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Professional Learning Community: Teachers' Perception and Its Effects On Student Achievement

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Philippine Normal University

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**PROFESSIONAL LEARNING COMMUNITY:
TEACHERS' PERCEPTION AND ITS EFFECTS ON STUDENT ACHIEVEMENT**

A Seminar Paper
Presented to
The College of Graduate Studies and Teacher Education Research
Philippine Normal University
Taft Avenue, Manila

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Teaching Mathematics

By
Ma.Edilyn D. Chiao
March 2014

APPROVAL SHEET

This seminar paper entitled “**PROFESSIONAL LEARNING COMMUNITY: TEACHERS’ PERCEPTION AND ITS EFFECTS ON STUDENT ACHIEVEMENT**” prepared and submitted by **MA. EDILYN D. CHIAO**, in partial fulfillment of the requirements for the degree of Master of Arts in Teaching Mathematics, is hereby recommended for approval and acceptance.

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Acknowledgement

"God will provide, but a good bundle of straw will not be amiss."

-Spanish Proverb

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Abstract

Researcher: Ma. Edilyn D. Chiao

Title: PROFESSIONAL LEARNING COMMUNITY:
TEACHERS' PERCEPTION AND ITS EFFECTS ON
STUDENT ACHIEVEMENT

Key Concepts: Professional Learning Community, Teachers' Perception,
Student Achievement in Mathematics, Improvement on
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The development of Professional Learning Communities (PLC) is a new and popular concept in improving student achievement. This research study sought to determine the influences of Professional Learning Community (PLC) as perceived by Elizabeth Seton School educators through the use of the The Schools as Professional Staff Learning Community Questionnaire (SPSLCQ). Furthermore, the study also sought to discover the effect of the first year of implementation of a departmental Professional Learning Community (PLC) on student achievement in the content area of Mathematics.

The study found that teachers' perception towards PLC affected how they made use of PLC as a tool in improving students' achievement. After two consecutive years of implementation, a marked improvement in students' mathematics grade was observed. This was achieved through teachers' collaborative efforts. The five dimensions of PLC have been manifested by teachers with a rating of very satisfactory that helped students attain good rating performance. Through the teachers' collaborative efforts, important matters during regular meetings, such as refinement of learning plans, devising of current teaching strategies, and sharing of best practices were prioritized to ensure significant improvement on students' achievement.

Since there is a significant relationship between teachers' perception towards PLC and students achievement and significant improvement in students' achievement in mathematics after two consecutive years of implementation, it is recommended to further fund, support, and train teachers to begin establishing Professional Learning Community (PLC).

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CHAPTER 1

The Problem and Its Background

INTRODUCTION

The history of Philippine education is filled with numerous attempts at reform. These reforms are essential as students' needs are constantly changing to meet the demands of the world today. In fact, De Guzman's paper on the current reforms in basic and higher education in the Philippines he states that "The Philippine Educational System is a clear example of a boat sailing in a body of changes and challenges. It has in fact followed the same pattern of education to that of the rest of the world. It has passed through various stages of development and undergone dramatic changes depicted in the various epochs of educational evolution. Its long years of exposure and contact with the Spaniards, Americans, and Japanese have created a spectrum of educational variations and lines of emphasis." (p. 39)

Education reform has been constant in the Philippines. Our educational system evolved from three colonizers: Spaniards, Americans, and Japanese, and their influences are still reflected on the present-day educational system's thinking and practices. At present, Philippine education is plagued by perennial ills – substandard quality, inadequate budget, incompetent teachers and personnel, lack of clear vision and direction, and poor facilities (Fernandez, 2012).

Achievement scores highlight Filipino students' poor performance in national examinations. The National Achievement Test (NAT) results for grade 6 in SY 2009-2010 showed a 69.21% passing rate while the NAT results for high school had 46.38% passing rate. Moreover, international tests results in 2003 Trends in International Mathematics and Science study (TIMSS) show that the Philippines ranked 34th out of 38 countries in HS Math and 43rd out of 46 countries in HS Science. Moreover, the Philippines ranked the lowest in 2008 even with only the science high schools joining the Advanced Mathematics category.

To remedy the pitiful state of Philippine education, several reforms were launched by past administrators through loans from the World Bank, Asian Development Bank and other multilateral funding agencies. However, its problems remained and some have even worsened (Fernandez, 2012).

To address this problem, the current administration of President Benigno Aquino III made reforming the country's educational system to K to 12 Program a major change in our country's educational landscape. As drafted in the Official Gazette of Department of Education (www.gov.ph/k-12), a 5-year old kindergarten student must undergo an implemented standardized curriculum as mandated to preschoolers nationwide. Elementary education refers to 6 years of primary school (Grades 1-6) while secondary education means four years of junior high school (Grades 7-10 or High

School 1st-4th Years). Additionally, two years are now assigned for senior high school (Grades 11-12 or High School 5th-6th Years).

There is an urgency to enhance the quality of basic education in our country as seen in the education outcomes of Filipino students and the comparative disadvantage of the Philippines with regard to other countries.

At present, the Philippines is the only country in Asia and among the three remaining countries in the world that uses a 10-year basic education cycle. According to South East Asian Ministers of Education Organization (SEAMEO-INNOTECH) on Additional Years in Philippine Basic Education (2010), the comparative data on duration of Basic and Pre-University Education in Asia shows that the Philippines allots 10 years not just for the basic education cycle but also for the pre-university education while all the other countries have either 11 or 12 years in their basic education cycle.

However, reforming curriculum and developing programs are not enough. Different schools adopt strategies that would assist students in improving their achievements. One recent concept taking education by storm is Professional Learning Community (PLC). This concept was first introduced in the business community as *the learning organization* through The Center for Organizational Learning, founded at Massachusetts Institute of Technology by Peter Senge in 1991 (Clanon, 1999). With

much fanfare and flaunted success, it has made its way onto educator's priority, adapting to meet the needs of educators and focusing goals on student learning.

In a PLC, all teachers work collaboratively in learning teams to attain high levels of student learning and positive student outcomes in alignment with school goals. Learning teams are groups consisting of 4 to 8 members who meet regularly and work interdependently to bring about positive change in student learning. Teachers in learning teams collaborate in areas such as refining lesson plans and materials as well as teaching strategies and assessment practices.

According to many research sources (Senge, 1990; DuFour&Eaker, 1998; Buffum, Mattos, & Weber, 2009), PLC may have some staying power that other popular trends in education have not. The basic idea of PLC is for teachers to collaborate on a regular basis to focus on student learning. The main tasks of an educational PLC are to answer the following questions: (1) What do we expect students to learn? (2) How will we know students are learning? (3) What will we do if students do not learn?

