and behavioral aspects, but have a "neutral" attitude towards the use of computers along emotional aspects.

The teachers are not comfortable using computers due to their lack of exposure to computers. They agree on the importance of computers, not only for them, but for the cognitive development of the students. They have the inclination to learn about computers but their lack of time and money prevent them from

attending computer in-service programs or even buying a computer unit for themselves.

Comparison in the Computer Literacy of Elementary and Secondary School Teachers in Ilocos Sur

The secondary school teachers have a significantly higher level of computer literacy than the elementary school teachers. Elementary school teachers are older than the secondary school teachers. Old teachers do not have anymore the interest in learning how to use the computer.

Comparison in the Attitude Towards the Use of Computers of the Elementary and Secondary School Teachers in Ilocos Sur

The elementary and secondary school teachers do not vary significantly on how they feel, value or view the importance of computers in school education.

Relationship Between Computer Literacy and their Personal/Professional Factors

Young teachers who have attended numerous computer-related trainings/conferences tend to have a higher level of computer literacy. Younger teachers tend to have more inclination in learning about computers than the older ones. That is why, given the opportunity, they always attend computer-related trainings/conferences. They know the value of the computers in the computation of grades and as an aid in the teaching-learning process which will eventually increase their level of competency.

Relationship Between Attitude Towards the Use of Computers and their Personal/Professional Factors

Teachers' attitude towards the use of computers is not influenced by age, sex, civil status, position, and number of trainings attended. Being young or old in age or in the service, male or female, single or married, with high or low educational attainment and position/rank, attending computer-related trainings/conferences is not a guarantee of high or positive attitude towards the use of computers.

Relationship Between Computer Literacy and Attitudes

Attitude towards the use of computers for education does not contribute significantly to high computer literacy. Respondents' feelings, views and actively accessing to computers are no guarantee of high knowledge about computers.

Recommendations

Based on the aforestated conclusions, the following recommendations are hereby forwarded:

1. Every school, elementary and secondary, in the Division of Ilocos Sur should be equipped with computers and computer materials.
2. An in-service training program should be offered to all the elementary and secondary school teachers of the Division of Ilocos Sur to upgrade their knowledge, skills and attitudes on computers.
3. Teachers should be allowed to attend computer-related seminars/conferences.
4. School administrators should tap the support of philanthropists in the community like the politicians, alumni, prominent citizens, etc. in the acquisition of computers. They should not rely solely on the budget coming from the government.
5. The DepEd should extend loans for teachers who wish to buy his/her computer unit.
6. A computer course should also be offered as a subject in the elementary or may be integrated in some of their subjects.
7. Principals with computer units in their office should make the computers available to all his teaching staff.

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