

Teachers' Competence, Attitudes and Extent of Integration of Multimedia in the Teaching-Learning Process in a Private School in Iloilo City

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ABSTRACT

This research aimed to determine teachers' competence, attitudes and extent of integration of multimedia in the teaching-learning process in a private school in Iloilo city. Cramer's V and Gamma Correlation were used to determine the relationships between selected variables and extent of integration of multimedia in classroom teaching among the teachers. Findings revealed that teachers had favorable attitude and moderate extent of integration of multimedia teaching. There were also moderate relationships between learning area and attitude, knowledge and attitude, skills and attitude, and attitude and extent of integration of multimedia. Strong relationship were found between learning area taught and skills. The result revealed that English and Filipino teachers had a high level of skill and knowledge about multimedia.

Keywords: *Teachers, Extent of Integration of Multimedia, Technology, Teacher's Perceptions, Teacher's Attitude, Young Learners*

INTRODUCTION

Studies on the extent of multimedia in the teaching-learning process gained much interest in recent years. It discussed literature and studies related to the phenomenon of the use of multimedia. It is hoped that these literature and studies will provide insights to the subject matter of the present research investigation. Summary of the Findings of Related Studies the ICT mandates towards competence in technology were the following: RA 9246 Section 5 sets the standards in terms of professional competencies related to information source, access, technology and management, and the ability to use information services. Moreover, its endorsement of RA 7722 also known as Higher Education Act of 1994 extended the development of Information Technology Education (ITE) in Memorandum 25, S. 2001 to keep abreast with the demand of global competitiveness (Magbanua, 2003).

In seminars and trainings, it has been found that the availability of computer hardware and software should be accompanied with the training of the users and constant technical support. Without this, even though high quality hardware and software are available, they could be wasted or remain underutilized by the users (Aryatua, 2007, Malcolm et al., 2008 and Spaulding, 2007). In the subject area taught by a teacher, each instructor must figure out for him/herself what is and what is not appropriate depending on the context of his/her course (Wankel, 2015). Morris (2010) also revealed that time and training are the primary factors in technology diffusion. Knezek et al. (2010) and Afshari et al. (2009) reported that educators with higher level of skill and knowledge are likely to utilize and integrate technology in teaching. In addition, Spaulding (2007), Marcial (2013) and Hsin-Kai et al. (2007) stated that the level of technical skills are

critical for successful implementation of multimedia technology in the classroom.

Teachers who have lower ICT proficiency are usually not willing and have less confidence to use ICT for teaching. Teachers who have strong engagement towards their own professional development are more motivated to use computers. Teachers' attitude toward the use of multimedia and the positive attitudes of both students and teachers have led to an increased demand for more computer-based technologies (Dong, 2007). Teachers' perception and attitude toward the use of multimedia had an impact in integrating multimedia in the teaching learning process (Alaja et al. 2015 and Farrell, 2007). There is a need, therefore, for all those involved in the teaching and learning process to be aware of developments taking place with regard to new learning technologies, to update themselves and take advantage of the benefits for both learner and provider/facilitator. There were certain identified gaps that have set the ground for further research in integrating multimedia in the teaching-learning process, curriculum review, and teachers' skills needs. To summarize, there are a lot of researches that found out the barriers in integrating multimedia in the teaching-learning process.

However, this study will focus on the teachers' extent of integration on the use of multimedia. There were studies which dealt about the use of multimedia but there are probably different variables that may have caused the problem. This study will be conducted in a different setting and population. Thus, further research regarding this concept is needed to prove the claims of the different studies mentioned above.

Objectives of the Study

This study was conducted to determine teachers' competence, attitudes and extent

of integration of multimedia in the teaching-learning process in a private school in Iloilo City.

Specifically, the study aimed to:

1. describe the learning areas taught by the teachers, length of service and the number of their training & seminars attended in relation to technology;
2. describe teacher's competence in the use of multimedia in terms of knowledge and skills;
3. describe the attitude of the teachers toward the integration of multimedia;
4. describe the extent of integration of multimedia in the teaching- learning process;
5. determine if there is a relationship between the learning areas taught by the teachers, length of service and the number of their training & seminars attended and teacher's competence;
6. determine if there is a relationship between the learning areas taught by the teachers, length of service and number of training & seminars attended and the attitudes of the teachers;
7. determine if there is a relationship between the learning areas taught by the teachers, length of service and number of training & seminars attended and extent of integration of multimedia;
8. determine if there is a relationship between teacher's competence and attitudes;
9. determine if there is a relationship between teacher's competence and extent of integration of multimedia;
10. determine if there is a relationship between attitude of teachers and their extent of integration of multimedia;
11. determine if there is a relationship between teacher's competence and the extent of integration of multimedia controlling for attitude.