This learning community has been the basis of Elizabeth Seton School in implementing the program of PLC among the pool of educators of the institution. Teachers in this institution identify the competencies that need improvement as

measured through the result of students' quarter examination. These examinations are based on the standards set for mathematics education as written on the Refined Secondary Education Curriculum (RSEC) for Grade 8 and K to 12 Curriculum for Grade 7. These standards allow the summative assessment to measure the needed competencies to be attained by students. After determining students' strengths and weaknesses, teachers then collaborate within their subject area department to think of appropriate teaching strategies that would suit the level and needed skills of students and provide meaningful interventions and activities. These collaborations also include revisions of learning plans, modification of instructional materials and realignment of goals, activities and assessment tools. These interventions and strategies are employed by teachers in the whole learning process of Elizabeth Seton School. Finally parents are informed through Parent-Teacher Conference (PTC) of their child's performance in the said subject area after a certain grading period.

Thus, to evaluate the effectiveness of this program, this study looked at students' achievement in mathematics as considered to be caused by the implementation of PLC. This implementation was done specifically for the First Year (Grade 7) beginning June 2011 and continued a year after for the Second Year (Grade 8). Following a thorough review of research about PLCs, this research sought to compare the June 2011 (before the implementation of PLC) and 2012 (after the first year of PLC implementation) mathematics grades and 2012 (before the second year of

PLC implementation) and 2013 (after the second year of PLC implementation) of the participants to see if there were improvements in student achievement, likewise, the Mathematics teachers were surveyed to see if the learning environment improved after the first year of implementing PLCs.

CONCEPTUAL FRAMEWORK

Educators struggle to improve students' learning to achieve school goals. There have been numerous attempts to address the issue: from differentiated instruction to experimentation with various teaching strategies or methods. Although several arrays of concepts, programs and strategies were introduced, the benefits of a professional learning community may be considered as one of the best practices for students' academic improvement.

According to DuFour (2007), the implementation of Professional Learning Communities has been noted to be the most promising strategy for improving and sustaining student achievement. Considering DuFour's statement, Elizabeth Seton School started its pilot implementation of PLC in SY 2011-2012. From a traditional teacher-centered school, ESS has opened its venture into a student-centered, performance task-based learning, and learning through interventions. Shifting to a culture of meaningful collaboration which is necessary to the implementation of PLCs, Elizabeth Seton School encouraged teachers to support the PLC program. This has

been described as the single most important factor for sustaining successful school improvement and overall effectiveness of a school (DuFour&Eaker, 1998).

The conceptual framework of this study is shown in Figure 1. It illustrates the essentials of the five dimensions of PLC and teachers' perception as factors that affect students' improvement. It also shows the significance of these five dimensions of Professional Learning Community as factors that affect students' improvement. These dimensions are essential descriptors to consider in implementing PLC and improving students' achievement, therefore, attaining school's academic goals.

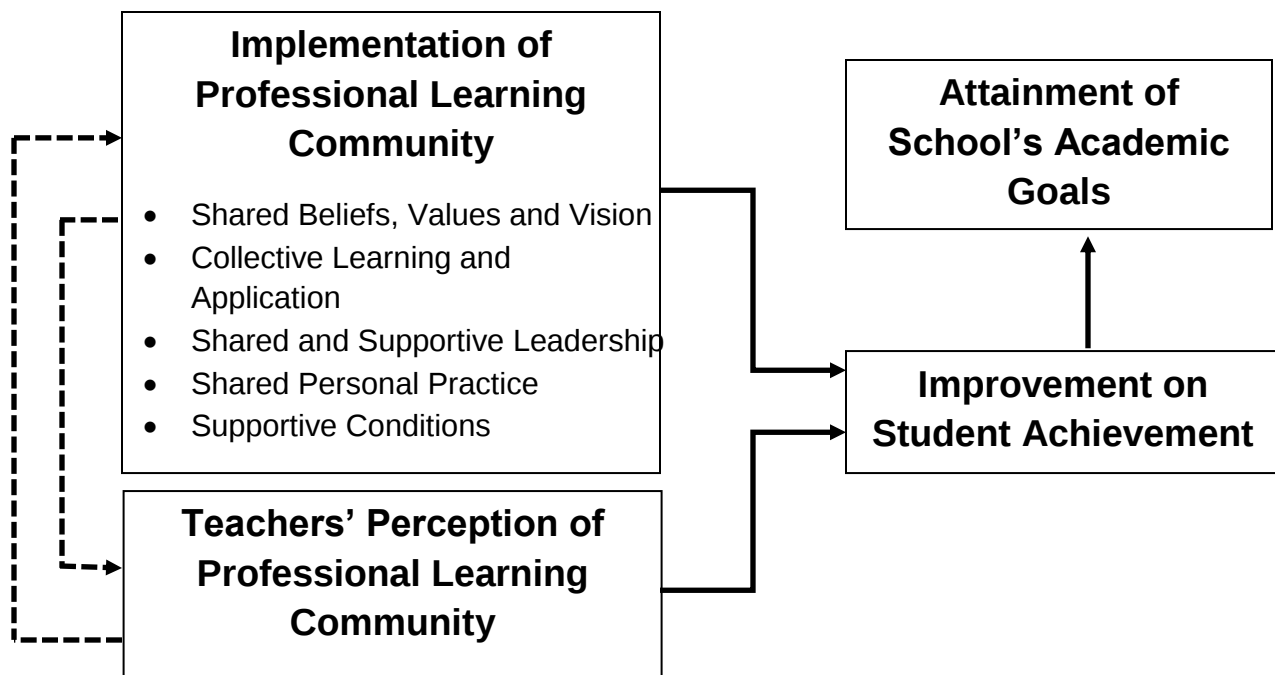


Figure 1: *Conceptual Framework of the Study*

According to Hall and Hord (2011), there will be no success on change initiative if schools that are not open to change. School's changes are necessary for improvement through close monitoring. This is the reason why PLC developed its five dimensions which serve as parameters to build an atmosphere favorable of observing change initiatives. Hipp and Huffman (2003) presented the attributes of five dimensions. The first dimension of PLC is Shared Values and Vision. This includes espoused values and norms that teacher share with one another that guide teaching and learning. This focuses on student learning that aligns the activities and assessment to the standards. The second dimension is Shared and Supportive Leadership. It includes broad-based decision making that reflects commitment and responsibility of coordinators and teachers in assisting students' learning. The third dimension is Collective Learning. It involves teachers, coordinators and school administrators working collaboratively to plan, solve problems and improve learning opportunities. The fourth dimension is Shared Personal Practice, which consists of peer observations and feedback to improve instructional practice, sharing outcomes, and coaching and mentoring. Last is the Supportive Conditional Relationships that are characterized by trust and respect, recognition and celebration, and effective communication system among the members is PLC.

