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Teachers' Attitude Towards Educational Measurement

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Philippine Normal University

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**TEACHERS' ATTITUDE
TOWARDS EDUCATIONAL MEASUREMENT**

A Special Project

Presented to the

College of Graduate Studies and Teacher Education Research

Philippine Normal University

National Center for Teacher Education

Taft Avenue, Manila

In Partial Fulfillment of the Requirements for the Degree

Master of Education with a Specialization

in Measurement and Evaluation

By

GARCIA, SUZI CHRISTINE EGUSQUISA

OCTOBER 2014

APPROVAL SHEET

This special project entitled **“Teachers’ Attitude towards Educational Measurement”** prepared and submitted by **Suzi Christine Egusquisa Garcia** in partial fulfillment of the requirements for the degree of **Master of Education with Specialization in Measurement and Evaluation**, is hereby recommended for approval and acceptance.

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DEDICATION

I dedicate this research to God, to my loving mother, and to my supportive husband.

ABSTRACT

Name: Garcia, Suzi Christine Egusquisa

Title: Teachers' Attitude towards Educational Measurement

Key Concepts: Teachers' Attitude, Measurement and Evaluation,
Educational Measurement

Degree: Master of Education

Specialization: Measurement and Evaluation

Adviser: Professor Antonio Dacanay

The main objective of this study is to determine teachers' attitude towards educational measurement. There were 180 respondents in this study selected through convenience and purposive sampling. The sample comprised 60 college professors from private and public schools; 60 secondary teachers from private and public schools; and 60 elementary teachers from private schools from Metro Manila, Quezon City, and Rizal.

The 31-item Attitude Towards Educational Measurement Inventory (ATEMI) designed by Bryant and Barnes (1997) and revised by Alkharusi (2011) was utilized as the main data gathering instrument. The ATEMI is divided into three components, (1) *usefulness of measurement to teaching*; (2) *emotional reactions to the quantitative aspects of the measurement course*; and (3) *willingness to take measurement course*

are known as they answered the questionnaire. Statistical analysis utilized mean, standard deviation, independent samples t-test, and one-way analysis of variance.

The following are the major findings of the study: (1) Majority of the private school teachers have neutral attitude towards educational measurement; (2) Majority of the public school teachers have a positive attitude towards educational measurement; and (3) Majority of the elementary, secondary, and tertiary teachers have a positive attitude towards educational measurement.

The study concluded the following: (1) The private school teachers have a neutral attitude towards educational measurement while the public school teachers have a positive attitude towards educational measurement; (2) The public school teachers have a more positive attitude towards educational measurement than private school teachers; (3) The elementary, secondary, and tertiary school teachers have a positive attitude towards educational measurement; and (4) The elementary teachers, secondary teachers and tertiary school teachers have shown concurrence in their attitude toward educational measurement in terms of usefulness of measurement to teaching and willingness to take more courses in measurement except in the emotional reactions to the quantitative aspects of the measurement course. The secondary school teachers have a more positive attitude than tertiary school teachers when it comes to emotional reactions to the quantitative aspects of the measurement course.

Based on the results of this study, the researcher recommends a Capability Building Program to improve the attitude of the teachers towards educational measurement intended for the following:

(1) School Administrators especially in private schools and tertiary level to conduct seminars, workshops, and trainings on measurement, testing and evaluation to improve the attitude of teachers towards Educational Measurement; (2) Schools to invite speakers from private and professional organizations that foster the promotion in the rich role of educational measurement, assessment and evaluation such as Center for Educational Measurement (CEM), Asian Psychological Services and Assessment Corporation (APSA), and Philippine Educational Measurement and Evaluation Association (PEMEA); (3) Teachers with negative attitude towards educational measurement to take additional courses to schools that offer measurement and evaluation for further studies and give scholarships grants for teachers that are interested in measurement and evaluation; and (4) Future researches to conduct a similar study using teachers from rural areas as participants and compare the results to this study.

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Chapter 1

THE PROBLEM AND ITS BACKGROUND

Introduction

Attitude means the individual's prevailing tendency to respond favorably or unfavorably to an object such as person, institutions or events. Attitude can be positive values or negative prejudices, but they can also be uncertain at times. For example, one might have mixed feelings about a particular person or issue. Social psychologists identify three components of the responses: *cognitive component* which is the knowledge about an attitude object, whether accurate or not; *affective component* which is the feelings towards the object; and *conative or behavioral component* which is the action taken towards the object (Smith, E. R. & Mackie, D. M., 2007).

Teachers' attitude is important for understanding and improving educational processes. It is closely linked to teachers' strategies for coping with challenges in their daily professional life and to their general well-being, and in shaping students' learning environment and in influencing student motivation and achievement. (Creating Effective Teaching and Learning Environment: First Results from TALIS, 2009). The focus of this research is the attitude of teachers towards educational measurement, which might influence a teacher's behavior regarding measurement in the classroom and teacher's willingness to attend measurement courses in the future.

This is particularly relevant in the preparation of teachers since positive attitudes towards educational measurement would help them understand its usefulness in assessing and evaluating their students' performances.

Notably, strong knowledge and skills in educational measurement are necessary for sound classroom assessment practices. However, many teachers have undesirable attitude about educational measurement as a subject, which becomes a hindrance for effective classroom assessment practices. Attitude has been defined as a summary evaluation of an object of thought (Bohner & Wänke, 2002). Researchers have long identified that pre-service teachers' attitude towards academic subject may determine their willingness to use the subject in their future profession (Auzmendi, 1991; Gal, Ginsburg, & Schau, 1997 as cited in Alkharusi 2011). Which is the reason why Alkharusi (2011) studied about the attitude of pre-service teachers towards educational measurement. The same principle applies to in-service teachers whose attitude towards educational measurement as a subject is currently influencing their application to their teaching profession. In this study, importance is placed on teachers' attitude towards educational measurement.

In the Philippines, teacher education programs require successful completion of an educational measurement course for teacher certification. The goal of this course is to have future teachers develop knowledge and skills related to measurement and testing that deemed essential to their prospective profession as teachers (Mertler & Campbell, 2005). Since attitudes may explain and predict

behaviors, it seems reasonable to argue that attitude of teachers towards educational measurement may influence the amount of efforts devoted in learning materials related to measurement and testing, hence, their attitudes are likely to determine whether they will use the material from the course in their profession as teachers. Thus, there has been an increased interest in studying attitude towards educational measurement (Alkharusi, 2011).

For example, Alkharusi (2011) cited a study of 188 upper-division undergraduate students done by Kushner, Carey, Dedrick, and Wallace (1995). They investigated changes in pre-service teachers' beliefs about the relevance of a required course in educational measurement and tests to the teaching profession and their confidence in performing classroom assessment-related tasks. The authors found that prior to and throughout the course, pre-service teachers' beliefs about the relevance of the course were positively related to their sense of confidence. Similarly, Alkharusi (2011) cited a study done by VanZile-Tamsen and Boes (1997). They examined attitudes and anxiety of 21 pre-service teachers toward a mandatory graduate course in tests and measurement using a retrospective rating scale of open-ended questions. The authors found that regardless of when they take the course in their program, teachers are likely to view it as difficult and thereby feel anxious about it. This suggests that teachers' attitude towards educational measurement deserve recognition and investigation.

The need of studying the attitude of teachers towards educational measurement is evident because by this, we can see if the teachers have a positive or negative attitude towards educational measurement. Firstly, since “attitude can influence the amount of efforts devoted to application in teaching in relation to measurement and testing” (Alkharusi, 2011), the researcher may recommend the level (elementary, secondary, and tertiary) and the type of school (public and private) that need more attention to improve the teachers’ attitude in educational measurement. Secondly, it was also emphasized by Alkharusi (2011) that attitudes are likely to determine whether these teachers will use the material from the measurement course taken to their profession as teachers. The results can be the basis for a decision of exposing teachers to more training or courses regarding educational measurement such as Measurement and Evaluation. The researcher could recommend to school administrators for possible programs that will improve the attitude of the teachers towards educational measurement which will result into good practices in classroom assessment, measurement and evaluation.

The researcher has decided to pursue this study because the results of this research can be a catalyst of informing the administrators that there is an urgent need to address the improvement of the classroom measurement and evaluation by focusing on cultivating teachers’ positive attitude towards educational measurement; thus, the effective attitudes and actions employed by teachers ultimately can make a positive difference on the learning and performance of their students. This belief will serve as the central focus of this paper.

Conceptual Framework

Attitude

Attitude is a central part of human identity. Everyday people love, hate, like, dislike, favour, oppose, agree, disagree, argue, persuade etc. All these are evaluative responses to an object. Hence attitudes can be defined as a summary evaluation of an object of thought (Bohner & Wänke, 2002). They are inclinations and predispositions that guide an individual's behavior and persuade to an action that can be evaluated as either positive or negative (Rubinstein, 1986 as cited in Alkharusi, 2011). Attitudes develop and change with time. According to Multicomponent Model of Attitude (Eagly & Chaiken, 1993 as cited in Colin, 2011), attitudes are influenced by three components: *cognitive* (beliefs, thoughts, attributes); *affective* (feelings, emotions); and *behavioral information* (past events, experiences) (G. Maio, G. R. Maio, & Haddock, 2010).

This framework explains the approach that the researcher used in this study. The figure shows that the researcher looked into the attitude of the teachers towards educational measurement. The concept and beliefs have influenced their attitudes which affect their behavior in the classroom and even how they make and conduct testing. Indeed, understanding the teachers' attitude towards educational measurement is essential in improving professional practices. The teachers' attitude is divided into three components: (1) *usefulness of measurement to teaching*; (2) *emotional reactions to the quantitative aspects of the measurement course*; and (3) *willingness to take measurement course* will be known as they answer the

questionnaire. Since attitudes may explain and predict behaviors, in turn, the attitudes of teachers toward educational measurement may influence the amount of efforts devoted in learning materials related to measurement and testing.

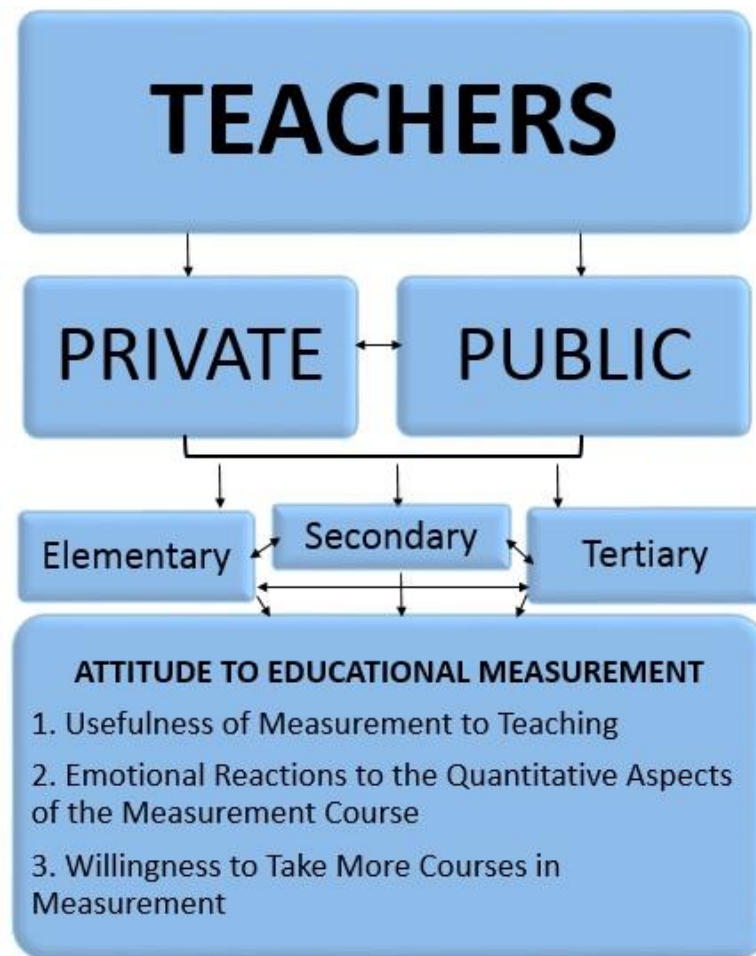


Figure 1.The Conceptual Paradigm

The boxes at the middle connected to the box at the bottom show that the researcher had chosen to investigate attitude of teachers from all levels (elementary, secondary, and tertiary) from two types of schools (private and public). It also shows

that all teachers across levels and all types of schools are compared to determine which group has more positive or negative attitude towards educational measurement.