THEORETICAL FRAMEWORK

This study is based on the Technology Acceptance Model (TAM) which was developed by Davis et al. (1992) to explain how individuals make a decision to accept and use a particular technology. Perceived Usefulness and Perceived Ease of Use are the key elements of this model. Technology Acceptance Model (TAM) is a revision of the Theory of Reasoned Action (TRA) in the area of Information System (IS). TAM considers that an individual's intention to use a system will be verified by perceived usefulness and perceived ease of use of that system. TRA and TAM presume that when teachers develop an objective to perform, they will be free to execute without restraint. Technology Acceptance Model (TAM) is considered as the most influential and commonly employed theory for describing an individual's

acceptance of information systems. In this study, the knowledge and skills of the teachers in using technology will affect their attitude to integrate multimedia. Limited knowledge and skill in technology will hinder and limit the actions of the teachers in having innovative strategies such as integrating multimedia for the presentation of their lessons. Various studies have been carried out by using the TAM in order to investigate the usage of Information Technology. Davis et al. (1992) examined the Theory of Reasoned Action (TRA) with TAM to find out whether combination factors of the two models can be delivered with more complete sight of what will determine the users' acceptance.

CONCEPTUAL FRAMEWORK

In this study, the learning areas taught by the teachers, length of service and their seminars/trainings attended are the antecedent variables with teachers' competence in terms of knowledge and skills as the independent variable, attitude as intervening variable while the extent of integration of multimedia in the teaching-learning process is the dependent variable. Teacher's competence in terms of knowledge and skills as independent variable is assumed to have a relationship with the attitude of the teachers.

The Theory of Acceptance Model (TAM) states that perceived usefulness and ease of use have considerable impact on attitude of the teachers and its effects on the use of technology. These can be determined as an unfavorableness and favorableness toward the system. In this study, the knowledge and skills of the teachers in using technology will affect their attitude to integrate multimedia. Limited knowledge and skill in technology will hinder and limit the actions of the

teachers in having innovative strategies such as integrating multimedia for the presentation of their lessons. The attitude of the teachers may affect their extent of integration of multimedia.

The study of Rogers (2003), Knezek et al. (2000), Morris (2010), and Afshari et al. (2009) found that effective use of computers by teachers depends on their attitude. Similarly, Lawless and Pellegrino (2007) stated that educators who integrate technology with new teaching practices gained positive attitude. Teacher's competence is expected to be related with the extent of integration of multimedia. According to the Theory of Acceptance Model (TAM) limited knowledge and skill in technology will hinder and limit the actions of the teachers in having innovative strategies such as integrating multimedia for the presentation of their lessons. In addition, the study of Morris (2010) stated that educators with higher level of skill would exhibit higher level of technology integration in the

classroom. Lastly, teacher's competence is expected to contribute to the extent of integration of multimedia in the teaching-

learning process controlled by the attitude of the teachers as the intervening variable.

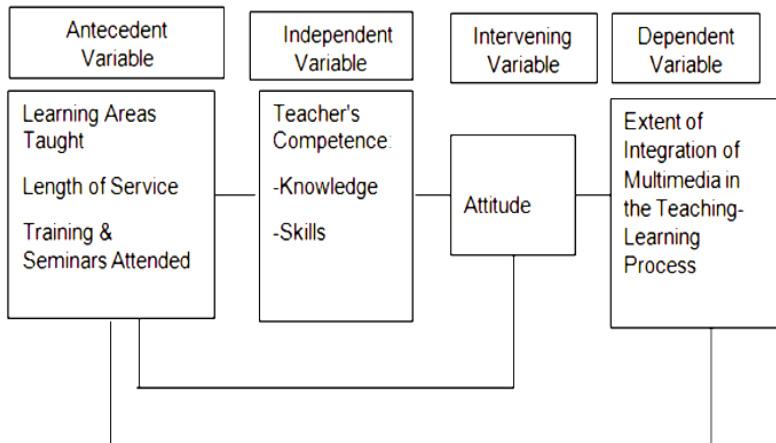


Figure1. A paradigm showing the relationship among the antecedent, independent, intervening and dependent variables.

SCOPE AND LIMITATION OF THE STUDY

This descriptive-relational study was confined to the extent of integration of multimedia among the teachers in a particular university in Iloilo City. The respondents of the study were the

elementary and secondary teachers in a private school in Iloilo City. This study was conducted in a private school in Iloilo City which has an access to multimedia facilities.

METHODOLOGY

It describes the research design that was used in the study, research instruments, validation of the instrument, and the reliability of the instrument, data gathering and data processing techniques employed in the study.

Research Design

This descriptive-relational study determined the teachers' competence, attitudes and extent of integration of multimedia in the teaching-learning process. The researcher used a one-shot survey to obtain data that will address or answer the objectives of the study. It is relational

because it tries to determine the direction and extent of relationship among the variables. Population and Sampling the researcher employed a complete enumeration of all elementary and secondary teachers which was composed of eighty-three (83) teachers in a particular university in Iloilo City.