The implementation of PLC through its five dimensions and teachers' perception towards PLC supports a learning institution to attain one of its goals: improvement of

students' achievement. PLC is a very conducive avenue in instilling among the teachers the spirit of collaboration. Through the five dimensions of PLC and teachers' collaborative efforts, an unsolicited learning team of empowered educators among them was founded which has paved the way in producing output oriented and academically equipped students.

Also, the figure supports the ideas of PLC that makes it an effective professional learning community. Composed of 4 to 8 faculty members, these learning teams usually meet regularly and work interdependently with a unanimous objective that is to aim for the holistic growth of their students. During their regular meetings, significant topics such as refinement of learning plans, devising of current teaching strategies, sharing of best practices, and the like were always prioritized. According to researches (Bolam, McMahon, Stoll, Thomas, and Wallace, 2005) PLC has the capacity to promote and sustain the learning of all the professionals in the school community with the collective purpose of enhancing pupil learning.

STATEMENT OF THE PROBLEM

This study aimed to determine the effects of Professional Learning Community on student achievement in mathematics at Elizabeth Seton School.

Specifically, the study aimed to answer the following questions:

1. What are the teachers' perceptions on the implementation of PLC in the school?
2. What are the students' achievement in mathematics?
3. Is there a significant relationship between teachers' perception on Professional Learning Communities and their students' achievement?
4. Is there significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year and second year of PLC implementation?

HYPOTHESES

Based on the problems stated, the following hypotheses were tested:

1. There is no significant relationship between teachers' perception on Professional Learning Communities and their students' achievement.
2. There is no significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation.

3. There is no significant difference/improvement in student achievement (as measured by the mathematics grade) after the second year of PLC implementation.

SIGNIFICANCE OF THE STUDY

The result of this study is significant to teachers, parents, school administrators and future researchers.

Teachers. The results of the study could assist mathematics teachers in developing new learning strategies to improve students' achievement. It could also provide guidance to teachers in developing habits of effective collaboration.

Students. The study may have an effect on the views of the students towards mathematics that through teachers' collaboration and support, improvement in mathematics is possible. This may also increase students' self-efficacy in mathematics as regular collaborations done by educators may help realize that teachers are concerned in their improvement.

Parents. As stakeholders of a learning institution, PLC enable the parents to be aware of students' achievement and performance in school through specific evaluation

which in turn may assist them in helping their children cope with the demands of the learning institutions.

School Administrators.The study could encourage school administrators to implement PLC in their respective schools that through PLC, students' achievement may be improved.

Future researchers.The results of this study may help future researchers in investigating further the merits of PLC.

ASSUMPTION OF THE STUDY

The researcher made the following assumptions regarding this study:

1. Each respondent is an active member of PLC.
2. The survey questions about PLC perceptions were answered truthfully by the respondents.
3. Respondents have enough knowledge and understanding to answer the survey questions.

SCOPE AND LIMITATIONS OF THE STUDY

This study aimed to determine the effects of Professional Learning Community on student achievement in mathematics at Elizabeth Seton School. The aspects looked

into teachers' perception and frequent teachers' collaboration in improving students' achievement. The research study was conducted in the High School Mathematics subject and only one school in Las Piñas City, Philippines. The research data was collected only by teachers self-reporting their perceptions. Perceptions of respondents are not factual information and are biased based on experiences and attitudes of respondents.

DEFINITION OF TERMS

The following terms are defined in this study as follows:

Professional Learning Community (PLC). A school's professional staff members who continuously seek to find answers through inquiry and act on their learning to improve student learning (Astuto, Clark, Read, McGree, & Fernandez, 1993). The five characteristics of PLCs are shared and supportive leadership, shared values and vision, collective learning and application, shared personal practice, and supportive conditions (Huffman & Hipp, 2003).

Student Achievement. It is the performance of the students in terms of cognitive knowledge and is based on the mathematics grade obtained every quarter.

Mathematics Grade-Level Mean before PLC.The grouped mean of mathematics grade-level before the implementation of PLC.In this study, the mean was computed statistically using the grouped mean formula and rounded off to the nearest hundredths.

Mathematics Level Grade Mean after PLC.The grouped mean of mathematics grade-level after the implementation of PLC.In this study, the mean was computed statistically using the grouped mean formula and rounded off to the nearest hundredths.

Teachers' Perception.Teachers' perceptions are views or insights of teachers towards PLC as measured by The Schools as Professional Staff Learning Community Questionnaire (SPSLCQ).

CHAPTER 2

Review of Related Literature

This review of literature identifies and analyzes studies pertinent to the effects of professional learning community (PLC). Studies about professional learning communities, its beginnings, impact on student achievement, and its relationship with teachers' perception are the focus of this study. This chapter provides background information about PLC, its dimensions, and how these dimensions are essential for successful PLC. Also, this chapter describes and analyzes some essential studies in the area of PLCs that reviews on necessary conditions for creating and sustaining professional learning communities.

PROFESSIONAL LEARNING COMMUNITY (PLC) BEGINNINGS

To address the condition of Philippine Education after several reforms, educators have been searching for more strategies on improving student achievement. One of the most recent new ideas in educational reform taking the profession by storm is the Professional Learning Community (PLC). Although not new, PLC has not been widely introduced and practiced in the Philippines. This is why there are no research studies on improving student achievement in the said country.

PLC started over with the impression of team collaboration which was under experimentation years ago. Using teacher team collaboration to initiate change was one of the successes of the 1930's Eight-Year Study, during which collaboration communities formed and flourished (Bullough, 2007). Stuewe (2012) listed the five lessons can be learned from Bullough's Eight-Year Study. These are (1) Teacher education and capacity building is at the root of school reform; (2) Powerful teacher education involves engagement and exploration with others in pressing personal and professional problems and issues; (3) Sustained school reform requires a foundation of trust among those involved; (4) Schools, colleges, and universities must join in a mutual quest for change and improvement in order to be successful; and (5) Each generation must learn from the experience of previous generations.

As the study progresses, there has been a demand on the role of the teachers, as it does in today's PLC (Fleming & Thompson, 2004). New tasks in the 1930's called for collaboration, developing new skills and setting aside old practices. Today's PLC movement requires the same, searching on educators to set agreed upon norms, and proceed with student learning as a main focus to drive cultural change within the school system.

DEFINING PROFESSIONAL LEARNING COMMUNITY (PLC) AND ITS DIMENSIONS

The *term* professional learning community and corresponding acronym (PLC) is a firsthand supplement to the list of educational reform acronyms. It has been widely used in educational circles to represent various groups that are assembled to work together for a variety of concerns. These groups of educators often include departmental and/or grade level groups to work on administrative tasks such as selecting text manuals, organizing time tables and schedules, and other organizational tasks (Hord, 2008)

Professional Learning Community is a learning community that consists of a group of professionals who “continuously seek and share learning, and act on their learning” (Hord, 1997). Parr and Ward (2006) describe learning communities as a sustainable vehicle for teacher learning that uses shared norms and values, collaboration, focus on student learning, shared personal practice, and insightful dialogue. DuFour and company (2010) argue that a PLC is an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve (DuFour, 2010).