After determining the attitude of teachers towards educational measurement and comparing it according to type of school and across levels, the researcher recommended a Capability Building Program to improve teachers' attitude towards it. From the results, the researcher determined which group of teachers is supposed to have more exposure in programs regarding educational measurement. Expectedly, the groups that are more likely to have negative attitude should have more trainings than those who have more positive attitude. The researcher suggests to school administrators to develop programs such as inviting speakers to their respective schools to talk about topics regarding measurement and evaluation. Through this, they will be given more exposure to this topic and might improve their attitude towards it. The researcher is also encouraging teachers with poor attitude to take additional courses about measurement and evaluation. Through this, the teachers may realize that acquiring more knowledge in educational measurement will make them more confident in using it to improve their teaching skills. As a result, their attitude towards educational measurement will definitely improve.

Statement of the Problem

This study aims to determine the attitude of teachers towards educational measurement. Specifically, it seeks to answer the following research questions:

1) What is the attitude of private and public school teachers towards educational measurement in terms of the following?

- a. Usefulness of Measurement to Teaching
- b. Emotional Reactions to the Quantitative Aspects of the Measurement Course
- c. Willingness to Take Courses in Measurement

2) Is there a significant difference between the attitudes of public and private school teachers towards educational measurement in terms of the aforementioned components?

3) What is the attitude of teachers towards educational measurement in terms of usefulness of measurement to teaching, emotional reactions to the quantitative aspects of the measurement course, willingness to take courses in measurement when grouped according to the following level?

- a. Elementary
- b. Secondary
- c. Tertiary

4) Is there a significant difference in the attitude towards educational measurement among the elementary, secondary, and tertiary teachers?

Significance of the Study

Assessment as part of the measurement courses can be a powerful tool in making improvements in educational systems (Koh, 2011). Yet, its effectiveness depends on teachers' attitudes and practices due to the continual interaction between its dimensions (Calderhead, 1999 as cited in Alkharusi, 2012).

1. *Teachers*

Teachers are the one of the biggest stakeholders in understanding their attitude towards educational measurement. They themselves should be aware of what the overall attitude of teachers towards it and how it will affect their classroom practices. This study will give them a chance to assess themselves in terms of their personal behavior in the different aspects of educational measurement. This will also give them an idea how other teachers feel about the educational measurement. From this, they may realize the importance of having a positive attitude towards it and they may be encouraged to enroll more courses and attend trainings and seminars in measurement and evaluation.

2. *School Administrators*

Since there is a need to fully understand teachers' attitude about educational measurement, school administrators may determine which group of teachers needs more attention from the result of this study. The results can be the basis for a decision of exposing teachers to more training or courses regarding educational measurement. The researcher recommends school

administrators to develop possible programs needed to improve the attitude of the teachers towards educational measurement which will result into good practices in classroom assessment, measurement and evaluation. The present study aimed at addressing this need.

3. *Students*

In the Philippines, there has been a great concern about the low achievement of students in standardized tests such as National Achievement Test (NAT). The improvement of students' academic performance is considered essential for the country to be competitive internationally. These concerns for international competitiveness have promoted a search for means to enhance teachers' assessment practices. The need of improving the students' score in national tests is being addressed by improving teachers' practices related to measurement and evaluation as a result of a Capability Building Program recommended by the researcher. As a result, teachers will give tests to students that will develop their testing skills in preparation of the standardized national tests.

4. *Other Schools Stakeholders*

The researcher hopes to encourage graduates and professionals to consider doing researches on measurement and evaluation in Philippine Education. This aims to trigger the interest of administrators, teachers, and

teacher education students to be involved and be aware of the importance of educational measurement in the Filipino classrooms. In turn, these actions will encourage more teachers to evaluate their students in a right way.

Scope and Delimitations of the Study

Using representative data from public and private schools, in all levels (elementary, secondary and tertiary) of six (6) campuses, this research presents attitude of teachers towards educational measurement. Differences between the attitude of private and public school teachers and variances among the attitudes of teachers from elementary, secondary and tertiary level will be shown.

The scope of this study is limited to teachers in selected schools in Metro Manila, Quezon City, and Rizal in the Philippines, during school year 2013 - 2014. This study involves thirty (30) elementary, thirty (30) secondary, thirty (30) tertiary teachers from public schools and (30) elementary, thirty (30) secondary, thirty (30) tertiary teachers from private schools equivalent to one hundred eighty (180) teachers. The study solely covered the attitude of the teachers towards educational measurement. The researcher used questionnaires to gather the data needed.

The use of convenience sampling limited the ability to generalize the results of the study to a larger population. This study is limited by teachers' recollections of

their behavior and attitude towards educational measurement; however, it is assumed that the participants responded to the survey as honestly as possible.

Definition of Terms

The following are the terms and concepts used and defined operationally and conceptually in this study.

Attitude: It is an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's belief or opinion about the referent (Garner, 1985b as cited in Alkharusi 2011). As used in the study, attitudes refer to prejudices and convictions of the teachers about educational measurement.

Assessment: The process of collecting information purposefully using different methods/strategies and tools for the purposes of informing decision.(Oxford Dictionary) In this study, it is any systematic method of obtaining information from tests and other sources, used to draw inferences about characteristics of people, objects, or programs. Assessment aids educational decision-making by securing valid and reliable information from multiple sources of evidence (combinations of performance, products, exhibits, discourse, tests, etc.) and integrating this information in order to judge whether students have learned what is expected.

Assessment Practice: A manner of conducting assessment for instance observation and diagnostic interviews. Classroom assessment is any planned method or strategy used in the classroom to establish the level of students' difficulties or understanding of a particular concept or idea with the purpose of helping students to succeed in learning (Ainscow, 1988; Pophan 1999 as cited in Susuwele-Banda, W.J., 2005). In this study, assessment practices are typically initiated by the classroom teacher. The overall sense or meaning that students make out of the various assessment tasks constitutes the classroom assessment environment (Brookhart & De Voge, 1999 as cited in Alkharusi 2013).

Educational Measurement: It is the application of a standard scale or measuring tool to determine the degree to which educationally-valuable knowledge, skills, and abilities have been acquired. According to the National Council on Measurement in Education web site, this includes theory, techniques, and instrumentation available for measurement of educationally relevant human, institutional, and social characteristics. We measure to obtain information, and such information may or may not be useful, depending on the accuracy of the instruments, and the skillful manner with which they are used. (Shute, V. & Zapata-Rivera D. Educational Testing Service, 2007)

Attitude in Educational Measurement: It is the attitude of teachers towards educational measurement as a course in teacher education. Attitudes of teacher

education toward educational measurement may influence the amount of efforts devoted in learning materials related to measurement and testing, and that their attitudes are likely to determine whether they will use the material from the course in their profession as teachers. (Alkharusi, 2011)

Chapter 2

REVIEW OF RELATED LITERATURE

This chapter presents the reviews made on literature and studies, foreign and local, related to the present study. It is divided into two parts: Related Literature and Related Studies.

Related Literature

Garner's concept of attitudes is rather complex. According to him, attitude is an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's belief or opinion about the referent (Garner, 1985b as cited in Alkharusi, 2011). Attitudes are evaluative response to the environment, ideas, objects, and other people (Min, 1998 as cited in Chiu, 2003).

Individuals express their attitude through speech and behavior only when they perceive the object of the attitude. Attitudes can be described by their *context* (what the attitude is about), *their direction* (positive, neutral, or negative feelings about the object or issue in question), and *their intensity* (an attitude may be held with greater or lesser vehemence) (Frankfort-Nachmias and Nachmaias, 1996 as cited in Chiu, 2003). Thus, attitudes refer to inclinations, prejudices, ideas, fears, and convictions about any specific topic.

The teachers' concept and beliefs have influenced their attitude which affect their behavior in the classroom and even how they conduct their assessment. Indeed,

understanding the teachers' attitude towards educational measurement is essential in improving professional practices. It would also help the administrators in developing standards in measurement and evaluation practices.

Because attitudes and beliefs are deeply ingrained and often unconsciously held, changing these attitudes towards educational measurement can be very difficult (Santos, 2009). According to Hunzicker (2004), "Changing a teacher's beliefs and attitude requires that new information be presented repeatedly over time, to the point that the person begins to feel imbalance between current attitude and new information towards a certain topic". This is where professional development programs enter the picture. Through professional development, we have the opportunity to present information about a particular subject, model it in action, giving teachers the opportunity to practice using it, hopefully resulting in changed attitudes and beliefs about educational measurement. Professional development is particularly effective when it does not focus solely on the subject, but it also focuses on teachers' attitudes and beliefs around that particular subject (Hunzicker, 2004). That is the reason why after determining the attitude of teachers towards educational measurement, the researcher recommended a Capability Building Program to improve teachers' attitude towards educational measurement. After determining which group of teachers needed to be given more attention, they will be recommended to undergo more trainings and seminars about topics regarding measurement and evaluation. By this, they will be given more exposure to this topic and might improve their attitude towards educational measurement. They will also be encouraged to take additional courses

about measurement and evaluation so that they may realize that acquiring more knowledge in this course will lessen their anxiety and be more confident in using educational measurement techniques to improve their teaching practices.

Measurement and evaluation is the primary element of any education process in pursuit of quality in education (Ozan, A. & Kose, E., 2013). The main purpose of measurement and evaluation is to assess and to improve the quality of the education (Linn & Gronlund, 1995 as cited in Ozan, A. & Kose, E., 2013). Positive attitude towards measurement and evaluation, which is an integral part of primary and secondary schools in open educational systems, is unquestionably one of the substantial qualities that the teachers should have in the teacher training institutions. According to Mertler (2009), it is the responsibility of the teachers to evaluate students' learning. However, preparing the assessment tools for the class takes much time of the teachers which is one of the reasons why some teachers have a negative attitude towards measurement and evaluation as a course (Alkharusi, Kazem, & Al-Musawi, 2011; Popham, 2006). Aside from all other responsibilities to be done as teachers, they have to devote themselves preparing reliable and valid measures. Also, one of the reasons why teachers have negative attitude towards measurement and evaluation course is because educational measurement contains mathematical processes that make them perceive it as a hard subject. But, Ozan, A. & Kose, E. (2013) stated that education is an important tool to change attitudes which is the reason why this study is giving importance of encouraging in-service teachers to take more courses and attend more seminars and trainings about measurement and

evaluation not only to improve their knowledge but also to improve their attitude towards educational measurement.

Based on these readings, it is vital to improve attitude towards the educational measurement courses. Teaching practices related to measurement are directly influenced by the teachers' attitude towards educational measurement. Therefore, there is a need to fully understand teachers' attitude about educational measurement and determine which group of teachers needs more attention. Notably, the results can be the basis of a decision of exposing teachers to more training or courses regarding educational measurement if necessary. This would also help the teacher training institutions to improve the measurement and evaluation courses curriculum of pre-service teachers. The attitude of in-service teachers towards educational measurement is clearly the product or simply the effects of what they have learned and what they have not learned in their measurement and evaluation courses in college level.

Research Studies

Teachers are required to develop classroom assessment that are aligned with practices recommended by experts of educational measurement. Unfortunately, findings from the past and recent studies of measurement and evaluation have consistently expressed a concern about the adequacy of teachers' assessment practices (e.g., McMillan & Lawson, 2001; Zhang & Burry-Stock, 2003). These studies have showed that there are some contradictions between teachers' practices and recommendations of educational measurement experts regarding issues of classroom

assessment. This lack of agreement between teachers' practices and experts' suggestions has been attributed to teachers' knowledge and attitudes about educational measurement. This study is focused on determining the attitudinal aspect of teachers towards educational measurement.