The respondents of the study included only sixty-eight (68) respondents who were willing to answer the questionnaire and fifteen (15) teachers refused to participate. Research Instrument In this study, the researcher used a three-part questionnaire and checklist. The first part of the

questionnaire required the respondents to fill out the needed information about their learning area, length of service and the number of seminars/training attended.

The second part contained questions regarding teachers' competence in terms of knowledge and skills in integrating multimedia in the teaching-learning process. It was divided into two parts, the 20- item multiple choice test for the knowledge which contained questions about the different applications used to create presentations and another 20-item for the skills in applying and operating the multimedia tools. The third part consisted of statements relating to the interest in using technology to measure teacher's attitude towards the acceptance and integration of multimedia in the teaching-learning process. For the extent of integration of multimedia, the researcher

checked the lesson plans to find out how many times they integrated multimedia within two weeks or ten (10) school days in their lessons.

The researcher also conducted observations and interviewed the teachers about their opinion in using multimedia. Validation and Reliability of the Instrument to determine the extent of integration of multimedia in the teaching-learning process, some statements and questions were modified and constructed to suit the academic teachers' requirements. The instrument was submitted for validation to three experts in teaching computer and pre-tested for its reliability. The questionnaire was also subjected to reliability testing using the test-retest method to find out the consistency of the instruments.

RESULTS AND DISCUSSION

Teachers' Characteristics The data in table 1 show that a little more than one-third (33.8%) of the respondents were teaching Mathematics and Science. More than one-third (35.3%) of the teachers teaching English and Filipino while only a little more than three-tenths (30.9%) were teaching AP, MAPEH, and EPP. We can confirm that there

were more respondents teaching languages – English and Filipino. When it comes to the length of service, most of the teachers were in the teaching service for more than 11 years (41.2%). Majority of the teachers, those who taught 1 to 5 years (33.8%) and 6 to 10 years (25%) may be considered new in the teaching service.

Table 1

Distribution of teachers' characteristics in terms of learning area, length of service and seminars/trainings attended.

Teachers' Characteristics	f	%
Learning Area		
Math & Science	23	33.8
English & Filipino	24	35.3
AP, MAPEH, EPP	21	30.9
Total	68	100
Length of Service		
1-5 years	23	33.8
6-10 years	24	25.0
11 years and above	21	41.2
Total	68	100
Seminars/Training		
0-1 seminar	25	36.8
2-3 seminars	23	33.8
4 seminars and above	20	29.4
Total	68	100

Teachers' Knowledge about Multimedia

To determine teacher's competence in terms of knowledge about multimedia, the number of correct answers were tallied, computed and ranked from highest to

lowest. Table 2 show that almost all (97.1%) of the teachers knew the application that is commonly used to prepare a presentation and slide show.

Table 2

Distribution of teachers according to correct responses to specific aspects on the use of multimedia in the teaching-learning process.

Knowledge About Multimedia	f	%
1. the application commonly used to prepare a presentation or slide show	66	97.1
2. the way of emphasizing a word of text, as in darker type or brighter characters on a video display terminal	63	92.6
3. the function reads data from a source, leaving the source data unchanged and writes it elsewhere	63	92.6
4. what presentations are	62	91.2
5. the application arranged in rows and columns that manipulate numbers	59	86.8
6. printed copy of machine output in a visually readable form	58	85.3
7. the application allows the user to create primarily text documents	58	85.3
8. device that produces texts and graphics into paper or cloth	56	82.4
9. entering, modifying or deleting data	56	82.4
10. the most common image used by digital cameras and other photographic image capture devices	56	82.4
11. the device or system is capable of carrying out a sequence of operations in a distinctly and explicitly defined manner	55	80.9
12. the package of instructions that causes the computer to do something	54	79.4
13. a set of consistent size, shape or style of printer characters, including alphabetic and numeric characters and other signs and symbols	53	77.9
14. an object or area on a slide/ page where text is entered and scrolled.	52	76.5
15. what multimedia is	50	73.5
16. commercially prepared drawings that come in packages with many application programs	46	67.6
17. the use of computer program to merge various types of media such as text, graphics, sound, animation, and video	48	73.6
18. computer-generated image as viewed on a screen	36	52.9
19. the transfer of information from a remote computer system to the users system	25	36.8
20. the file contains pictures in motion	24	35.3

Teachers' Skills in the Use of Multimedia

For teacher's competence in terms of skills, Table 3 shows that almost all (97.1%) of the teachers were skilled in using MS

Word to print a document. On the other hand, there were only a little more than two-thirds (67.6%) who were skilled in sharing the image on the computer screen and projector.

Table 3

Distribution of teachers according to correct responses on specific aspects on the use of multimedia.