Professional learning communities also suggest difference in school setting as compared to traditional schools. As shown in Table 1, Eaker, Dufour, and DuFour(2002)

indicated that changes abound in professional learning communities when compared to traditional approaches to school. Angelle and Teague (2011) made use of the table below to clearly analyze the comparison of traditional approach with PLC.

Table 1:*Comparison of Traditional Schools and Professional Learning Communities*

Traditional Schools	Professional Learning Communities
Teacher isolation	Collaborative teams
Generic mission and belief statements	Mission statements clarify what students will learn, how it will be assessed, and how school will respond if not learned
Vision statements, often developed by only a few, more like wish lists, and may be ignored	Research based vision statements developed through collaboration and provide blueprint for improvement
Goal statements that are random, focused on means rather than ends, may be difficult to assess	Goals stated with measurable performance standards linked to vision
Culture focused primarily on teaching	Culture focused primarily on learning
Curriculum overload is common; teachers independently decide what to teach	Collaboration used to develop curriculum that is focused on student learning expectation
Improvement decisions made by averaging opinions	Improvement decision made through collaboration and based on best practices
Effectiveness of improvement strategies externally validated; an emphasis on teacher opinions of strategies	Effectiveness of improvement strategies internally validated based on student learning outcomes
Administrators are leaders	Administrators are leaders of leaders
Teachers are implementers	Teachers are transformational leaders
School Improvement Plan focused on wide variety of issues; plan may be set aside after developed	School Improvement focused on fewer goals developed collaboratively and designed to affect student learning; plan is vehicle for change
Improvement initiatives follow latest trends/fads	Improvement initiatives tied to vision statement

The term “professional learning community” defines itself. In the publication “Professional Learning Communities: Communities of Continuous Inquiry and Improvement”, Hord (1997) noted that there was no universal definition of professional learning community. Based on an extensive literature review of the concept, Hord conceptualized PLC as schools in which the professional staff as a whole consistently operates along with the five dimensions: (1) shared beliefs, values and vision, (2) supportive and shared leadership, (3) supportive conditions, (4) collective learning and application, and (5) shared personal practices.

Establishing and sustaining a professional learning community within a school does not occur rapidly. It calls for dedicated and deliberate effort on the part of the school administrators, subject area coordinators and teachers. Hord’s five dimensions of professional learning communities will be utilized as a means of organizing the data. The literature reviewed provided insight into the characteristics of schools that are immersed in the development, implementation, and sustaining of PLCs.

SHARED BELIEFS, VALUES, AND VISION

Professional Learning Community members such as school administrators, teachers and other professional staff should possess intentional effort in developing shared vision and beliefs. Huffman (2003) reported that in professional learning communities that were considered to have more experienced educators understand the

necessity to develop a vision and have the capacity to connect it with important overarching concerns such as goals for student achievement, school improvement, and lifelong learning.

Every learning institution has its vision essential in attaining school's goals. According to Pankake& Moller (2003), a vision that is "characterized by an undeviating focus on student learning" (p. 8) has been renowned as a sign of a true professional learning community. This statement was supported by Hord (2008) who emphasized that a shared vision guided the work of a learning institution as they considered improvements that were vital for greater student learning.

Huffman (2003) affirmed that among all of the five dimensions which are foundational to the concept of PLC, shared vision was the most crucial. It is then stated that shared vision is critical to understand that the occurrence of a resilient, shared vision based on collective values provides the foundation for informed leadership, staff member commitments, student success, and sustained school growth. Thus, the work of professional learning communities gave the idea from this sense of shared vision and purpose.

SHARED AND SUPPORTIVE LEADERSHIP

The principal is not the authoritative manager in a PLC, but one who involves staff in the decision making process (DuFour&Eaker, 1998). A review on the five case studies conducted by Louis, Marks, and Kruse (1996) discovered that principals in learning institutions that were effectively implementing professional learning communities positioned themselves in the center of the learning tem rather than a superior individual. According to research, integrating leadership practices that utilize shared power creates better motivation, a sense of community, efficiency, trust, and even risk taking (Wahlstrom& Louis, 2008).

According to another research by Huffman & Hipp (2003), administrators such as principals participated in nurturing relationships within the learning institution as a key player that allowed for shared leadership, shared power, shared authority, and shared responsibility. To foster a successful PLC, shared and supportive leadership is very essential since principal and subject area coordinators share responsibilities contributed to the development of a PLC.

COLLECTIVE LEARNING AND APPLICATION

As described by Hord (2009), learning within PLCs is a continual activity where the team learns how to learn together constantly. Collective learning upholdsto seek responses to questions about what students need to learn, how we will know it has

been learned, and how will we act when students struggle (DuFour, 2004; Lovett & Cameron, 2011). Senge (1990) stated that learning is always also implicates learning how to deal creatively with the powerful forces opposing productive dialogue and discussion in working groups. In order to create an effective professional learning communities that can impact student learning, collective learning was found to be essential (Hord, 1997, 1998, 2008).

To integrate collective learning, there should be an excellent channel of consistent communication among the active members of PLC. The professional learning community is an independent environment which “allows dissent and debate among its members, and this can result in increased understanding and learning of the members” (Hord, 1997, p. 37).

SHARED PERSONAL PRACTICE

Professional learning communities motivated educators to collaborate and impart personal practices. PLC's shared personal practice requires mutual respect and a development of trust (Huffman & Hipp, 2003). The work of has paved the way for educators to implement more peer observations, partaking exchange in outcomes, and coaching or mentoring roles (Huffman & Hipp, 2003; Hord, 1997).

In order for shared practice to be greatly implemented, team members have to unleash of mental models and build the capacity for change (Senge, 1990). DuFour (2004) stated that sharing personal practices of educators that participate in meaningful and active collaboration helps in identifying and determining if instructional approaches and strategies benefits students' learning. Collective learning also leads to developing and testing new approaches that can be reinforced through shared reflection (DuFour&Eaker, 1998).

SUPPORTIVE CONDITIONS

According to Huffman and Hipp (2003), supportive conditions are “glue that is critical to hold the other dimensions together” (p. 146). Supportive conditions found in learning institutions implementing PLC included both supportive relational conditions and supportive structural conditions. Hord (1997) cited two kinds of supportive structures found within professional learning communities: (1) structural conditions which include productive use of time, proper communication channeling, school's population, teachers' proximity, and staff development processes and (2) shared relationships which include optimistic attitudes of active members of PLC, shared vision and sense of purpose, norms of constant inquiry and enhancement, respect, trust, and caring relationships.