Several studies have examined teachers' knowledge, attitudes, and practices about educational measurement. Ogan-Bekiroglu (2009) concluded that teachers' knowledge and attitudes related to educational measurement should be taken into account when introducing reforms in the educational systems. However, teaching load and other school responsibilities could cause conflicts between teachers' educational measurement beliefs and attitude in that the teachers do not always have time to enact all of the practices that align with their beliefs about educational measurement. Recent studies have also confirmed the importance of attitude towards educational measurement, self-perceived competence in educational measurement, assessment training, gender, and majorship when considering teachers' educational measurement. For example, in a survey of 288 teacher candidates enrolled in a teacher education program in Canada, DeLuca and Klinger (2010) found that teacher candidates who selected to enroll in a measurement evaluation course had higher levels of confidence in educational measurement knowledge and skills than those who did not have formal instruction in educational measurement.

Alkharusi (2011) cited a study of 188 upper-division pre – service teachers done by Kushner, Carey, Dedrick, and Wallace in 1995. They investigated changes in their beliefs about the relevance of a required course in educational measurement and

tests to the teaching profession and their confidence in performing classroom assessment-related tasks. The authors found that prior to and throughout the course, pre-service teachers' beliefs about the relevance of the course were positively related to their sense of confidence. Similarly, another study was cited by Alkharusi (2011) done by VanZile-Tamsen and Boes (1997). They examined attitudes and anxiety of 21 pre-service teachers toward a mandatory graduate course in tests and measurement using a retrospective rating scale of open-ended questions. The authors found that regardless of when they take the course in their program, they are likely to view it as a difficult course and thereby feel anxious about it. This suggests that teachers' attitudes toward educational measurement deserve recognition and investigation.

In the Philippines, like in other countries, "teacher education programs require successful completion of an educational measurement course for teacher certification" (Campbell, Murphy, & Holt, 2002). The goal of this course is to have pre-service teachers develop knowledge and skills related to measurement and testing that are deemed essential to their prospective profession as teachers (Mertler & Campbell, 2005).

The advancement of educational measurement evaluation in higher education in the Philippines has been heavily influenced by its colonial history and is described to be multidisciplinary (Magno C. & Gonzales R., 2010). Measurement and evaluation are essentially used formally and informally in all colleges and universities that explain it as being part of the higher education system such as decision making, creating and continuance of progress (Magno C. & Gonzales R., 2010).

In 2010, Magno and Gonzales studied the history of measurement and evaluation in education entitled, “Measurement and Evaluation in the Philippine Higher Education: Trends and Development” noted that much of the development in Measurement and Evaluation in the Philippines in terms of theory, training, development of experts, and programs originated in higher education institutions. They also noted that there are not many universities in the Philippines that offer specialized training on educational measurement and evaluation. These trainings and professional development are offered as tracks or majors in masters and doctorate degree in universities in the National Capital Region (Magno C. & Gonzales R., 2010). These programs are offered usually under the psychology department or programs under the college of education. The De La Salle University in Manila was the first university to offer a master’s program in educational measurement and evaluation in 1986. The programs within educational measurement and evaluation are offered in the De La Salle University (DLSU), Miriam College, and Philippine Normal University (PNU). On top of degree granting institutions like universities and colleges, also other institutions advocate training, development and research in line with educational measurement and evaluation. According to the study (Magno C. & Gonzales R., 2010), there are two private institutions in the country offer training and development in educational measurement – the Center for Educational Measurement (CEM) and the Asian Psychological Services and Assessment Corporation (APSA) and only one professional organization in the Philippines that fosters the promotion

and advocacy in the rich role of educational assessment specialist in the country, the Philippine Educational Measurement and Evaluation Association (PEMEA).

Based on these studies, the knowledge and attitude of the teachers towards educational measurement should be considered when introducing reforms educational systems. This study would give the school administrators and curriculum developers a statistical data of teachers' attitude towards educational measurement when they plan to introduce changes in educational system. It is also noted that teachers in other countries viewed measurement and evaluation as a difficult course and feel anxious about its mathematical components. This study would also check if the mathematical components of measurement and evaluation affected the Filipino teachers' feelings about it. Researches also inferred that Philippines has a dearth in institutions that offer training and specialization in measurement and evaluation. The results of this study would determine if there is a need to add more institutions that offer training and courses in measurement and evaluation. By this, we could address if there is a need for more schools offering the said course. The school administrators of group with negative attitude towards educational measurement can ask the help of the experts from CEM, APSA, and PEMEA to conduct trainings, seminars regarding measurement and evaluation in education.

Chapter 3

THE RESEARCH METHODOLOGY

This chapter presents the methods and procedures the researcher has undergone in the conduct and completion of the study. Specifically described hereunder are the research design used, the participants involved, the sampling technique used, and the statistical treatment applied to analyze the gathered data.

Research Design

This study employed descriptive correlational study. Descriptive studies are aimed at finding out "what is," so observational and survey methods are frequently used to collect descriptive data (Creswell, 2003). Correlational research describes what exists at the moment (conditions, practices, processes, structures etc.) and is therefore, classified as a type of descriptive method. Correlational research consists of collecting data to determine whether, and to what extent, a relationship exists between two or more quantifiable variables.

The researcher used quantitative survey research methodology to answer the questions. A survey is used to collect data in this study. As Fink (2006) explained, "Surveys are information collection methods used to describe, compare, or explain individual and societal knowledge, feelings, values, preferences, and behavior". It describes the nature of a situation as it exists at the time of the study and explores the causes of particular phenomena.

Quantitative research method is the most appropriate method to be used in this study because the survey involves a convenience sample so that the data will be collected and analyzed fairly quickly. Secondly, this can provide reliable or repeatable direction for planning programs and messages.

The researcher aimed to survey the teachers' attitude from selected schools across all levels in educational measurement using a questionnaire. After acquiring permission from the school administrations, a survey was conducted to know the attitude of the teachers. Considering all these, the treatment of the data is quantitative.

Respondents of the Study

Textbooks for introductory statistics courses commonly use a sample size of thirty (30) as a lower bound for large-sample inference about the mean of a quantitative variable (Creswell, 2002; Abao, 2009). The participants in this study were thirty (30) elementary, thirty (30) secondary, thirty (30) tertiary teachers from public school and (30) elementary, thirty (30) secondary, thirty (30) tertiary teachers from private school with one hundred eighty (180) teachers as respondents. The participants were teaching both general and professional subjects in tertiary and basic education in elementary and secondary level.

	Public School		Private School	
	<i>No. of Teachers</i>	<i>Percent</i>	<i>No. of Teachers</i>	<i>Percent</i>
Elementary	30	16.67%	30	16.67%
Secondary	30	16.67%	30	16.67%
Tertiary	30	16.67%	30	16.67%

Sampling

The method of sampling used by the researcher is convenience sampling because the survey was distributed directly to known participants (Creswell, 2003). Convenience sampling is regularly used in exploratory research to collect data that are generally representative of the population being studied. This method is often used during preliminary research efforts to get a gross estimate of results, without incurring the cost or time required to select a random sample (StatPac, 2007). Since the researcher had limited time to use random sampling, she decided to use convenience sampling as a selection technique.

Convenience sampling allows researchers to collect data within given time periods and under particular conditions. As a result, the target population may not be sufficiently represented by the study sample, which limits a researcher's ability to generalize results. This means that those selected for the study will only partially represent the population being investigated; therefore, it may be necessary to repeat the study to validate the results (Keppel & Zedeck, 2001). Despite its flaws, convenience sampling is the best method of obtaining a sample population when time and conditions prevent random sampling (Neuman, 2003). This study might successfully measure what needs to be measured, but this might not generalize the greater population of teachers and students.

The respondents were teachers coming from private and public schools to determine and compare the attitude of teachers from two types of schools. The

respondents were also composed of teachers from elementary, secondary and tertiary level to see and compare the attitude of teachers across levels. The researcher also opted to choose college professors that were not teaching in a teacher training institute. The reason behind this is that college professors in teacher training institutes such as Philippine Normal University and National Teachers College are most likely have a positive attitude towards educational measurement because they are teaching the principles and importance of measurement in the classroom. This manner of selection technique is called purposive sampling.

Instrumentation

A self-report questionnaire of two parts was used in this study. The first part was about background and demographic data of the participants including their gender, number of years of teaching experience, and the name of school they are currently teaching in. Teachers were not asked to give their real identity to secure their honesty in answering the questions. The second part is about their attitude towards educational measurement.

Attitude towards Educational Measurement Inventory (ATEMI)

To adequately determine the attitudes of teachers towards educational measurement, Bryant and Barnes (1997) developed a 31-item scale called Attitude toward Educational Measurement Inventory (ATEMI) (see Appendix A). There has been an increased interest in utilizing the ATEMI to understand attitudes of teachers

toward educational measurement (e.g., Alkharusi, 2009; Ibrahim & Al-Mehrzi, 2008). However, the measurement properties of this measure have not been explored statistically that is why Alkharusi (2011) conducted a study reporting on the validity and reliability of the ATEMI for teacher education.

This questionnaire containing 31 items is adapted from the revised Bryant and Barne's Attitude toward Educational Measurement Inventory (Alkharusi, 2011d). Alkharusi (2011) made a study to establish the reliability and validity of the questions. It consisted of 14 positively worded items and 17 negatively worded items. The items were divided into three subscales: (a) usefulness of measurement to teaching (13 items); (b) emotional reactions to the quantitative aspects of the measurement course (10 items); and (c) willingness to take more courses in measurement (8 items). Responses were obtained on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scoring of the negative items was reversed so that a high score reflected a more positive attitude towards educational measurement. An individual's attitude towards educational measurement was represented by an average rating score across all the items. In this study, content validity was verified by four professors in the educational measurement and psychology from Sultan Qaboos University, where Alkharusi(2011) conducted his study in Reliability and Validity of the Attitude Toward Educational Measurement Inventory (ATEMI). Biographical information collected included self-reported gender, age, majorship, and university identification number.

Reliability and Validity

The results of Alkharusi's study in 2011 indicated that the ATEMI reliably measures three distinct, yet related aspects of student attitudes toward educational measurement: (a) usefulness of measurement to teaching; (b) emotional reactions to the quantitative aspects of the measurement course; and (c) willingness to take more courses in measurement (Alkharusi, 2011). Also, the results revealed three clusters of pre-service teachers based on their attitudes toward educational measurement. The clusters were found to be statistically distinct with regard to their attitudes toward and academic achievement in educational measurement (Alkharusi, 2011). In addition, the results of the study confirmed the importance of teachers' attitudes toward educational measurement in predicting academic achievement in the course.

To examine the construct validity of the ATEMI's scores, a Confirmatory Factor Analysis (CFA) was first used to evaluate the dimensionality of the ATEMI. The results suggest that the three-factor model represents a good fit to the responses of the participants to the 31-ATEMI items. The factor loadings ranged from .45 to .75 for the first factor, from .43 to .90 for the second factor, and from .46 to .98 for the third factor. The factors were positively related to each other with correlation coefficients ranging from .46 to .64. All factor loadings and factor intercorrelations were statistically significant, $ps < .05$.

Data Gathering Procedures

Acquiring Permission

Letters of request were given to the office of the administration of schools involved requesting to collect data from the teachers. The participants were informed that a study is being conducted to investigate teachers' attitude towards educational measurement. The teachers were also informed that they were not obligated to participate in the study; if they wished, their responses would remain anonymous and confidential.

Conducting the Survey

Those who wished to participate in the study were provided a cover letter (*See Appendix C*) and the questionnaire along with brief instructions about the information that was requested in the questionnaire, how to respond to the items, and where to find directions that were also included both on the cover letter and the questionnaire. The researcher asked the teachers to answer the questionnaires after faculty meetings or accomplish them during their break time. The participants took around twenty minutes to complete the questionnaire.