Skills in the Use of Multimedia	f	%
1. using MS Word in printing their work for handout	66	97.1
2. downloading videos from YouTube	64	94.1
3. making the pictures to appear as moving images in MS PowerPoint	61	88.2
4. closing a window on your desktop	60	88.2
5. adding table in MS PowerPoint	60	86.8
6. closing PowerPoint 2007 application	59	86.8
7. adding some pictures in your presentation	59	86.8
8. minimize or maximizing a program in Windows	58	85.3
9. turning off a computer properly	58	85.3
10. connecting a laptop to Overhead Projector/ LCD TV	58	85.3
11. showing a video in your laptop	57	83.8
12. copying the text	57	83.8
13. starting a computer	56	82.4
14. saving your work from laptop to flash drive	55	80.9
15. connecting laptop to audio speaker	55	80.9
16. opening a program such as a MS PowerPoint when there are no icons on the desktop	53	77.9
17. capitalizing the first letter in the sentence in MS PowerPoint	52	76.5
18. starting a PowerPoint 2007	51	75.0
19. sharing the image on the computer screen and projector	46	67.6
20. adding a slide in your presentation	45	66.2

Overall Knowledge and Skills in Multimedia

Table 4 shows the overall knowledge of the teachers in multimedia technology, a bit less than one-third (30.9%) had low level of knowledge, more than two-fifths (44.1%) for the average and one-fourth (25.0%) had a high level of knowledge. This shows that

most of the teachers were in the middle rating which could be further improved to reach the highest level since they were expected to perform well in their profession. Similarly, Caluza et al (2017) found that teachers have only a basic knowledge in technology which needs improvement.

Table 4

Summary table of teachers' competence in terms of knowledge and skills.

Teachers' Competence	f	%
Knowledge		
Low (10-13)	21	30.9
Average (14-17)	30	44.1
High (18-20)	17	25.0
Total	68	100
Skills		
Fair (7-15)	17	25.0
Good (16-18)	30	44.1
Very Good (19-20)	21	30.9
Total	68	100

Teachers' Attitude towards Integration of Multimedia

Table 5 presents the statements in relation to the attitude and the corresponding frequencies and percentage.

It shows that majority (60.3%) of the teachers strongly agreed that they would be a better teacher if they knew how to use technology properly.

Table 5

Distribution of teachers according to their extent of agreement on specific attitude measures toward integration of multimedia in teaching.

Statements on Attitude	Extent of Agreement				Total %
	4 Strongly Agree %	3 Agree %	2 Undecided %	1 Disagree %	
1. I enjoy integrating the elements of multimedia technology	57.4	33.8	8.8	-	100
2. I know that technology can help me to learn many new things	54.4	29.4	16.2	-	100
3. I would be a better teacher if I knew how to use technology properly	60.3	29.4	10.3	-	100
4. I'm very confident when it comes to working with technology at home/at work/ at university	39.7	36.8	20.6	2.9	100
5. I want to learn more about using technology at home/at work/at university	58.8	25.0	13.2	2.9	100
6. I believe that I can improve my language skills using the benefits of the Internet	54.4	32.4	10.3	2.9	100
7. Using technology in teaching and learning is necessary	50.0	33.8	-	-	100
8. Multimedia activities encourage students to work in groups and express their knowledge in multiple ways	44.1	33.8	22.1	-	100
9. Through multimedia activities, students can learn the importance of research, planning and organization skills	41.2	42.6	13.2	2.9	100
10. Students should know how to use technology in class	47.1	41.2	11.8	-	100
11. In multimedia activities, the teacher learns the significance of presentation and speaking skills	45.6	39.7	8.8	5.9	100
12. Through participation in multimedia activities, students can learn real-world skills related to technology	38.2	38.2	23.5	-	100
13. Teachers should have time required to plan, design, develop and evaluate multimedia activities	41.2	35.3	20.6	2.9	100
14. Using images, video, and animations alongside a text stimulates the brain	41.2	30.9	25.0	2.9	100
15. With the help of multimedia, children can explore and learn about places they were never been to	48.5	29.4	19.1	2.9	100

Overall Attitude towards Integration of Multimedia in the Teaching-Learning Process

The data shown in table 6 show that higher than one-third (36.8%) of the teachers

had a favorable attitude towards integration of multimedia. However, only less than one-third (30.9%) had a highly favorable and (32.4%) had unfavorable attitude.

Table 6

Distribution of teachers according to their attitude towards integration of multimedia in the teaching-learning process.

Attitude	f	%
Unfavorable (40-63)	22	32.4
Favorable (64-69)	25	36.8
Highly Favorable (70-75)	21	30.9
Total	68	100

Overall Extent of Integration of Multimedia in the Teaching-Learning Process

Table 7 shows that more than one-third (35.3%) of the teachers had a moderate

extent of integration of multimedia. This confirms the study of Marcial (2017) that IT implementation is just moderate.

Table 7

Distribution of teaches according to their extent of integration of multimedia in the teaching-learning process.