To have a successful and sustaining PLC, resources such as materials, finances, training seminars, and individuals were found in research to be essential (Huffman & Hipp, 2003). Louis, Marks, and Kruse (1996) found that time set aside to meet and talk, both as teaching teams and as a staff, was critical for growth of PLCs. When supportive conditions are present, Leo and Cowan (2000) found that collegial relationships are fostered. Roundtree and Hipp (2010) also discovered a noticeable change in staff and student morale when the staff was confident of needed support.

ADVANTAGES OF PROFESSIONAL LEARNING COMMUNITY

While many learning institutions, with the best intentions, choose to use the PLC label, it is still essential to accurately assess the level of effectiveness of PLC characteristics and how learning institutions and students benefit from it. Schmoker (2006) stated that PLCs emerged as possibly the best means by which to constantly improve instruction and student performance.

To justify on the statement of Schomer (2006) and recognize the benefits and effectiveness of PLC, several researches were considered as basis for this study. In the dissertation entitled “Professional Learning Communities and the Positive Effects on Student Achievement: A National Agenda for School Improvement”, Teresa Ann Hughes (2006) presents the effectiveness of PLC in public high schools in Texas. The research shows that professional learning communities empowered the faculty and administration

to work collectively and provided quality instruction. It also confirms that there is a positive impact on students. The data from this study indicated that almost all schools functioning as professional learning communities improved in their Mathematics and Reading/English Language Arts Texas Assessment Knowledge and Skills scores. Burdett (2009) and Roberts (2010) also noted a statistically significant improvement on student achievement scores in the areas of Mathematics and Reading. In another dissertation presented by Cieslak (2002), the mechanisms of shared decision making, shared vision, collective learning, and school conditions and capacities (excluding shared practice) positively contributed to a teaching staff's maturity level as a PLC and student achievement.

The study of Vescio et al (2008) also reviews the empirical evidence gathered on the impact of the professional learning community on both teaching practices and student achievement. After evaluating the evidence on the improvement of student achievement, the authors concluded that although not much, the collective outcomes of these studies offer an unequivocal answer to the question about whether the literature supports the assumption that student learning increases when teachers participate in professional learning communities.

To further support studies on PLC, several websites were created to promote its benefits and effectiveness. One of these websites is All Things PLC

(www.allthingsplc.info) where there are more than 100 schools who implement PLC and almost 50 schools who shared their inspirational stories. In the same website, there have been PLC evidences of effectiveness where participating schools followed a selection process of applying and identifying school's progress. These PLC evidences of effectiveness were measured and assessed by a committee using criteria which identify meaningful steps and build the collective capacity of the staff to implement this powerful continuous improvement concept.

TEACHERS' PERCEPTION TOWARDS PROFESSIONAL LEARNING COMMUNITY

Teachers play vital roles in the lives of the students in their classrooms. They are best known for the role of educating the students that are placed in their utmost care. Beyond that, teachers serve many other roles in the classroom. Teachers set the mood of their classrooms, build a care-free environment, nurture students, become role models and mentors, and listen with an open heart.

Teachers uncover practices on improving student achievement. Research on professional learning communities indicates that teachers reap such benefits as collective responsibility for student achievement, improved understanding of educators' roles in assisting students and professional renewal (Hord, 1997).

Since teachers are very essential in PLC, Little (1990) describe teachers as a member of the productive teams that “plan, design, research, evaluate, and prepare teaching materials together” (p. 526-527). Their perception towards PLC is vital since there is a significant difference found based on teacher perceptions of the PLC process with regard to school level and years of experience (Roberts 2010).

SYNTHESIS

The review of related literature provided an understanding on studies about Professional Learning Communities. Although the term Professional Learning Community (PLC) was noted to have no universal definition (Hord, 1997), it is still conceptualized as a community that focuses on student learning (Pankake& Moller, 2003) in which the professional staff as a whole consistently operates along with its five dimensions: (1) shared beliefs, values and vision, (2) supportive and shared leadership, (3) supportive conditions, (4) collective learning and application, and (5) shared personal practices. Several authors cited how each dimension is essential for successful PLC (Hord, 1997).

Since several concepts of PLC have been introduced for two decades now, there is still a need to consider several research studies and recognize their findings. There is a number of literature reviews of studies focused on Professional Learning Community but only a few was used for this current study. These research studies which review on

the role of professional staff such as principals and teachers were considered. These are studies of Fleming & Thompson (2004), Louis, Marks, and Kruse (1996), Huffman (2003) which suggest the shared responsibility of school leaders and teachers is the key for a successful and sustaining PLC.

Other than the research studies presented on the role of professional staff, there have been few more studies dealing with PLC and student achievement. These studies were implemented on different levels: primary/elementary schools (Burdett, 2009 and Hurd, 2010), middleschools (Stuewe, 2012 and Hughes, 2006) and both primary and middle schools (Roberts, 2010). All specifically aimed on dealing with improvement on student achievement, collective results were noted to support the assumption on its effectiveness. Stuewe (2012) noted that there was an improvement in the 8th grade test scores from 2010-2011 which signifies that PLC have potentially made a positive impact on student achievement. Hughes (2006), Burdett (2009) and Roberts (2010) also noted that there is a statistically significant increase on students' Mathematics and Reading/English Languages Arts scores.

CHAPTER 3

Methodology

This chapter presents the methods and procedures used in the study. These are presented in the following sections: (1) Research Design and Procedure, (2) Respondents of the Study, (3) Survey Instrument and Data Collection, (4) Statistical Treatment of the Data.

RESEARCH DESIGN

This study used descriptive research as a type of methodology which involved collection of quantitative information needed to determine whether PLC had the intended effect on student achievement.

Using this research design, data were gathered and summarized through numerical reports and tables using measures of central tendency, variation and correlation.

RESEARCH PROCEDURE

In this research study, the researcher followed the flowchart shown in Figure 2 as the basis for the research method. This flowchart shows a step-by-step procedure on how the study was conducted and findings were sought.