Collecting the Questionnaires

Some of the questionnaires were not collected on the same date it was given because of time constraints and other priorities of the teachers. To give the teachers more time to answer carefully, the researcher gave them two to three days to accomplish the survey. The questionnaires were collected from the grade level coordinators after the teachers had finished answering.

Statistical Data Analysis

The data were analyzed using frequencies, percentages, means, and standard deviations. Independent samples t-test and One-way Analysis of Variance were applied in determining the significance of the mean differences.

Weighted Mean. This tool was used to determine the average response of the teachers in the items of the questionnaires, consequently determining the attitude of the teachers toward educational assessment.

Standard Deviation. This was used to find out how dispersed the scores of the respondents in the attitude scale were. In the study, it was used to determine the diversity of the educational assessment attitude of the teachers.

Independent Samples t-test. This tool was used to determine the significance of the mean difference between two independent groups. In this study, it was used to find out if a significant difference exists between the private and public school teachers' attitude towards educational assessment.

One-way Analysis of Variance. This tool was used to determine the significance of the mean difference between three or more independent groups. In this study, it was used to find out if a significant difference exists among the elementary, secondary and tertiary teachers' attitude towards educational measurement.

The null hypotheses were tested at alpha 0.05 level of significance. Data were processed with the aid of computer software, specifically the Statistical Package for

the Social Sciences (SPSS) Version 15. SPSS is comprehensive statistical software that contains a broad range of statistics used in computing electronic research data.

The following scale was used in interpreting the attitude of the respondents toward educational measurement (Abao, 2009):

Scale	Range	Response	Descriptive Rating
5	4.20-5.00	Strongly Agree	Very Positive Attitude
4	3.40-4.19	Agree	Positive Attitude
3	2.60-3.39	Neutral	Neutral Attitude
2	1.80-2.59	Disagree	Negative Attitude
1	1.00-1.79	Strongly Disagree	Very Negative Attitude

Chapter 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the findings of the study based on the gathered data. The results were shown in tabular forms for a quick grasp of the findings. In-depth analysis and interpretation of each table were also provided.

Research Question 1: What is the attitude of private and public school teachers towards educational measurement in terms of the following?

- a. Usefulness of Measurement to Teaching***
- b. Emotional Reactions to the Quantitative Aspects of the Measurement Course***
- c. Willingness to Take Courses in Measurement***

Educational Measurement Attitude of Private School Teachers

The first objective of the study was to describe the educational measurement attitude of the teachers in private schools. Results are presented in tables 1 to 4, followed by the corresponding analysis and interpretation.

Table 1 presents the attitude of the private school teachers toward educational measurement as to its usefulness of measurement to teaching. Apparently, the respondents have a positive attitude with respect to the usefulness of educational measurements of the teaching profession which reflected in the overall weighted

mean of 3.68 with a standard deviation of 0.34. The weighted mean of 3.68 indicates that the private school teachers have a positive attitude toward educational measurement as to usefulness of measurement to teaching. This signifies that they perceive educational measurement as essential and beneficial to teachers. This also confirms the results of the Alkharusi's (2011) study that teachers have positive views about educational measurement.

Table 1: Private School Teachers' Attitude towards Educational Measurement in Terms of Its Usefulness of Measurement to Teaching

Usefulness of Measurement to Teaching	Mean	Attitude
<i>*1. Measurement training is not really useful for most teachers.</i>	3.94	<i>Positive</i>
<i>*2. I see no value in measurement.</i>	3.94	<i>Positive</i>
<i>*3. Studying measurement is a waste of time.</i>	3.76	<i>Positive</i>
4. A good teacher must have enough background in measurement.	3.89	Positive
5. Most teachers would benefit from taking a measurement course.	3.27	Neutral
6. Measurement will be useful to me in my profession.	4.03	Positive
7. I am excited at the prospect of actually using measurement in my field.	3.73	Positive
<i>*8. I have difficulty seeing how measurement relates to my field of study.</i>	3.34	<i>Neutral</i>
9. Measurement is an inseparable aspect of teaching.	3.66	Positive
<i>*10. A measurement course should not be required.</i>	2.92	<i>Neutral</i>
11. Measurement is an excellent tool for teaching.	3.78	Positive
<i>*12. Measurement is not really useful because it is seldom used in a school setting.</i>	3.76	<i>Positive</i>
13. Measurement is a valid way to evaluate student's learning.	3.87	Positive
Attitude	f	%
Very Positive	6	6.67
Positive	65	72.22
Neutral	19	21.11
Total	90	100.00
Overall Weighted Mean= 3.68 (Positive)		
Standard Deviation= 0.34		

Note:

* Reversely scored

Additionally, this is substantiated by the weighted mean in the specific items under usefulness of measurement to teaching. As shown, the respondents answered *agree* to 6 out of 7 positively-worded items. This just shows how the teachers put value on the importance of educational measurement. They are most agreeable to the statements “measurement will be useful to me in my profession” (4.03); “A good teacher must have enough background in measurement (3.89); and “measurement is a valid way to evaluate students learning” (3.87). This means that the respondents believe that teachers should have adequate knowledge in measurement. Teachers need to be proficient in constructing measurement tools to evaluate the academic performance of their students.

With regard to the negatively-stated items, the private school teachers answered *disagree* in 4 out of 6 indicators while being neutral in 2 statements. As shown, they are most disagreeable to the statements “measurement training is not really useful for most teachers” (3.94) and “I see no value in measurement” (3.94). This means that the teachers recognize the importance of educational measurement.

The standard deviation of 0.34 indicates that majority of the private school teachers got scores ranging from 3.34 (neutral) to 4.02 (positive) which is reflected as well in the frequency distribution, whereby majority (72.22%) of the respondents have positive attitude towards educational measurement as to its usefulness of measurement to teaching.

Table 2: Private School Teachers' Attitude towards Educational Measurement in Terms of Their Emotional Reactions to the Quantitative Aspects of the Measurement

Emotional Reactions to the Quantitative Aspects of the Measurement Course	Mean	Attitude
<i>*14. Just thinking of taking a measurement course scares me.</i>	3.77	<i>Positive</i>
<i>*15. I feel insecure in a measurement course.</i>	3.81	<i>Positive</i>
<i>*16. I feel intimidated when I have to deal with mathematical formulas.</i>	2.53	<i>Negative</i>
<i>*17. I do not like measurement because I have to deal with math.</i>	2.38	<i>Negative</i>
18. I feel at ease with math, so I feel comfortable with measurement.	2.33	Negative
<i>*19. Measurement is too mathematically oriented for me to use effectively.</i>	2.73	<i>Neutral</i>
<i>*20. When I hear the word measurement, I feel frightened.</i>	3.53	<i>Positive</i>
<i>*21. Measurement is very difficult.</i>	3.63	<i>Positive</i>
<i>*22. Being enrolled in a measurement course is an unpleasant experience.</i>	3.68	<i>Positive</i>
23. I have no antagonistic feeling toward measurement.	3.27	Neutral
Attitude	F	%
Very Positive	1	1.11
Positive	36	40.00
Neutral	46	51.11
Negative	7	7.78
Total	90	100.00
Overall Weighted Mean= 3.17 (Neutral)		
Standard Deviation= 0.44		

Note:

* Reversely scored

Table 2 shows the attitude of the private school teachers towards educational measurement as to the emotional reactions as regards to the quantitative aspects of the measurement course. As revealed, the respondents have a neutral attitude in this aspect of educational measurement as reflected in the overall weighted mean of 3.17. This means that the private school teachers are undecided when it comes to the quantitative aspects of the measurement course. Smith, E. R. & Mackie, D. M., (2007) argued that attitude can also be uncertain at times. For example, one might

have mixed feelings about a particular person or issue. This is apparent in their *neutral* response to the statement “I have no antagonistic feeling toward measurement” (3.27). Also, the respondents neither agree nor disagree to the statement “measurement is too mathematically oriented for me to use effectively” (2.73). This means that the mathematics aspect of educational measurement is a source of worry among the respondents. This is evident in their *agree* response to the items “I feel intimidated when I have to deal with mathematical formulas” (2.53) and “I do not like measurement because I have to deal with math” (2.38). Moreover, they admitted feeling uneasy toward mathematics. Hence, the private school teachers have negative attitude towards the mathematics aspect of educational measurement.

Additionally, the frequency distribution shows that more than half (51.11%) of the private school teachers have neutral attitude and 7.78% of them have negative attitude with respect to the emotional reactions as regards to the quantitative aspects of the measurement course. Nevertheless, the standard deviation of 0.44 shows that majority of the respondents got mean scores ranging from 2.73 (neutral) to 3.61 (positive). Hence, a large percentage of the respondents have positive attitude toward the emotional reactions as to the quantitative aspects of the measurement course at 40%. Results also show that the respondents answered *disagree* to 5 out of 8 negatively-worded statements under emotional reactions. They denied having feelings of insecurity or frightening thoughts in taking a measurement course. This signifies that the private school teachers do not dread the idea of a measurement course itself. Thus, they are not scared in taking up a measurement course, but they are slightly

daunted by the complex computations attached therein. This confirms the result of Van de Walle's (2001) research that most pre-service teachers perceive mathematics as a difficult subject.

Table 3: Private School Teachers' Attitude towards Educational Measurement in Terms of Their Willingness to Take More Courses in Measurement

Willingness to Take More Courses in Measurement	Mean	Attitude
24. I would like to take more measurement courses in the future.	2.61	Neutral
25. I am willing to take more measurement courses.	2.61	Neutral
*26. <i>I wish that I could have avoided taking a measurement course.</i>	3.50	Positive
27. I enjoy taking a measurement course because it is fun.	3.44	Positive
28. More courses in measurement should be required for teachers.	2.67	Neutral
*29. <i>I would only take measurement course if I were required.</i>	2.71	Neutral
30. My likes of measurement courses outweigh my dislikes.	3.63	Positive
*31. <i>I feel that I have been well prepared without taking measurement course</i>	3.54	Positive
Attitude	f	%
Positive	16	17.78
Neutral	63	70.00
Negative	11	12.22
Total	90	100.00
Overall Weighted Mean= 3.09 (Neutral)		
Standard Deviation= 0.39		

Note:

* *Reversely scored*

Table 3 reveals the attitude of the private school teachers toward educational measurement as to teachers' willingness to take more courses in measurement. Results show that the respondents have taken a neutral stand when it comes to enrolling in additional measurement courses in the future. This is evident in the overall weighted mean of 3.09 with a standard deviation of 0.39. This means that the private school teachers simultaneously possess a positive and negative about further measurement courses. As observed, the respondents are indecisive in this area. For

instance, they claimed to have enjoyed taking a measurement course, yet they wished that they could have avoided the same. This means that while the measurement courses they have taken have helped them in their profession, the private school teachers believe that another measurement course is unnecessary at this point. They feel that their knowledge on educational measurement is enough at the moment and that their past measurement training have prepared them well. Hence, they neither agree nor disagree to the statements “I would like to take more measurement courses in the future” (2.61), “I am willing to take more measurement courses” (2.61), and “more courses in measurement should be required for teachers” (2.67).

The frequency distribution shows that in every 10 private school teachers, 7 neither commit nor reject additional measurement course. Currently, the respondents are hesitant to enroll in extra units in measurement classes, but at the same time they are not totally adamant to the idea. The standard deviation of 0.39 indicates that majority of the respondents got mean scores ranging from 2.70 (negative) to 3.78 (positive). Again, the table shows some respondents have positive (17.78%) and negative (12.22%) attitude towards willingness to take more courses in measurement.

Educational Measurement Attitude of Public School Teachers

Another objective of the study is to determine the attitude of the teachers in public schools toward educational measurement. Tables 4 to 6 present the summary of results followed by its corresponding analysis and interpretation.