Extent of Integration	f	%
Low (0-3)	21	30.9
Moderate (4-6)	24	35.3
High (7-10)	23	33.8
Total	68	100

Relationship between the Learning Area and Knowledge

The fifth objective of the study intended to correlate the learning area and knowledge of the teachers in multimedia. Table 8 shows that a little more than one-third (34.8%) of the Mathematics and Science teachers had a low level of knowledge while less than one-

third (29.2%) of the English and Filipino teachers had low level of knowledge. Table 8 also shows the Cramer's V value of 0.161 which means that there is a weak relationship between the learning area and knowledge. Therefore, the learning area taught by the teacher is not associated to his or her knowledge about multimedia.

Table 8

Distribution of teachers according to their level of knowledge about multimedia by learning area.

Learning Area	Level of Knowledge						Total	
	Low		Average		High			
	f	%	f	%	f	%	f	%
Math & Science	8	34.8	11	47.8	4	17.4	23	100
English & Filipino	7	29.2	8	33.3	9	37.5	24	100
AP, MAPEH, EPP	6	28.6	11	52.4	4	19.0	21	100
Total	21	30.9	30	44.1	17	25.0	68	100

Cramer's V = 0.161 – weak relationship

Relationship between the Learning Area and Skills

Table 9 shows that there is a strong relationship between the teachers' learning area and their skills in using multimedia as

indicated by the Cramer's value of .325. Therefore, the teachers' learning area could be an indicator of their level of skills in the use of multimedia.

Table 9

Distribution of teachers according to their skills in using multimedia by learning area.

Learning Area	Level of Knowledge						Total	
	Low		Average		High			
	f	%	f	%	f	%	f	%
Math & Science	12	52.2	7	30.4	4	17.4	23	100
English & Filipino	3	12.5	11	45.8	10	41.7	24	100
AP. MAPEH, EPP	2	9.5	12	57.1	7	33.3	21	100
Total	17	25.0	30	44.1	21	30.9	68	100

Cramer's V = 0.325 – strong relationship

Relationship between the Learning Area and Attitude

Table 10 shows that there is a moderate relationship between teachers'

learning area and attitude. Cramer's V of .231 indicated that teacher's attitude is moderately related to the learning area taught.

Table 10

Distribution of teachers according to their attitude towards integration of multimedia by learning area.

Learning Area	Level of Knowledge						Total	
	Low		Average		High			
	f	%	f	%	f	%	f	%
Math & Science	10	43.5	5	21.7	8	34.8	23	100
English & Filipino	8	33.3	12	50.0	4	16.7	24	100
AP. MAPEH, EPP	4	19.0	8	38.1	9	42.9	21	100
Total	22	32.4	25	36.8	21	30.9	68	100

Cramer's V = 0.231 – moderate relationship

Relationship between the learning area and extent of integration of multimedia

Table 11 shows that there is a weak relationship between learning area and

extent of integration with a Cramer's value of .115. Hence, learning areas that teachers teach would be a weak indicator of their extent of use of multimedia in teaching.

Table 11

Distribution of teachers according to their extent of integration of multimedia by learning area.

Learning Area	Level of Knowledge						Total	
	Low		Average		High			
	f	%	f	%	f	%	f	%
Math & Science	7	30.4	8	34.8	8	34.8	23	100
English & Filipino	9	35.4	9	37.5	6	25.0	24	100
AP. MAPEH, EPP	5	23.8	7	33.3	9	42.9	21	100
Total	21	30.9	24	35.3	23	33.8	68	100

Cramer's V = 0.115 – weak relationship

Relationship between the Length of Service and Knowledge

Table 12 shows the data that was used to determine the relationship between length of service and knowledge about multimedia. The Gamma result of $-.313$ implies that

there is a moderate negative relationship between length of service and knowledge about multimedia. Therefore, teachers who have longer years of teaching service would probably have even less knowledge about multimedia.

Table 12

Distribution of teachers according to their knowledge about multimedia by the length of service.

Length of Service	Knowledge						Total	
	Unfavorable		Favorable		Highly Favorable			
	f	%	f	%	f	%	f	%
1-5 years	2	8.7	10	43.5	11	47.8	23	100
6-10 years	11	64.7	5	29.4	1	5.9	17	100
11 years and above	8	28.6	15	53.6	5	17.9	28	100
Total	21	30.9	30	44.1	17	25.0	68	100

Cramer's V = 0.313 – moderate negative relationship

Relationship between the Length of Service and Skills

The data in Table 13 show that the value of the Gamma was $-.411$ which means that there was a moderate negative relationship between the length of service and skills of teachers in the use of multimedia. Moreover, it was also noted that

the longer the length of service the teacher has, the lower would be the skills in the use of multimedia. This is congruent with the study of *Buabeng-Andoh (2012)* that found out the need for improvement in the skills of the teachers. It also concluded that new teachers were more skillful than those who had long service.