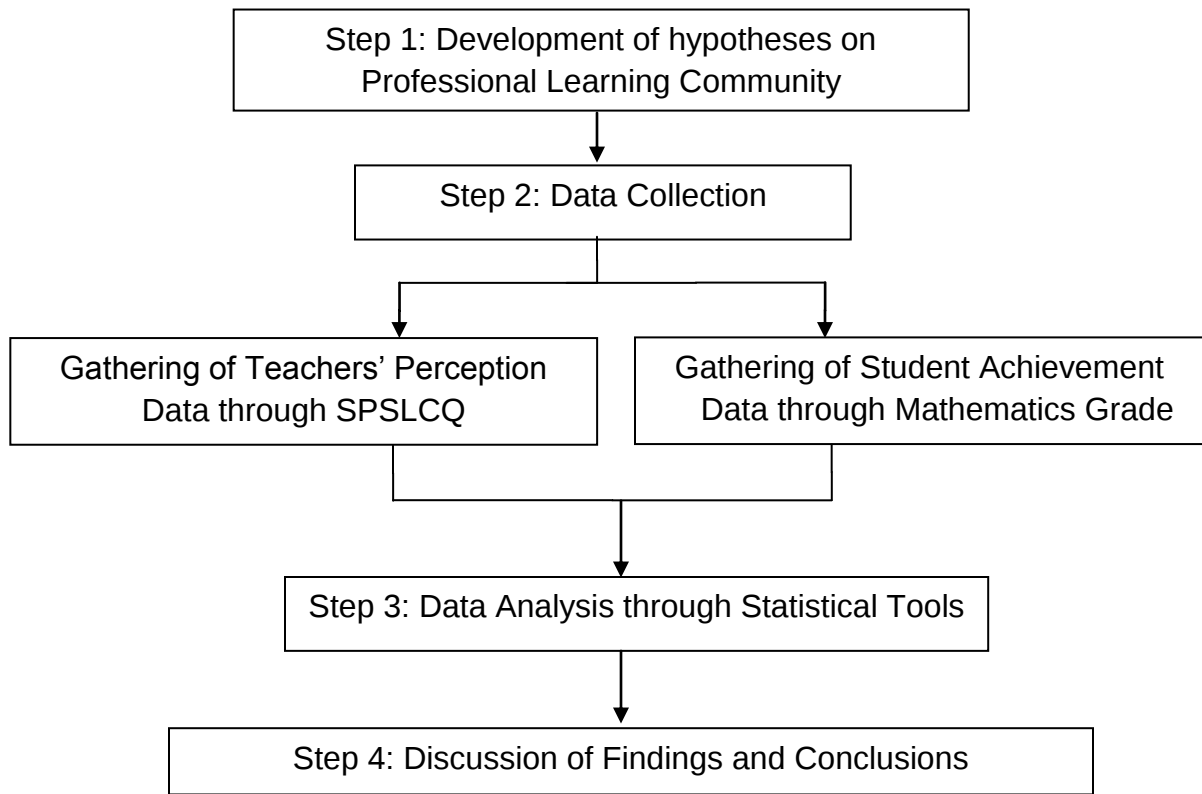


Figure 2:*Research Procedure*

This research procedure is attainable in four significant steps. The initial stage of the process is the cultivation of the hypotheses on the Professional Learning Community. Having formulated such hypotheses, the researcher then collects ample and significant data through conduction of surveys on Teachers' Perception via SPSLCQ and Student Achievement via corresponding Mathematics Grades. Through specified statistical tools, these gathered data are utilized to compose a comprehensive interpretation and analysis on the study. Finally, all formulated findings and conclusions proceed for discussion.

RESPONDENTS OF THE STUDY

The Grade 7 students of SY 2011-2012 and Grade 8 students of SY 2012-2013 of Elizabeth Seton School, located in Las Piñas City, were the respondents of this research study. There were 242 students in Grade 7 for SY 2011-2012 and almost 98% re-enrolled in SY 2012-2013.

For establishing the relationship of teachers' perception with student achievement, the sample of individuals included seven (7) mathematics teachers teaching high school mathematics in Elizabeth Seton. These teachers are all active members in PLC.

Table 2:

Mathematics Teachers' Rank and Academic Preparations

Teacher's Rank	No. of Teachers	Grade/Year Handled
Probationary (1-3 years)	2 (1 teacher with single preparation and 1 teacher with double preparations)	Grade 8 and Third Year
Novice (4-8 years)	2 (1 teacher with single preparation and 1 teacher with double preparations)	Grade 7 and Grade 8
Junior (9-16 years)	1 (double preparations)	Third Year and Fourth Year
Senior (17 years onwards)	2 (both single preparation)	Fourth Year

SURVEY INSTRUMENT

The Schools as Professional Staff Learning Community Questionnaire (SPSLCQ), developed by Hord (1997), was selected to assess teachers' perception of their school as a learning community. This questionnaire (see Appendices) assesses the extent to which teachers believe their school is a positive learning environment and a supportive learning community. The survey consists of five conceptual, not empirical, dimensions: shared leadership, shared visions, collective creativity, peer review, and supportive conditions/capacities. Each dimension contains items with individual Likert-type response scales of 5 (high) to 1 (low). The response scales used in the SPSLCQ vary by item and are, therefore, different from the more familiar Agree – Disagree response range.

The response scales on the SPSLCQ have anchor statements at both end-points and at the mid-point to differentiate the high, middle, and low points on the scale. The higher the total score the more positively the school is viewed as a PLC.

DATA COLLECTION

The data of this study were collected using The Schools as Professional Staff Learning Community Questionnaire (SPSLCQ). Two surveys were administered, the first in March 2012 and the second in March 2013. Each survey questionnaire was expected

to take participants approximately 10-15 minutes to complete.

The quantitative data were processed using the Statistical Package for Social Sciences (SPSS) version 21.

STATISTICAL TREATMENT OF THE DATA

The data gathered from the respondents were tabulated, tallied, analyzed and interpreted. To interpret the data gathered, the following formulas were utilized:

1. **The Ungrouped Mean** was used to determine the mean scores of the The Schools as Professional Staff Learning Community Questionnaire (SPSLCQ) answered by teachers.

It is defined by the formula:

$$Mean = \frac{\sum x}{n}$$

where:

x = rate on the survey

n = number of respondents

The data of the survey were interpreted by using the five (5) point Likert Scale as the criterion which serves as the basis for the interpretation of the data as shown on Table 3.

Table 3:

Likert Scale Rating

Scale	Verbal Interpretation	Average
5	Excellent	4.50 – 5.00
4	Very Satisfactory	3.50 – 4.49
3	Satisfactory	2.50 – 3.49
2	Fair	1.50 – 2.49
1	Poor	1.00 – 1.49

2. **The Grouped Mean** will be used to determine the mean grade in mathematics of the grade/year and section before the start of Professional Learning Community and a year after PLC was implemented. It is computed by getting the product of the class mark and the frequency of each class, then dividing it with the number of students in each class. It is defined by the formula:

$$Mean = \frac{\sum fX_m}{n}$$

where:

f = frequency

X_m = class mark

n = number of respondents

3. **The Standard Deviation** will be used to determine how closely the values of a data set are clustered around the mean. The standard deviation is obtained by taking the positive square root of the variance. It is defined by the formula:

$$sd = \frac{\sum f(X_m - \bar{X})^2}{n - 1}$$

where:

f = frequency

X_m = class mark

$\bar{X}$ = grouped mean

n = number of respondents

4. **The Paired t-test** is used to determine the difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation. Also, t-test is used since we have only 6 sections for SY2011-2012 and 12 sections for SY 2012-2013 as population and the two samples for each school year are the same size. Weiss (2011) defined the formula:

$$z = \frac{\bar{d}}{S_d / \sqrt{n}}$$

where:

$\bar{d}$ = mean difference

S_d = standard deviation difference

n = number of respondents

All data for t-test were interpreted and computed with the use of Statistical Package for Social Sciences (SPSS) version 21.