Table 4: Public School Teachers' Attitude towards Educational Measurement in Terms of Its Usefulness of Measurement to Teaching

Usefulness of Measurement to Teaching	Mean	Attitude
*1. <i>Measurement training is not really useful for most teachers.</i>	4.06	Positive
*2. <i>I see no value in measurement.</i>	4.07	Positive
*3. <i>Studying measurement is a waste of time.</i>	4.07	Positive
4. A good teacher must have enough background in measurement.	4.06	Positive
5. Most teachers would benefit from taking a measurement course.	4.01	Positive
6. Measurement will be useful to me in my profession.	4.10	Positive
7. I am excited at the prospect of actually using measurement in my field.	3.91	Positive
*8. <i>I have difficulty seeing how measurement relates to my field of study.</i>	3.42	Positive
9. Measurement is an inseparable aspect of teaching.	3.59	Positive
*10. <i>A measurement course should not be required.</i>	3.59	Positive
11. Measurement is an excellent tool for teaching.	4.02	positive
*12. <i>Measurement is not really useful because it is seldom used in a school setting.</i>	3.60	Positive
13. Measurement is a valid way to evaluate student's learning.	4.05	Positive
Attitude	f	%
Very Positive	19	21.11
Positive	59	65.56
Neutral	11	12.22
Negative	1	1.11
Total	90	100.00
Overall Weighted Mean= 3.89 (Positive)		
Standard Deviation= 0.50		

Note:

* Reversely scored

A quick glance at table 4 would indicate that there is a positive attitude toward educational measurement in terms of its usefulness. The overall weighted mean of 3.89 with a standard deviation of 0.50 reflects this. The public school teachers perceive the importance of learning principles and techniques in measuring student behavior and academic performance. There appears a consistent response from the teachers with respect to the usefulness of academic measurement. As observed, they

answered *agree* to all the positively-stated items and answered *disagree* to all the negatively-worded items. This signifies a unanimous acceptance that educational measurement is an integral part of the teaching profession. The public school teachers acknowledge that a teacher must have enough background in constructing and applying measurement tools in the classroom setting.

Moreover, the respondents show approval of measurement training. They believe that taking a measurement course would give them sufficient knowledge in educational measurement. This is evident in their disagreement to the statements “measurement training is not really useful for most teachers” (4.06) and “studying measurement is a waste of time” (4.07). On the contrary they answered *agree* to the statement “most teachers would benefit from taking a measurement course” (4.01).

The standard deviation of 0.50 indicates that majority of the respondents got mean scores ranging from 3.39 (neutral) to 4.39 (very positive). This is apparent in the frequency distribution, whereby diverse attitudes toward educational measurement are observed. Majority (65.56%) of the public school teachers have positive attitude towards the usefulness of educational measurement and another 21.11% of them have very positive attitude. This implies that the public school teachers are convinced that educational measurement is very relevant and significant in their academic tasks.

Table 5: Public School Teachers' Attitude towards Educational Measurement in Terms of Their Emotional Reactions to the Quantitative Aspects of the Measurement Course

Emotional Reactions to the Quantitative Aspects of the Measurement Course	Mean	Attitude
<i>*14. Just thinking of taking a measurement course scares me.</i>	3.73	<i>Positive</i>
<i>*15. I feel insecure in a measurement course.</i>	3.90	<i>Positive</i>
<i>*16. I feel intimidated when I have to deal with mathematical formulas.</i>	3.33	<i>Neutral</i>
<i>*17. I do not like measurement because I have to deal with math.</i>	3.21	<i>Neutral</i>
18. I feel at ease with math, so I feel comfortable with measurement.	3.48	Positive
<i>*19. Measurement is too mathematically oriented for me to use effectively.</i>	2.74	<i>Neutral</i>
<i>*20. When I hear the word measurement, I feel frightened.</i>	3.73	<i>Positive</i>
<i>*21. Measurement is very difficult.</i>	3.37	<i>Neutral</i>
<i>*22. Being enrolled in a measurement course is an unpleasant experience.</i>	3.74	<i>Positive</i>
23. I have no antagonistic feeling toward measurement.	3.44	Positive
Attitude	f	%
Very Positive	8	8.89
Positive	49	54.44
Neutral	25	27.78
Negative	8	8.89
Total	90	100.00
Overall Weighted Mean= 3.46 (Positive)		
Standard Deviation= 0.63		

Note:

* *Reversely scored*

Table 5 presents the attitude of the public school teachers toward educational measurement as to the emotional reactions to the quantitative aspects of the measurement course. Obviously, there is a positive attitude among the respondents in this aspect of educational measurement. The weighted mean of 3.46 signifies that the respondents have positive attitude towards the quantitative aspects a measurement course. Also, majority (54.44%) of them have positive attitude toward educational measurement as to the emotional reactions to the quantitative aspects of the

measurement course. Moreover, this is evident in their responses to the specific items in this aspect. As shown, they gave an *agree* response to the positively-stated items “I feel at ease with math, so I feel comfortable with measurement” (3.48) and ‘I have no antagonistic feeling toward measurement” (3.44). They also rejected the idea that measurement courses are frightening and unpleasant.

Interestingly, though, the public school teachers gave a neutral response to four (4) indicators, three (3) of which relates to the mathematics aspect of educational measurement. This means that the teachers are uncertain on their approval of the math side of the measurement courses.

In addition, the standard deviation of 0.63 indicates varied response and diverse attitude among the public school teachers. This signifies that majority of the respondents got mean scores ranging from 2.83 (neutral) to 4.09 (positive). The frequency distribution supplements this result. As shown, there are considerable percentages of respondents ranging from very positive attitude to negative attitude.

Table 6 presents the attitude of the public school teachers toward educational measurement as to their willingness to take more courses in measurement. As shown, there is an overall weighted mean of 3.54 with a standard deviation of 0.47. This means that the public school teachers have a positive attitude toward additional educational measurement courses. The respondents show willingness to enroll in courses to supplement their knowledge on how to properly construct, administer and evaluate educational measurement materials. This is evident in their responses to the

specific items measuring their attitude in this aspect. They answered *agree* in 4 out of 5 positively-stated items, indicating their interest in measurement trainings and eagerness to take more measurement courses in the future. They even assert that “more courses in measurement should be required for teachers” (3.61). This signifies a desire on the part of the teachers to be more equipped on how to design effective measurement tools.

Table 6: Public School Teachers’ Attitude towards Educational Measurement in Terms of Their Willingness to Take More Courses in Measurement

Willingness to Take More Courses in Measurement	Mean	Attitude
24. I would like to take more measurement courses in the future.	3.58	Positive
25. I am willing to take more measurement courses.	3.63	Positive
*26. <i>I wish that I could have avoided taking a measurement course.</i>	3.86	<i>Positive</i>
27. I enjoy taking a measurement course because it is fun.	3.56	Positive
28. More courses in measurement should be required for teachers.	3.61	Positive
*29. <i>I would only take measurement course if I were required.</i>	3.11	<i>Neutral</i>
30. My likes of measurement courses outweigh my dislikes.	3.16	Neutral
*31. <i>I feel that I have been well prepared without taking measurement course</i>	3.80	<i>Positive</i>
Attitude	f	%
Very Positive	8	8.89
Positive	39	43.33
Neutral	43	47.78
Total	90	100.00
Overall Weighted Mean= 3.54 (Positive)		
Standard Deviation= 0.47		

Note:

* *Reversely scored*

Interestingly, though, the frequency distribution shows that there are more public school teachers with a neutral attitude (47.78%) than positive attitude (43.33%) towards willingness to take more measurement courses. It should be noted,

however, that none of them have negative attitude while 8.89% of them have very positive attitude towards their willingness to take more measurement courses. The higher number of those with neutral attitude could also be explained by the standard deviation of 0.47 from the mean. It shows that majority of the respondents have scores ranging from 3.07 (neutral) to 4.01 (positive). As such, the teachers answered *neither agree nor disagree* to the statements “I would only take measurement course if I were required” (3.11) and “my likes of measurement courses outweigh my dislikes” (3.16). This means that if measurement course is not a compulsory obligation of teachers, they would hesitate whether to take it or not. It seems that “teachers view educational measurement as an added requirement to their teaching job (Morgan and Watson 2002)”.

Research Question 2: Is there a significant difference between the attitudes of public and private school teachers towards educational measurement in terms of the aforementioned components?

Educational Measurement Attitude according to Type of School

A major objective of the study is to compare the attitude toward educational measurement between teachers from private and public schools.

Table 7 shows a summary result on the test of significance of the mean difference between private and public school teachers’ attitude toward educational measurement. As revealed, significant differences exist between private and public

school teachers in terms of usefulness of measurement to teaching ($t=3.165$, $p<.01$), emotional reactions to the quantitative aspects of the measurement course ($t=3.639$, $p<.001$), willingness to take more courses in measurement ($t=6.691$, $p<.001$), and overall educational measurement attitude ($t=6.519$, $p<.001$). This warrants the rejection of the null hypothesis stating that there is no significant difference in the educational measurement attitude between private and public school teachers. This implies that type of school makes a difference in the educational measurement attitude of the respondents.

Table 7: Significant Difference between the Attitudes of Private and Public School Teachers towards Educational Measurement

Attitude	Private	Public	t	p	Decision
Usefulness of Measurement to Teaching	3.68	3.89	3.165	.002	With Significant Difference
Emotional Reactions to the Quantitative Aspects of the Measurement Course	3.17	3.46	3.39	.000	With Significant Difference
Willingness to Take More Courses in Measurement	3.09	3.54	6.961	.000	With Significant Difference
Overall	3.36	3.66	5.519	.000	With Significant Difference

As observed, the public school teachers obtained a higher mean than the private school teachers in all aspects. Since the t-test result shows that the mean differences are significant, then public school teachers have a more positive attitude than private school teachers when it comes to attitude towards usefulness of measurement to teaching, emotional reactions to the quantitative aspects of the measurement course, willingness to take more courses in measurement, and overall educational measurement attitude. Since “attitude can influence the amount of efforts

devoted to application in teaching” (Alkharusi, 2011), it is necessary that teachers in private schools will be given more training in educational measurement that may improve their attitude towards it.

Research Question 3: What is the attitude of teachers towards educational measurement in terms of usefulness of measurement to teaching, emotional reactions to the quantitative aspects of the measurement course, and willingness to take courses in measurement when grouped according to the following levels?

a. Elementary

b. Secondary

c. Tertiary

Educational Measurement Attitude of Teachers in the Elementary Level

Tables 8 to 10 present the tabular findings on the educational measurement attitude of elementary school teachers.

It is apparent in table 8 that the elementary school teachers have a positive attitude when it comes to the usefulness of measurement to teaching. The overall weighted mean of 3.81 with a standard deviation of 0.36 indicates that the respondents have a positive attitude in this aspect of educational measurement. This means that the elementary school teachers recognize the value of measurement in the teaching profession. They believe that as teachers, they need to be adept in making educational measurement tools and techniques.

Table 8: Elementary Teachers' Attitude towards Educational Measurement in Terms of Its Usefulness of Measurement to Teaching

Usefulness of Measurement to Teaching	Mean	Attitude
*1. <i>Measurement training is not really useful for most teachers.</i>	3.90	Positive
*2. <i>I see no value in measurement.</i>	3.95	Positive
*3. <i>Studying measurement is a waste of time.</i>	3.90	Positive
4. A good teacher must have enough background in measurement.	4.05	Positive
5. Most teachers would benefit from taking a measurement course.	3.82	Positive
6. Measurement will be useful to me in my profession.	3.95	Positive
7. I am excited at the prospect of actually using measurement in my field.	3.72	Positive
*8. <i>I have difficulty seeing how measurement relates to my field of study.</i>	3.40	Positive
9. Measurement is an inseparable aspect of teaching.	3.55	Positive
*10. <i>A measurement course should not be required.</i>	4.02	Positive
11. Measurement is an excellent tool for teaching.	3.83	Positive
*12. <i>Measurement is not really useful because it is seldom used in a school setting.</i>	3.63	Positive
13. Measurement is a valid way to evaluate student's learning.	3.90	Positive
Attitude	f	%
Very Positive	6	10.00
Positive	47	78.33
Neutral	7	11.67
Total	60	100.00
Overall Weighted Mean= 3.81 (Positive)		
Standard Deviation= 0.36		

Note:

* Reversely scored

As observed, the elementary teachers gave a positive response to all positively-stated items and provided negative response to the negatively-worded statements. This unwavering response proves that they are convinced of the importance of measurement in the academe. Among the positively-stated items, the teachers are most agreeable that teachers “must have enough background in measurement (4.05) and “measurement will be useful to me in my profession” (3.95).