Table 13

Distribution of teachers according to their skills in using multimedia by the length of service.

Length of Service	Skills						Total	
	Unfavorable		Favorable		Highly Favorable			
	f	%	f	%	f	%	f	%
1-5 years	3	13.0	9	39.1	11	47.8	23	100
6-10 years	4	23.5	8	47.1	5	29.4	17	100
11 years and above	10	35.7	13	46.4	5	17.9	28	100
Total	17	25.0	30	44.1	21	30.9	68	100

Cramer's V = 0.411 – moderate negative relationship

Relationship between the Length of Service and Attitude

Data in table 14 show that there was a weak negative relationship between the

length of service and attitude as revealed by the result of the Gamma test which was $-.003$. Therefore, the length of service of the teachers could only slightly affect their attitude towards multimedia.

Table 14

Distribution of teachers according to their attitude towards integration of multimedia by the length of service.

Length of Service	Attitude						Total	
	Unfavorable		Favorable		Highly Favorable			
	f	%	f	%	f	%	f	%
1-5 years	4	17.4	13	56.5	6	26.1	23	100
6-10 years	8	45.8	6	29.2	3	25.0	17	100
11 years and above	10	33.3	6	23.8	12	42.9	28	100
Total	22	32.4	25	36.8	21	30.9	68	100

Cramer's V = 0.003 - weak negative relationship

Relationship between the Length of Service and Extent of Integration of Multimedia

The seventh objective is to determine the relationship between the length of service and extent of integration of

multimedia. The result in table 15 revealed that there was a weak relationship between the length of service and extent of integration of multimedia with a Gamma value of .161 indicating a weak relationship between years of service and the integration of multimedia.

Table 15

Distribution of teachers according to their extent of integration of multimedia by the length of service.

Length of Service	Extent of Integration						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
1-5 years	10	43.5	6	26.1	7	30.4	23	100
6-10 years	4	20.8	7	45.8	6	33.3	17	100
11 years and above	7	28.6	11	33.3	10	38.1	28	100
Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.161 - weak relationship

Relationship between the Seminar and Knowledge about Multimedia

Table 16 reflects the Gamma value of -.222 which means that there was a weak negative relationship between teachers' attendance to seminars and their knowledge about the use of multimedia. Therefore,

teachers may be knowledgeable enough about technology regardless of the number of seminars they have attended in relation to technology. This finding concurred with the study of Nagel (2013) who found that workshop-based professional development is not effective.

Table 16

Distribution of teachers according to their knowledge about multimedia by the number of seminars related to technology they attended.

Seminars	Knowledge						Total	
	Low		Average		High			
	f	%	f	%	f	%	f	%
0-1	7	28.0	6	24.0	12	48.0	25	100
2-3	9	39.1	12	52.2	2	8.7	23	100
4 and above	5	25.0	12	60.0	3	15.0	20	100
Total	21	30.9	30	44.1	17	25.0	68	100

Gamma = 0.222 - weak negative relationship

Relationship between the seminar and skills

Result in Table 17 shows the Gamma value of -.113 which means that there was a weak negative relationship between the seminars or training and skills in the use of

multimedia. From the result it can be deduced that skills are not affected regardless of the number of seminars attended in relation to technology.

Table 17

Distribution of teachers according to their skills in using multimedia by the number of seminars related to technology they attended.

Seminars	Skills						Total	
	Fair		Good		Very Good			
	f	%	f	%	f	%	f	%
0-1	7	28.0	11	44.0	7	28.0	25	100
2-3	4	17.4	7	30.4	12	52.2	23	100
4 and above	6	30.0	12	60.0	2	10.0	20	100
Total	17	25.0	30	44.1	21	30.9	68	100

Gamma = 0.113 - weak negative relationship

Relationship between the Seminar and Attitude

Table 18 reflects the Gamma value of -.017 which means that there was a weak negative relationship between number of

seminars attended and attitude. Therefore, it can be concluded that the number of seminars attended by the teachers does not affect their attitude towards integration of multimedia.

Table 18

Distribution of teachers according to their attitude towards integration of multimedia by the number of seminars related to technology they attended.

Seminars	Attitude						Total	
	Unfavorable		Favorable		Highly Favorable			
	f	%	f	%	f	%	f	%
0-1	6	24.0	11	44.0	8	32.0	25	100
2-3	9	39.1	10	43.5	4	17.4	23	100
4 and above	7	35.0	4	20.0	9	45.0	20	100
Total	22	32.4	25	36.8	21	30.9	68	100

Gamma = 0.017 - weak negative relationship

Relationship between the Seminar and Extent of Integration

negative relationship between the number of trainings attended and the extent of integration of multimedia by the teacher.

The Gamma test yielded the value of - .023 which reflected the result - a weak

Table 19

Distribution of teachers according to their extent of integration of multimedia by the number of seminars related to technology they attended.