5. **The Pearson Product-Moment Correlation Coefficient of correlation** was used to determine the degree of relationship between the student achievement and teacher perception towards PLC. It is defined by the formula:

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

where N -number of cases

$\sum XY$ - sum of the products X and Y

$\sum X$ - sum of X

$\sum Y$ - sum of Y

$\sum X^2$ - sum of the squares of X

$\sum Y^2$ - sum of the squares of Y

The researcher interpreted the degree of correlation using the table below as cited in <http://www.experiment-resources.com/pearson-product-moment-correlation.html>.

Table 4:

Correlation Range

Values of r	Strength of Relationship
-1.0 to -0.5 or 0.5 to 1.0	Strong
-0.5 to -0.3 or 0.3 to 0.5	Moderate
-0.3 to -0.1 or 0.1 to 0.3	Weak
-0.1 to 0.1	None or very weak

All data for correlation were interpreted and computed with the use of Statistical Package for Social Sciences (SPSS) version 21.

CHAPTER 4

Presentation, Analysis, and Interpretation of Data

In this chapter the results of the data analysis are presented. The data were collected and then processed in response to the problems posed in chapter 1 of this study. This study aimed to determine the teachers' perception on PLC and its relationship with students' achievement. This study also determines the effectiveness of PLC in improving students' achievement in Elizabeth Seton School.

After two years of implementing the PLC in Elizabeth Seton School, this research analyzes the grade-level averages of the students in mathematics, standard deviations, paired t-test analysis, and value-added comparisons from 2011 and 2013 to determine if PLC is effective in improving students' achievement in mathematics.

The presentation of the data is based on the sequence in which the questions from chapter 1 are stated.

TEACHER SURVEY RESULTS

A five-point Likert survey was distributed among the seven mathematics teachers who are part of the school's mathematics PLC in the SY 2011-2012. This survey was administered in March of 2012 before the last quarter grade was released. All seven

mathematics teachers responded to the survey. The survey was administered again in March 2013, part-way through the second year of PLC development in the school with seven teachers responding to the survey.

The survey questionnaire concerns teachers' perceptions about PLC in Elizabeth Seton School. Each item and sub-item from the survey corresponds to one of the five dimensions of PLC.

PROBLEM 1: *How do teachers perceive the implementation of PLC in school?*

Regarding the research question *How do teachers perceive the implementation of PLC in school*, the results of the survey showed that the teachers found the implementation of PLC to be satisfactory as a whole. Each PLC dimension was rated using descriptors found on the questionnaire. The perceptions of these seven mathematics teachers were assessed using a five-point scale and analyzed using the Likert Scale (see Table 3). Table 5 and 6 shows the summary of teachers' perception towards PLC.

Table 5:

Teachers' Perception towards PLC after the First Year of Implementation

Dimensions of PLC	Mean average of Teachers' Perception	Verbal Interpretation
Shared and Supportive Leadership (Items 1a, and 1b)	3.14	Satisfactory
Shared Beliefs, Values, and Visions (Items 2a, 2b, and 2c)	3.62	Very Satisfactory
Collective Learning and Application (Items 3a, 3b, 3c, 3d, and 3e)	3.42	Satisfactory
Shared Personal Practices (Items 4a, and 4b)	3.22	Satisfactory
Supportive Conditions (Items 5a, 5b, 5c, 5d, and 5e)	3.86	Very Satisfactory

Table 5 shows that teachers' perception on PLC by means of its five dimensions. Supportive Conditions rated the highest with 3.86 score, followed by Shared Beliefs, Values and Visions rated 3.62. These two dimensions are interpreted as very satisfactory. The rating of Collective Learning and Application is 3.42, Shared and Supportive Leadership is 3.14 and Shared Personal Practices has a rating of 3.22. These three dimensions are interpreted as satisfactory.

Since Shared and Supportive Leadership, Collective Learning and Application, and Shared Personal Practices are ranked satisfactory; it shows that administrators of Elizabeth Seton School participated in nurturing relationships within the school that allowed shared power, authority, and responsibility. It also shows that Elizabeth Seton School integrates strong group learning through constant working in teams with motivated teachers who constantly implements peer observation, sharing feedbacks and outcomes. Examples of these are different practices are team-building before the start of every school year for strong relationships among administrators and teachers, constant communication and proper dissemination of tasks to promote shared responsibility, continual walk-throughs, informal and formal observations, and constant meetings for sharing feedbacks and outcomes.

Shared Beliefs, Values, and Visions, and Supportive Conditions were ranked very satisfactory. It shows that teachers of Elizabeth Seton School shares their beliefs, values and vision through practices such as endless learning collaboration in meeting school's goal of student achievement, attendance to seminars frequently for lifelong learning, and team-building activities to promote good collegial relationships with positive attitude towards work.

Table 6

Teachers' Perception towards PLC after the Second Year of Implementation

Dimensions of PLC	Mean average of Teachers' Perception	Verbal Interpretation
Shared and Supportive Leadership (Items 1a, and 1b)	3.58	Very Satisfactory
Shared Beliefs, Values, and Visions (Items 2a, 2b, and 2c)	4.05	Very Satisfactory
Collective Learning and Application (Items 3a, 3b, 3c, 3d, and 3e)	3.71	Very Satisfactory
Shared Personal Practices (Items 4a, and 4b)	3.71	Very Satisfactory
Supportive Conditions (Items 5a, 5b, 5c, 5d, and 5e)	4.06	Very Satisfactory

Table 6 shows that after the second year of PLC implementation, the teachers' perception on PLC by means of its five dimensions. Supportive Conditions still rated the highest with 4.06score, followed by Shared Beliefs, Values and Visions rated 4.05. The rating of Collective Learning and Application and Shared Personal Practices is both 3.71,and Shared and Supportive Leadership rated 3.58. All the five dimensions are interpreted as very satisfactory.

In general, the teachers perceive the implementation of PLC in school on a **SATISFACTORY** rating on the first year of implementation and **VERY SATISFACTORY** on the second year of implementation. This implies that administrators and teachers of Elizabeth Seton School perceived that they manifested the five dimensions of PLC. This is because they were used to the PLC process on the second year of implementation. Since administrators and teachers familiarized themselves with PLC, the second year of its implementation became an avenue for developing an intensive working collaboration to meet the purpose of PLC and the demands of the students.

PROBLEM 2: *What are the students' achievements in mathematics?*

Regarding the research question *What are the students' achievements in mathematics*, student achievement data and relative data on the mathematics grade-level averages were used to compare students' achievement.