This implies that the teachers appreciate the benefits of knowing how to properly construct measurement tools to evaluate student performances.

Among the negatively-worded items, the statements rebuffed the most by the elementary teachers are “a measurement course should not be required” (4.02) and “I see no value in measurement” (3.95). This means that the respondents uphold the importance of a measurement course as this will enhance the teachers’ understanding and confidence on educational measurement. Klinger (2010) also said that teachers who were enrolled in a measurement evaluation course had high levels of confidence in educational measurement knowledge and skills.

The standard deviation of 0.36 indicates that majority of the public school teachers got scores ranging from 3.45 (neutral) to 4.17 (positive). This is manifested as well in the frequency distribution, whereby almost 8 out of 10 respondents (78.33%) have positive attitude towards educational measurement as to usefulness of measurement to teaching.

Nevertheless, measurement itself does not scare the respondents. They reject ideas suggesting that measurement is difficult and frightening. They also repulse the notion that measurement training is an unpleasant experience. This explains why the frequency distribution reveals that there are more elementary teachers with a positive attitude (58.33%) than neutral attitude (35%) as to their emotional reactions to the quantitative aspects of the measurement course. Moreover, the standard deviation of 0.49 indicates that majority of the respondents got scores falling within the range 2.85 to 3.83, from neutral to positive.

Table 9: Elementary Teachers' Attitude towards Educational Measurement in Terms of Their Emotional Reactions to the Quantitative Aspects of the Measurement Course

Emotional Reactions to the Quantitative Aspects of the Measurement Course	Mean	Attitude
<i>*14. Just thinking of taking a measurement course scares me.</i>	3.63	<i>Positive</i>
<i>*15. I feel insecure in a measurement course.</i>	3.88	<i>Positive</i>
<i>*16. I feel intimidated when I have to deal with mathematical formulas.</i>	3.07	<i>Neutral</i>
<i>*17. I do not like measurement because I have to deal with math.</i>	3.08	<i>Neutral</i>
18. I feel at ease with math, so I feel comfortable with measurement.	2.83	Neutral
<i>*19. Measurement is too mathematically oriented for me to use effectively.</i>	2.71	<i>Neutral</i>
<i>*20. When I hear the word measurement, I feel frightened.</i>	3.72	<i>Positive</i>
<i>*21. Measurement is very difficult.</i>	3.40	<i>Positive</i>
<i>*22. Being enrolled in a measurement course is an unpleasant experience.</i>	3.75	<i>Positive</i>
23. I have no antagonistic feeling toward measurement.	3.34	Neutral
Attitude	f	%
Positive	35	58.33
Neutral	21	35.00
Negative	4	6.67
Total	60	100.00
Overall Weighted Mean= 3.34 (Neutral)		
Standard Deviation= 0.49		

Note:

** Reversely scored*

Table 10 presents the attitude of the elementary school teachers toward educational measurement as to their willingness to take more courses in measurement. As shown, the respondents show impartiality with respect to taking additional measurement courses in the future. This is manifested in the overall weighted mean of 3.34 with a standard deviation of 0.39. This means that the elementary school teachers have ambivalent attitude because they possess a positive and negative attitude about additional measurement courses. As observed, the respondents show indecisiveness in this aspect. As observed, they answered *neither*

agree nor disagree in 5 out of 8 items. This means that while they have enjoyed taking measurement courses, the elementary school teachers are not ready to commit for another measurement course. They feel that they have sufficient knowledge on educational measurement brought about by past trainings. Hence, they neither agree nor disagree to the statements “I am willing to take more measurement courses” (3.25), and “more courses in measurement should be required for teachers” (3.33).

Table 10: Elementary Teachers’ Attitude towards Educational Measurement in Terms of Their Willingness to Take More Courses in Measurement

Willingness to Take More Courses in Measurement	Mean	Attitude
24. I would like to take more measurement courses in the future.	3.42	Positive
25. I am willing to take more measurement courses.	3.25	Neutral
*26. <i>I wish that I could have avoided taking a measurement course.</i>	3.38	<i>Neutral</i>
27. I enjoy taking a measurement course because it is fun.	3.52	Positive
28. More courses in measurement should be required for teachers.	3.33	Neutral
*29. <i>I would only take measurement course if I were required.</i>	2.85	<i>Neutral</i>
30. My likes of measurement courses outweigh my dislikes.	3.22	<i>Neutral</i>
*31. <i>I feel that I have been well prepared without taking measurement course</i>	3.72	<i>Positive</i>
Attitude	f	%
Very Positive	1	1.67
Positive	18	30.00
Neutral	40	66.67
Negative	1	1.67
Total	60	100.00
Overall Weighted Mean= 3.34 (Neutral)		
Standard Deviation= 0.39		

Note:

* *Reversely scored*

Additionally, the frequency distribution shows that two-thirds (66.67%) of the respondents neither commits nor reject additional measurement course. At this time, the respondents are undecided whether to take extra units in measurement classes or be satisfied with their current knowledge on educational measurement. As observed,

there are more respondents willing to take additional measurement courses (30%) than those who choose not to enroll (1.67%). This is substantiated by the standard deviation of 0.39, which indicates that majority of the respondents got mean scores ranging from 2.95 (neutral) to 3.73 (positive).

Educational Measurement Attitude of Teachers in the Secondary Level

Another objective of the study was to describe the educational measurement attitude of the teachers in secondary schools. Results are presented in tables 12 to 14, followed by its corresponding analysis and interpretation.

It is evident in table 11 that there is a positive attitude toward educational measurement in terms of its usefulness. This is reflected in the overall weighted mean of 3.82 with a standard deviation of 0.56. The secondary school teachers recognize the importance of learning principles and techniques in measuring student behavior and academic performance. Apparently, there is a consistent response from the teachers with respect to the usefulness of academic measurement. As observed, they answered *agree* to the positively-stated items. In the same manner, they answered *disagree* to 5 out of 6 negatively-worded statements. This implies a marked acceptance among the respondents the importance of educational measurement in the teaching profession. The secondary school teachers acknowledge that a teacher must have enough background in constructing and applying measurement tools in the classroom setting.

Table 11: Secondary Teachers' Attitude towards Educational Measurement in Terms of Its Usefulness of Measurement to Teaching

Usefulness of Measurement to Teaching	Mean	Attitude
*1. <i>Measurement training is not really useful for most teachers.</i>	4.03	Positive
*2. <i>I see no value in measurement.</i>	4.07	Positive
*3. <i>Studying measurement is a waste of time.</i>	3.88	Positive
4. A good teacher must have enough background in measurement.	3.82	Positive
5. Most teachers would benefit from taking a measurement course.	4.00	Positive
6. Measurement will be useful to me in my profession.	4.13	Positive
7. I am excited at the prospect of actually using measurement in my field.	3.87	Positive
*8. <i>I have difficulty seeing how measurement relates to my field of study.</i>	3.47	Positive
9. Measurement is an inseparable aspect of teaching.	3.65	Positive
*10. <i>A measurement course should not be required.</i>	3.27	Neutral
11. Measurement is an excellent tool for teaching.	3.86	Positive
*12. <i>Measurement is not really useful because it is seldom used in a school setting.</i>	3.80	Positive
13. Measurement is a valid way to evaluate student's learning.	3.78	Positive
Attitude	f	%
Very Positive	14	23.33
Positive	34	56.67
Neutral	11	18.33
Negative	1	1.67
Total	60	100.00
Overall Weighted Mean= 3.82 (Positive)		
Standard Deviation= 0.56		

Note:

* Reversely scored

Moreover, the respondents show approval of measurement training. They believe that taking a measurement course would give them sufficient knowledge in educational measurement. This is evident in their *agree* answer to the statements “Measurement will be useful to me in my profession” (4.13) and “Most teachers

would benefit from taking a measurement course” (4.00). On the contrary, they answered *disagree* to the statement “I see no value in measurement” (4.07).

The standard deviation of 0.56 indicates that majority of the respondents got mean scores ranging from 3.26 (neutral) to 4.38 (very positive). This is apparent in the frequency distribution, whereby diverse attitudes toward educational measurement are observed. Majority (56.67%) of the secondary school teachers have positive attitude towards the usefulness of educational measurement and another 23.33% of them have very positive attitude. This implies that the secondary school teachers are convinced that educational measurement is very relevant and significant in their academic tasks.

Table 12 reveals the attitude of the secondary school teachers toward educational measurement as to the emotional reactions to the quantitative aspects of the measurement course. Apparently, there is a positive attitude among the respondents in this aspect of educational measurement. The weighted mean of 3.46 signifies that the respondents have positive attitude towards the quantitative aspects a measurement course. Also, most (48.33%) of them have positive attitude toward educational measurement as to the emotional reactions to the quantitative aspects of the measurement course. This is also manifested in their responses to the specific items in this aspect. As shown, they gave a *disagree* response to 5 out of 8 negatively-worded statements. Moreover, the respondents claim that they “have no antagonistic feeling toward measurement” (3.56). They also rebuffed notions that measurement courses provide unpleasant and frightening experience.

Table 12: Secondary Teachers' Attitude towards Educational Measurement in Terms of Their Emotional Reactions to the Quantitative Aspects of the Measurement Course

Emotional Reactions to the Quantitative Aspects of the Measurement Course	Mean	Attitude
*14. Just thinking of taking a measurement course scares me.	3.92	Positive
*15. I feel insecure in a measurement course.	3.82	Positive
*16. I feel intimidated when I have to deal with mathematical formulas.	3.22	Neutral
*17. I do not like measurement because I have to deal with math.	3.13	Neutral
18. I feel at ease with math, so I feel comfortable with measurement.	3.00	Neutral
*19. Measurement is too mathematically oriented for me to use effectively.	2.95	Neutral
*20. When I hear the word measurement, I feel frightened.	3.62	Positive
*21. Measurement is very difficult.	3.68	Positive
*22. Being enrolled in a measurement course is an unpleasant experience.	3.75	Positive
23. I have no antagonistic feeling toward measurement.	3.56	Positive
Attitude	f	%
Very Positive	8	13.33
Positive	29	48.33
Neutral	17	28.33
Negative	6	10.00
Total	60	100.00
Overall Weighted Mean= 3.46 (Positive)		
Standard Deviation= 0.67		

Note:

* Reversely scored

Curiously, the respondents seem impartial in the mathematics aspect of educational measurement, evident in the *neutral* response they gave to four (4) indicators. As shown, the teachers neither agree nor disagree to statements related to the mathematics aspect of educational measurement. This means that the teachers are uncertain on their approval of the math side of the measurement courses. This result is seemingly parallel to the statement of Even & Tirosh (2002) that, “learning mathematics is complex, takes time and is often avoided by many teachers.”

In addition, the standard deviation of 0.67 indicates diverse attitude among the secondary school teachers. This signifies that majority of the respondents got mean scores ranging from 2.79 (neutral) to 4.13 (positive). The frequency distribution supplements this result. As shown, there are considerable percentages of respondents with negative attitude to very positive attitude.

Table 13 presents the attitude of the secondary school teachers toward educational measurement as to their willingness to take more courses in measurement. As revealed, the respondents have taken a neutral stand when it comes to enrolling additional measurement courses in the future. This is evident in the overall weighted mean of 3.32 with a standard deviation of 0.54. This means that the secondary school teachers simultaneously possess a positive and negative about extra measurement courses. As observed, the respondents show indecisiveness in this aspect. While claiming that measurement course is fun, they are hesitant to commit themselves to enroll further training on measurement. While asserting that their likes of measurement courses outweigh their dislikes, they are not sure whether to endorse that measurement courses be required for teachers. This means that while the elementary school teachers have benefited from past measurement courses, they are not set on committing themselves to another round of measurement training. Hence, they neither agree nor disagree to the statements “I would like to take more measurement courses in the future” (2.85), and “I would only take measurement course if I were required” (3.18).