Seminars	Extent of Integration						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
0-1	7	28.0	10	40.0	8	32.0	25	100
2-3	7	30.4	8	34.8	8	34.8	23	100
4 and above	7	35.0	6	30.0	7	35.0	20	100
Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.023 - weak negative relationship

Relationship between the Knowledge and Attitude

was a moderate relationship between knowledge and attitude with a value of .368. Therefore, the attitude of the teachers in the integration of multimedia would depend on their knowledge in using the technologies.

The data in Table 20 shows the result of the Gamma test which revealed that there

Table 20

Distribution of teachers according to their attitude towards integration of multimedia by their knowledge about multimedia.

Knowledge	Attitude						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
Low (10-13)	12	57.1	7	33.3	2	9.5	21	100
Average (14-17)	8	26.7	7	23.3	15	50.0	30	100
High (18-20)	2	11.8	11	64.7	4	23.5	17	100
Total	22	32.4	25	36.8	21	30.9	68	100

Gamma = 0.368 - moderate relationship

Relationship between the Knowledge and Extent of Integration of Multimedia

extent of integration of multimedia with a Gamma value of .266. The result supports the Theory of Acceptance Model (TAM) that the knowledge of teachers in technology influenced them to integrate multimedia.

Table 21 shows that there was a weak relationship between the knowledge and

Table 21

Distribution of teachers according to their extent of integration of multimedia by their knowledge about multimedia.

Knowledge	Extent of Integration						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
Low (10-13)	9	42.9	9	42.9	3	14.3	21	100
Average (14-17)	8	26.7	8	26.7	14	46.7	30	100
High (18-20)	4	23.5	7	41.2	6	35.3	17	100
Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.266 – weak relationship

Relationship between skills and attitude

Table 22 revealed that the higher the level of skill, the more favorable attitude they possess. Therefore, the competence of the

teachers in terms of skills in technology could affect their attitude towards its integration in their lessons.

Table 22

Distribution of teachers according to their attitude towards integration of multimedia by their skills in using multimedia.

Skills	Attitude						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
Fair (7-15)	12	70.6	2	11.8	3	17.6	17	100
Good (16-18)	6	20.0	12	40.0	12	40.0	30	100
Very Good (19-20)	4	19.0	11	52.4	6	28.6	21	100
Total	22	32.4	25	36.8	21	30.9	68	100

Gamma = 0.338 – moderate relationship

Relationship between skills and extent of integration of multimedia

The result of this study revealed there was a weak relationship between the skills

and extent of integration derived from the Gamma value .289. Table 23 shows that the higher the level of skill, the higher will be the extent of integration.

Table 23

Distribution of teachers according to their extent of integration of multimedia by their skills in using multimedia.

Skills	Extent of Integration						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
Fair (7-15)	9	52.9	5	29.4	3	17.6	17	100
Good (16-18)	6	20.0	13	43.3	11	36.7	30	100
Very Good (19-20)	6	28.6	6	28.6	9	42.9	21	100
Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.289 – weak relationship

Relationship between attitude and extent of integration of multimedia

The data in Table 24 show that there was a moderate relationship between the attitude and extent of integration as revealed

by the Gamma value of .533. This implies that with more positive attitude, teachers would also have a higher possibility of using multimedia tools in presenting the lesson.

Table 24

Distribution of teachers according to their extent of integration by their attitude.

Attitude	Extent of Integration						Total	
	Low		Moderate		High			
	f	%	f	%	f	%	f	%
Unfavorable	8	36.4	12	54.5	2	9.1	22	100
Favorable	10	40.0	10	40.0	5	20.0	25	100
Highly Favorable	3	14.3	2	9.5	16	76.2	21	100
Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.533 – moderate relationship

Relationship between knowledge and extent of integration controlling for attitude

The result revealed there was a strong relationship among the variables with a

Gamma value of .600. This implies that the unfavorable attitude of the teachers would greatly influence their knowledge and extent of integration.

Table 25

Distribution of teachers according to their extent of integration of multimedia by their knowledge about multimedia controlling for attitude.

Attitude		Extent of Integration						Total	
		Low		Moderate		High			
		f	%	f	%	f	%	f	%
Unfavorable Knowledge	Low	6	50.0	6	50.0	0	0.0	12	100
	Average	2	25.0	4	50.0	2	25.0	8	100
	High	0	0.0	2	100.0	0	0.0	2	100
	Total	8	36.4	12	54.5	2	9.1	22	100
Gamma = 0.600 strong relationship									
Favorable Knowledge	Low	3	42.9	3	42.9	1	14.3	7	100
	Average	3	42.9	3	42.9	1	14.3	7	100
	High	4	36.4	4	36.4	3	27.3	11	100
	Total	10	40.0	10	40.0	5	20.0	25	100
Gamma = 0.154 weak relationship									
Highly Favorable Knowledge	Low	0	0.0	0	0.0	2	100	2	100
	Average	3	20.0	1	6.7	11	73.3	15	100
	High	0	0.0	1	25.0	3	75.0	4	100
	Total	3	14.3	2	9.5	16	76.2	21	100
Gamma = 0.167 weak relationship									
Total Knowledge	Low	9	42.9	9	42.9	3	14.3	21	100
	Average	8	26.7	8	26.7	14	46.7	30	100
	High	4	23.5	7	41.2	6	35.3	17	100
	Total	21	30.9	24	35.3	23	33.8	68	100