Table 13: Secondary Teachers' Attitude towards Educational Measurement in Terms of Their Willingness to Take More Courses in Measurement

Willingness to Take More Courses in Measurement	Mean	Attitude
24. I would like to take more measurement courses in the future.	2.85	Neutral
25. I am willing to take more measurement courses.	3.02	Neutral
*26. <i>I wish that I could have avoided taking a measurement course.</i>	3.90	<i>Positive</i>
27. I enjoy taking a measurement course because it is fun.	3.44	Positive
28. More courses in measurement should be required for teachers.	3.05	Neutral
*29. <i>I would only take measurement course if I were required.</i>	3.18	<i>Neutral</i>
30. My likes of measurement courses outweigh my dislikes.	3.45	Positive
*31. <i>I feel that I have been well prepared without taking measurement course</i>	3.65	<i>Positive</i>
Attitude	f	%
Very Positive	4	6.67
Positive	19	31.67
Neutral	34	56.67
Negative	3	5.00
Total	60	100.00
Overall Weighted Mean= 3.32 (Neutral)		
Standard Deviation= 0.54		

Note:

* *Reversely scored*

Furthermore, the frequency distribution shows that majority (56.67%) of the respondents neither commit nor reject additional measurement course. Currently, the respondents are hesitant to take more courses in measurement, but, they are nonetheless open to such idea. As shown, some respondents have positive (31.67%) and negative (5%) attitude towards their willingness to take more courses in measurement which is substantiated by the standard deviation of 0.54, indicating that majority of the respondents got mean scores ranging from 2.78 (negative) to 3.86 (positive).

Educational Measurement Attitude of Teachers in the Tertiary Level

Another objective of the study was to describe the educational measurement attitude of the teachers in tertiary schools. Results are presented in tables 15 to 17, followed by its corresponding analysis and interpretation.

Table 14 presents the attitude of the teachers in the tertiary level toward educational measurement as to usefulness of measurement to teaching. Evidently, there is a positive attitude toward educational measurement in terms of its usefulness. This is reflected in the overall weighted mean of 3.72 with a standard deviation of 0.36. The tertiary school teachers value the importance of studying measurement tools and techniques to evaluate student academic performance and other characteristics. It appears that there is a consistent response from the teachers with respect to the usefulness of academic measurement. As observed, they answered *agree* to 6 out of 7 positively-stated items. In the same manner, they answered *disagree* to 4 out of 6 negatively-worded statements. This implies an obvious belief among the respondents that educational measurement is very essential in the teaching profession. The tertiary school teachers acknowledge that a teacher must have sufficient knowledge in constructing and applying measurement tools in the classroom setting.

Furthermore, the respondents have a positive view on relevant education in measurement. They believe that taking a measurement course would give them sufficient knowledge in educational measurement. This is evident in their *agree* answer to the statements “measurement will be useful to me in my profession” (4.12)

and “measurement is an excellent tool for teaching” (4.00). On the contrary, they answered *disagree* to the statements “measurement training is not really useful for most teachers” (4.07) and “I see no value in measurement” (4.00).

Table 14: Tertiary Teachers’ Attitude towards Educational Measurement in Terms of Its Usefulness of Measurement to Teaching

Usefulness of Measurement to Teaching	Mean	Attitude
*1. Measurement training is not really useful for most teachers.	4.07	Positive
*2. I see no value in measurement.	4.00	Positive
*3. Studying measurement is a waste of time.	3.95	Positive
4. A good teacher must have enough background in measurement.	4.05	Positive
5. Most teachers would benefit from taking a measurement course.	3.10	Neutral
6. Measurement will be useful to me in my profession.	4.12	Positive
7. I am excited at the prospect of actually using measurement in my field.	3.88	Positive
*8. I have difficulty seeing how measurement relates to my field of study.	3.28	Neutral
9. Measurement is an inseparable aspect of teaching.	3.67	Positive
*10. A measurement course should not be required.	2.48	Negative
11. Measurement is an excellent tool for teaching.	4.00	Positive
*12. Measurement is not really useful because it is seldom used in a school setting.	3.60	Positive
13. Measurement is a valid way to evaluate student’s learning.	4.19	Positive
Attitude	f	%
Very Positive	5	8.33
Positive	43	71.67
Neutral	12	20.00
Total	60	100.00
Overall Weighted Mean= 3.72 (Positive)		
Standard Deviation= 0.36		

Note:

* Reversely scored

The standard deviation of 0.36 indicates that majority of the respondents got mean scores ranging from 3.36 (neutral) to 4.08 (positive). This is substantiated in the frequency distribution, whereby diverse attitudes toward educational measurement are observed. Majority (71.67%) of the tertiary school teachers have positive attitude

towards the usefulness of educational measurement and another 8.33% of them have very positive attitude. This implies that the tertiary school teachers are convinced that educational measurement is very relevant and significant in their academic tasks.

Table 15: Tertiary Teachers' Attitude towards Educational Measurement in Terms of Their Emotional Reactions to the Quantitative Aspects of the Measurement Course

Emotional Reactions to the Quantitative Aspects of the Measurement Course	Mean	Attitude
<i>*14. Just thinking of taking a measurement course scares me.</i>	3.70	Positive
<i>*15. I feel insecure in a measurement course.</i>	3.86	Positive
<i>*16. I feel intimidated when I have to deal with mathematical formulas.</i>	2.52	Negative
<i>*17. I do not like measurement because I have to deal with math.</i>	2.17	Negative
18. I feel at ease with math, so I feel comfortable with measurement.	2.88	Neutral
<i>*19. Measurement is too mathematically oriented for me to use effectively.</i>	2.54	Negative
<i>*20. When I hear the word measurement, I feel frightened.</i>	3.57	Positive
<i>*21. Measurement is very difficult.</i>	3.43	Positive
<i>*22. Being enrolled in a measurement course is an unpleasant experience.</i>	3.63	Positive
23. I have no antagonistic feeling toward measurement.	3.15	Neutral
Attitude	f	%
Very Positive	1	1.67
Positive	21	35.00
Neutral	33	55.00
Negative	5	8.33
Total	60	100.00
Overall Weighted Mean= 3.14 (Neutral)		
Standard Deviation= 0.45		

Note:

* Reversely scored

Table 15 shows the attitude of the teachers in the tertiary level toward educational measurement as to their emotional reactions to the quantitative aspects of the measurement course. As presented, the respondents have a neutral attitude in this aspect of educational measurement, as reflected in the overall weighted mean of 3.14

with a standard deviation of 0.45. This means that the tertiary school teachers are undecided when it comes to the quantitative aspects of the measurement course. Interestingly, though, they have two (2) neutral response to the indicators of the quantitative aspects of measurement only *neither agree nor disagree* response to the statement “I have no antagonistic feeling toward measurement” (3.15) and “I feel at ease with math, so I feel comfortable with measurement”(2.88). Nevertheless, the respondents show indecisiveness when it comes to mathematics aspect of educational measurement. Then they answered *agree* to the items “I feel intimidated when I have to deal with mathematical formulas” (2.52) and “I do not like measurement because I have to deal with math” (2.37). Moreover, they admitted that measurement is too mathematically oriented for them to use effectively. Hence, the teachers in the tertiary level have negative attitude towards the mathematics aspect of educational measurement.

In addition, the frequency distribution shows that more than half (55%) of the tertiary school teachers have neutral attitude and 8.33% of them have negative attitude with respect to the emotional reactions to the quantitative aspects of the measurement course. Nevertheless, the standard deviation of 0.45 shows that majority of the respondents got mean scores ranging from 2.69 (neutral) to 3.59 (positive). Thus, more than a third (35%) of the respondents have positive attitude toward the emotional reactions of the quantitative aspects of the measurement course. The table also shows that the respondents have a positive attitude towards 5 out of 8 negatively-worded statements under emotional reactions. They denied having feelings of

insecurity or frightening thoughts in taking a measurement course. This signifies that the tertiary school teachers do not worry about the measurement course itself, only the mathematics aspect of it. Therefore, they are not scared in taking up a measurement course, but they are slightly daunted by the complex computations attached therein. Again, it is parallel to the statement of Even & Tirosh (2002) that, “learning mathematics is complex, takes time and is often avoided by many teachers.”

Table 16: Tertiary Teachers’ Attitude towards Educational Measurement in Terms of Their Willingness to Take More Courses in Measurement

Willingness to Take More Courses in Measurement	Mean	Attitude
24. I would like to take more measurement courses in the future.	3.02	Neutral
25. I am willing to take more measurement courses.	3.10	Neutral
*26. <i>I wish that I could have avoided taking a measurement course.</i>	3.75	<i>Positive</i>
27. I enjoy taking a measurement course because it is fun.	3.55	Positive
28. More courses in measurement should be required for teachers.	3.03	Neutral
*29. <i>I would only take measurement course if I were required.</i>	2.70	<i>Neutral</i>
30. My likes of measurement courses outweigh my dislikes.	3.52	Positive
*31. <i>I feel that I have been well prepared without taking measurement course</i>	3.63	<i>Positive</i>
Attitude	f	%
Very Positive	3	5.00
Positive	18	30.00
Neutral	32	53.33
Negative	7	11.67
Total	60	100.00
Overall Weighted Mean= 3.29 (Neutral)		
Standard Deviation= 0.52		

Note:

* *Reversely scored*

Table 16 presents the attitude of the teachers in the tertiary level toward educational measurement as to their willingness to take more courses in measurement. Results show that the respondents have taken a neutral stand when it

comes to enrolling in additional measurement courses in the future. There is an overall weighted mean of 3.29 with a standard deviation of 0.52. This means that the tertiary school teachers simultaneously possess a positive and negative about additional measurement courses. As observed, the respondents are indecisive in this area. At one point, they claimed to have enjoyed taking a measurement course yet they wished that they could have avoided the same. This means that while the measurement courses they have taken have helped them in their profession, the tertiary school teachers believe that another measurement course is unnecessary at the moment. They feel that their knowledge on educational measurement is enough and that their past measurement trainings have prepared them well. Hence, they neither agree nor disagree to the statements “I would like to take more measurement courses in the future” (3.02), “I am willing to take more measurement courses” (3.10), and “more courses in measurement should be required for teachers” (3.03).

Furthermore, the frequency distribution shows that majority (53.33%) of the respondents have a neutral attitude as to additional training in measurement. The respondents are open to the idea to take more courses in measurement, but they are hesitant to give full commitment to it as of the moment. As shown, some respondents have positive (30%) and negative (11.67%) attitude towards willingness to take more courses in measurement. This is also substantiated by the standard deviation of 0.54, indicating that majority of the respondents got mean scores ranging from 2.77 (negative) to 3.81 (positive).

Research Question 4: Is there a significant difference in the attitude towards educational measurement among the elementary, secondary, and tertiary teachers?

Table 17.1 presents the result of the test on significant difference among the elementary, secondary and tertiary private school teachers' attitude toward educational measurement. As shown, no significant difference were found with respect to the usefulness of measurement to teaching and willingness to take more courses in measurement. Statistical analysis shows that computed F-values in usefulness of measurement to teaching ($F=0.956, p>.05$) and willingness to take more courses in measurement ($F=0.157, p>.05$) are not significant at alpha .05 level of significance, warranting the acceptance of the null hypothesis. This means that the elementary teachers, secondary teachers and tertiary school teachers have shown concurrence in their attitude toward educational measurement in terms of usefulness of measurement to teaching and willingness to take more courses in measurement.

Table 17.1 Significant Difference in the Attitude towards Educational Measurement among Elementary, Secondary and Tertiary School Teachers

Attitude	Elementary (n=60)	Secondary (n=60)	Tertiary (n=60)	F	p	Decision
Usefulness of Measurement to Teaching	3.81	3.82	3.72	0.956	.386	No Significant Difference
Emotional Reactions to the Quantitative Aspects of the Measurement Course	3.34	3.46	3.14	5.062	.007	With Significant Difference
Willingness to Take More Courses in Measurement	3.34	3.32	3.29	0.157	.855	No Significant Difference
Overall	3.54	3.58	3.42	2.518	.083	No Significant Difference

Nonetheless, significant difference exists in the attitude of the respondents in terms of emotional reactions to the quantitative aspects of the measurement course. The computed F -value is significant ($F=5.062$; $p<.01$), indicating the rejection of the null hypothesis. This signifies that there is a significant difference among elementary, secondary and tertiary level teachers of public schools when it comes to their emotional reactions to the quantitative aspects of the measurement course.

Post-hoc analysis in Table 17.2 reveals that the significant difference is found between the secondary school teachers and tertiary school teachers. The secondary school teachers got a mean of 3.46, corresponding to a verbal interpretation of *positive attitude*. On the other hand, the tertiary school teachers obtained a mean of 3.14, with verbal interpretation of *neutral attitude*. Scheffe's test result shows that the mean difference of 0.32 is huge enough to elicit a significant difference between the two sample groups. This means that secondary school teachers have a more positive attitude than tertiary school teachers when it comes to their emotional reactions to the quantitative aspects of the measurement course.

Table 17.2 Post-Hoc Analysis in Significant Difference in the Attitude towards Educational Measurement among Elementary, Secondary and Tertiary School Teachers as to Their Emotional Reactions to the Quantitative Aspects of the Measurement Course

Comparisons	Mean Difference	p	Decision
Elementary vs. Secondary	0.18	.484	No Significant Difference
Elementary vs. Tertiary	0.19	.154	No Significant Difference
Secondary vs. Tertiary	0.32	.008	With Significant Difference

Additionally, there exists no significant difference in the overall attitude of teachers towards educational measurement when compared according to educational

level. ANOVA test result shows that the mean difference is not significant ($F=2.518$, $p>.05$), warranting the acceptance of the null hypothesis. This signifies that there is no significant difference in the attitude among elementary, secondary and tertiary level teachers. This means that the three sample groups generally have the same attitude toward educational measurement. As observed, elementary, secondary and tertiary level teachers obtained weighted means of 3.54, 3.58, and 3.42 respectively, all of which correspond to verbal interpretation of “positive” attitude. This is parallel to the results of the Alkharusi’s (2011) study that teachers have positive views about educational measurement.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the major findings, conclusions and recommendations of the study.

Summary of Findings

Based on the data gathered, the following are the major findings of the study:

1. a. Majority of the private school teachers have a neutral attitude towards educational measurement.

b. Majority of the public school teachers have a positive attitude towards educational measurement.

2. There is a significant difference between private and public school teachers in terms of usefulness of the following: (1) measurement to teaching; (2) emotional reactions to the quantitative aspects of the measurement course; (3) willingness to take more courses in measurement; and (4) overall attitude toward educational measurement.

3. a. Majority of the elementary school teachers have a positive attitude towards educational measurement.

b. Majority of the secondary school teachers have a positive attitude towards educational measurement.

c. Majority of the tertiary school teachers have a positive attitude towards educational measurement.

4. a. There is no significant difference found with respect to the usefulness of measurement to teaching and willingness to take more courses in measurement. But, significant difference exists in the attitude of the respondents in terms of emotional reactions to the quantitative aspects of the measurement course.

b. Significant difference is found in the attitude towards educational measurement in terms of emotional reactions to the quantitative aspects of the measurement course found between the secondary and tertiary teachers.

Conclusions

The following are the conclusions drawn based on the findings of the study:

1.a The private school teachers have a neutral attitude towards educational measurement.

b. The public school teachers have a positive attitude towards educational measurement.

2. The public school teachers have a more positive attitude towards educational measurement than private school teachers.

3. Generally, teachers from all levels have positive attitude towards educational measurement.

4. a. The elementary teachers, secondary teachers and tertiary school teachers have shown concurrence in their attitude toward educational measurement in terms of usefulness of measurement to teaching and willingness to take more

courses in measurement except in the emotional reactions to the quantitative aspects of the measurement course

b. It was revealed that the significant difference is found between the secondary school teachers and tertiary school teachers. The secondary school teachers have a more positive attitude than tertiary school teachers when it comes to emotional reactions to the quantitative aspects of the measurement course.

Recommendations

After determining the attitude of teachers towards educational measurement and comparing it according to type of school and across levels, the researcher recommends a Capability Building Program to improve teachers' attitude towards educational measurement. From the results, the researcher determined which group of teachers is supposed to have more exposure in programs regarding educational measurement. The groups who have negative attitude should be given more trainings than those who have more positive attitude.

The researcher recommends the following professional development to improve the attitude of the teachers towards educational measurement which will result into good practices in classroom assessment, measurement and evaluation:

1. School Administrators especially in private schools and tertiary level may conduct seminars, workshops, and trainings regarding measurement, testing and evaluation to

improve the attitude of teachers towards educational measurement. Giving these teachers more knowledge and exposure to this topic might ease their anxiety in dealing with the mathematical aspect of measurement.

2. Schools may invite speakers from private and professional organizations that foster the promotion in the rich role of educational measurement, assessment and evaluation. Organizations like Center for Educational Measurement (CEM), Asian Psychological Services and Assessment Corporation (APSA), and Philippine Educational Measurement and Evaluation Association (PEMEA) can conduct seminars and trainings to their respective schools to talk about topics regarding measurement and evaluation. Through this, they will be given more exposure to this topic and might improve their attitude towards educational measurement.

3. Teachers with poor attitude towards educational measurement may take additional courses on measurement and evaluation.

4. A similar study may be conducted using teachers from rural areas as participants. It would be interesting to also know these teachers' stand regarding the importance of measurement in education.

5. Lastly, another study may be conducted comparing the attitude of teachers from Metro Manila and rural areas towards educational measurement.

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APPENDIX A

Attitude towards Educational Measurement Inventory (ATEMI)

adapted from Hussain Alkharusi (2011)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
<i>Useful Measurement to Teaching</i>					
1. Measurement training is not really useful form most teachers.					
2. I see no value in measurement.					
3. Studying measurement is a waste of time.					
4. A good teacher must have enough background in measurement.					
5. Most teachers would benefit from taking a measurement course.					
6. Measurement will be useful to me in my profession.					
7. I am excited at the prospect of actually using measurement in my field.					
8. I have difficulty seeing how measurement relates to my field of study.					
9. Measurement is an inseparable aspect of teaching.					
10. A measurement course should not be required.					
11. Measurement is an excellent tool for teaching.					
12. Measurement is not really useful because it is seldom used in a school setting.					
13. Measurement is a valid way to evaluate student's learning.					
<i>Emotional Reactions to the Quantitative Aspects of the Measurement Course</i>					
14. Just thinking of taking a measurement course scares me.					
15. I feel insecure in a measurement course.					
16. I feel intimidated when I have to deal with mathematical formulas.					
17. I do not like measurement because I have to deal with math.					
18. I feel at ease with math, so I feel comfortable with measurement.					
19. Measurement is too mathematically oriented for me to use effectively.					
20. When I hear the word measurement, I feel frightened.					
21. Measurement is very difficult.					
22. Being enrolled in a measurement course is an unpleasant experience.					
23. I have no antagonistic feeling toward measurement.					
<i>Willingness to Take More Courses in Measurement</i>					
24. I would like to take more measurement courses in the future.					
25. I am willing to take more measurement courses.					
26. I wish that I could have avoided taking a measurement course.					
27. I enjoy taking a measurement course because it is fun.					
28. More courses in measurement should be required for teachers.					
29. I would only take measurement course if I were required.					
30. My likes of measurement courses outweigh my dislikes.					
31. I feel that I have been well prepared without taking measurement course					

APPENDIX B

Attitude towards Educational Measurement Inventory (ATEMI)

QUESTIONNAIRE

Teaching Level:

- ☐ Elementary
☐ Secondary
☐ Tertiary

Gender:

- ☐ Male
☐ Female

School: _____

No. of Years in Teaching: _____

Instructions: This test contains a number of statements about educational measurement. You will be asked about your views about these statements. No wrong or right answers. For each statement, check the box that corresponds to your opinion.

Educational measurement refers to the use of educational assessments and the analysis of data such as scores obtained from educational assessments to infer the abilities and proficiencies of students	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1. Measurement training is not really useful form most teachers.					
2. I see no value in measurement.					
3. Studying measurement is a waste of time.					
4. A good teacher must have enough background in measurement.					
5. Most teachers would benefit from taking a measurement course.					
6. Measurement will be useful to me in my profession.					
7. I am excited at the prospect of actually using measurement in my field.					
8. I have difficulty seeing how measurement relates to my field of study.					
9. Measurement is an inseparable aspect of teaching.					
10. A measurement course should not be required.					
11. Measurement is an excellent tool for teaching.					
12. Measurement is not really useful because it is seldom used in a school setting.					
13. Measurement is a valid way to evaluate student's learning.					
14. Just thinking of taking a measurement course scares me.					
15. I feel insecure in a measurement course.					
16. I feel intimidated when I have to deal with mathematical formulas.					
17. I do not like measurement because I have to deal with math.					
18. I feel at ease with math, so I feel comfortable with measurement.					
19. Measurement is too mathematically oriented for me to use effectively.					
20. When I hear the word measurement, I feel frightened.					
21. Measurement is very difficult.					
22. Being enrolled in a measurement course is an unpleasant experience.					
23. I have no antagonistic feeling toward measurement.					
24. I would like to take more measurement courses in the future.					
25. I am willing to take more measurement courses.					
26. I wish that I could have avoided taking a measurement course.					
27. I enjoy taking a measurement course because it is fun.					
28. More courses in measurement should be required for teachers.					
29. I would only take measurement course if I were required.					
30. My likes of measurement courses outweigh my dislikes.					
31. I feel that I have been well prepared without taking measurement course					

APPENDIX C

Cover Letter

December 2013

Dear Sir/Madam:

Greetings!

I am **Suzi Christine Garcia** and currently taking up my master's degree in Measurement and Evaluation at the **PHILIPPINE NORMAL UNIVERSITY** and presently conducting a study on "**ATTITUDE OF TEACHERS TOWARDS EDUCATIONAL ASSESSMENT**"

My study would require analysis of the teachers' attitude. As a participating institution in my study, may I request your good office to allow me to conduct a survey with your (40) teachers?

The result of my study could provide insights in improving your institution's assessment environment. Your participation is highly appreciated.

Very truly yours,

SUZI CHRISTINE GARCIA

M.A. Student

Philippine Normal University

Dr. Antonio Dacanay

Adviser

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SUZI CHRISTINE EGUSQUISA GARCIA

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TEACHING EXPERIENCE

June 2012 – March 2014

World Citi Colleges, Quezon City

- Mathematics Instructor

May 2009 – May 2011

Miriam College Grade School, Quezon City

- Middle School Mathematics Teacher

May 2010

I Can Academy (Language School), Pasig City

- Part-time English Teacher

May 2007 – March 2009

TG Academy, Pasig City

- Head Teacher, Math and English Teacher

November 2007– February 2007

Kumon, Pasig City

- Part-time Math Instructor

WRITING PROJECTS

June 2013 – Present

University Press of Asia, DIWA Learning Systems, Inc.

- Next Generation Mathematics 10

December 2011– January 2012

University Press of Asia, DIWA Learning Systems, Inc.

- Plantilla for Grade School Mathematics Books

June 2011–June 2012

University Press of Asia, DIWA Learning Systems, Inc.

- Math for Smart Kids 6

October – November 2010

DIWA Learning Town, DIWA Learning Systems, Inc.

- Grade School Offline Modules

PROFESSIONAL LICENSE

Licensure Examination for Teachers

August, 2007

EDUCATION

March 2014 **Philippine Normal University** Manila
*Master of Education with Specialization in Measurement
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March 2007 **Philippine Normal University** Manila
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