Gamma = 0.266 weak relationship

Relationship between skills and extent of integration controlling for attitude

Table 26 presents the relationship between skills and extent of integration

controlling for attitude. The result revealed that over-all, there was a weak relationship among the variables with a Gamma value of 0.289.

Table 26

Distribution of teachers according to their extent of integration of multimedia by their skills in using multimedia controlling for attitude.

Attitude		Extent of Integration						Total	
		Low		Moderate		High		f	%
		f	%	f	%	f	%		
Unfavorable Skills	Fair	7	58.3	5	41.7	0	0.0	12	100
	Good	0	0.0	6	100.0	0	0.0	6	100
	Very Good	1	25.0	1	25.0	2	50.0	4	100
	Total	8	36.4	12	54.5	2	9.1	22	100
Gamma = 0.711 strong relationship									
Favorable Skills	Fair	1	50.0	0	0.0	1	50.0	2	100
	Good	5	41.7	6	50.0	1	8.3	12	100
	Very Good	4	36.4	4	36.4	3	27.3	11	100
	Total	10	40.0	10	40.0	5	20.0	25	100
Gamma = 0.154 weak relationship									
Highly Favorable Skills	Fair	1	33.3	0	0.0	2	66.7	3	100
	Good	1	8.3	1	8.3	10	83.3	12	100
	Very Good	1	16.7	1	16.7	4	66.7	6	100
	Total	3	14.3	2	9.5	16	76.2	21	100
Gamma = 0.074 weak negative relationship									
Total Skills	Fair	9	52.9	5	29.4	3	17.6	17	100
	Good	6	20.2	13	43.3	11	36.7	30	100
	Very Good	6	28.6	6	28.6	9	42.9	21	100
	Total	21	30.9	24	35.3	23	33.8	68	100
Gamma = 0.289 weak relationship									

CONCLUSIONS AND RECOMMENDATIONS

With these results, it is reasonable to conclude that;

1. Most of the teachers were teaching English and Mathematics and they had 6 to 15 years in the teaching service. Most of them had only 0-1 seminar attended in relation to technology.

2. Most of the teachers had average level of knowledge and good level of skills. The most number of teachers had favorable attitude which was in the middle level. The highest percentage in the extent of

integration of multimedia of the teachers was in moderate level.

3. In the learning area and knowledge, there were more teachers who were in the average level. With regards to the skills, there were also more teachers having good level of skills. Teachers with favorable attitude had moderate extent of integration of multimedia.

4. In the length of service and teachers' competence in terms of knowledge and skills, more teachers were just average. Most

of the teachers were also good and had favorable attitude toward the integration of multimedia. They also had moderate extent of integration of multimedia. There were more teachers who had 6 to 15 years of teaching service.

5. For the overall knowledge and skills, most of the teachers had average and good level of skills. Most of them had favorable attitude and moderate extent of integration of multimedia controlling for attitude.

Recommendations

Some of the teachers' characteristics, competence, attitudes, and extent of integration were found to have a relationship depending on different variables tested.

Hence, the foregoing findings, conclusions and implications lead to the following recommendations:

1. To be globally competitive, schools should keep pace with the computer technologies. Lessons should be integrated with these technologies and teachers should have preparation for the use of these technologies.

2. The use of multimedia is mandated to NICS-teachers. In view of this, teachers should be competent in terms of knowledge and skills and develop positive attitude towards integration of multimedia.

3. Department of Education should have a Computer Literacy Program to

address the needs of the teachers in line with the use of multimedia in teaching and to update them with regards to development and changes in the programs which are related to teaching.

4. For a successful implementation on the use of video simulations, it is suggested that schools should have enough facilities and equipment to accommodate all students.

5. The school must conduct an activity or seminars with regards to the usefulness of technology that would encourage the teachers to integrate multimedia in their lessons.

6. Teachers are encouraged to adapt to some changes and innovate strategies in teaching the pupils through the use of multimedia as one of the 21st Century Skills.

7. Based on the results of the study, teachers need to have a basic knowledge and skills in technology that will develop their attitude to embrace technology. Teachers need to be creative in presenting their lesson through the use of multimedia that will capture the attention of the students.

8. Future researchers are encouraged to conduct further study on teachers' extent of integration of multimedia and other factors that may affect its use in the teaching-learning process.

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