STUDENT ACHIEVEMENT DATA

Quarter/Term Grades of the student respondents in mathematics were used as the measure of student achievement for this study. The said grades are intended to measure how well a student learned in mathematics. These kinds of tests/assessments differ from norm-referenced tests in that the scores reflect students' proficiency on particular educational standards, rather than their academic standing relative to other students.

For the first year of PLC implementation, the first quarter grade of SY 2011-2012 was used to compare the fourth quarter grade of the same school year to determine if there is a significant improvement on students' performance. On the start of the second year of PLC implementation, the first quarter grade of SY 2012-2013 was used to compare the fourth quarter grade of the same school year to again determine if there is a significant improvement on students' performance. The same quarter grades for each school year were also used to examine the relationship of teachers' perception towards PLC with student achievement.

In this study, the mathematics grades are used to measure student achievement. This is parallel to the study of Jacob and Rockoff (2011) which reviews on three organizational reforms. The study also suggests that grades are used to measure student achievement and have potential increase in K–12 student performance.

RELATIVE DATA ON THE MATHEMATICS GRADE-LEVEL AVERAGES

The grade-level mean was computed using the formula for grouped data using the first quarter grade released on August 2011 and the fourth quarter grade released in March 2012. Relative data on the mathematics grade-level averages were used to compare students' achievement as shown in Tables 7 and 8.

Table 7

The Mathematics Grade-Level Averages for School Year 2011-2012

Grade/Year and Section	August 2011		March 2012		Mean Difference
	Mean	Standard Deviation	Mean	Standard Deviation	
First Year Basilan	79.36	6.55	83.05	6.80	3.69
First Year Bukidnon	79.09	6.84	79.38	6.74	0.29
First Year Camiguin	78.26	5.67	78.71	4.82	0.45
First Year Misamis Occidental	78.93	4.31	79.71	4.12	0.78
First Year Misamis Oriental	79.40	5.09	80.00	4.94	0.60
First Year Zamboanga Del Norte	76.60	4.93	77.57	4.65	0.97

Table 7 shows the mean grades and standard deviation of each section in First Year/Grade 7 for SY 2011-2012. The table shows that there is consistency in the increase of mean grades of each section but no consistency in standard deviation through this comparative analysis.

The increase in mathematics mean grade suggests that the Grade 7 students improved their mathematics grade since it was seen that the mean difference are all positive while the increase in standard deviation suggests that the grades of March 2012 are more concentrated around the mean than that of August 2011. It shows good sign of performance.

This shows that through the first year of PLC implementation, all six sections of grade 7 students were able to perform well in mathematics.

Table 8*The Mathematics Grade-Level Averages for School Year 2012-2013*

Grade/Year and Section	August 2012		March 2013		Mean Difference
	Mean	Standard Deviation	Mean	Standard Deviation	
Grade 7 Basilan	83.83	4.42	85.67	4.31	1.84
Grade 7 Bukidnon	83.18	5.31	86.06	5.25	2.88
Grade 7 Camiguin	81.84	6.16	85.17	5.82	3.33
Grade 7 Davao Del Sur	78.79	5.87	81.11	5.45	2.22
Grade 7 Misamis Occidental	78.87	4.65	81.04	4.41	2.17
Grade 7 Zamboanga Del Sur	79.72	5.85	81.17	5.69	1.45
Second Year Compostela Valley	87.74	5.52	87.94	4.64	0.20
Second Year Davao Del Norte	79.26	5.30	79.45	5.29	0.19
Second Year Davao Oriental	79.21	5.01	79.59	4.94	0.38
Second Year Sarangani	78.60	5.12	79.00	4.02	0.40
Second Year South Cotabato	78.38	5.83	79.26	5.80	0.88
Second Year Sultan Kudarat	79.65	5.72	80.88	5.47	1.23

Table 8 shows the mean grades and standard deviation of each section in First Year/Grade 7 and Second Year/ Grade 8 for SY 2012-2013. The table shows that there is consistency in the increase of mean grades and standard deviation of each section through this comparative analysis

The grade-level mean was computed using the formula for grouped data using the first quarter grade released on August 2012 and the fourth quarter grade released March 2013.

The increase in mathematics mean grade suggests that the Grade 7 and students improved their mathematics grade since it was seen that the mean difference are all positive while the increase in standard deviation suggests that the grades of March 2013 are more concentrated around the mean than that of August 2012. It shows good sign of performance.

Consistent with Table 7, this shows that after the second year of PLC implementation, all six sections of grade 7 and six sections of grade 8 students were able to perform well in mathematics.

PROBLEM 3: *Is there a significant relationship between teachers' perception on Professional Learning Communities and their students' achievement?*

Regarding the research question *Is there a significant relationship between teachers' perception on Professional Learning Communities and their students' achievement*, a consolidated survey data on teachers' perception was made to determine its relationship with student achievement as shown in Table 7.

Table 9

Consolidated Survey Data on Teachers' Perception towards PLC and Grade-Level Mean for SY 2011-2012 and SY 2012-2013

	Teacher	Mean on Teachers' Perception	Sections the Teacher Handled	Grade-Level Mean
SY 2011-2012	Teacher 2	3.647059	Basilan	83.05
	Teacher 6	3.529412	Misamis Oriental	80.00
	Teacher 7	3.470588	Bukidnon, Camiguin Misamis Occidental Zamboanga Del Norte	78.84
SY 2012-2013	Teacher 4	3.764706	Compostela Valley Davao Del Norte Sarangani, South Cotabato	81.41
	Teacher 5	3.705882	Basilan Zamboanga Del Sur Davao Oriental Sultan Kudarat	81.83
	Teacher 6	3.764706	Bukidnon Camiguin Davao Del Sur Misamis Occidental	83.35

Table 9 shows the consolidated survey data on teacher perception towards PLC and the grade-level mean of sections they handled. For SY 2011-2012, Teacher 2 and Teacher 6 handled only one section each, Basilan and Misamis Occidental respectively while Teacher 7 handled the remaining four sections namely Bukidnon, Camiguin, Misamis Oriental and Zamboanga Del Norte. For SY 2012-2013, Teacher 7 handled four sections in Grade 7 (Bukidnon, Camiguin, Davao Del Sur and Misamis Occidental). Teacher 5 handled two sections in Grade 7 (Basilan and Zamboanga Del Sur) and two sections in Grade 8 (Davao Oriental and Sultan Kudarat) Teacher 4 handled four sections in Grade 8 (Compostela Valley, Davao Del Norte, Sarangani and South Cotabato).

The grade-level mean was computed using the formula for grouped data using the fourth quarter grade of SY 2011-2012. Each mean of teachers' perception were calculated using the mean formula for ungrouped data. The calculated mean is the average of score gathered from SPSLCQ and rounded-off to six decimal places. The teachers for each section were assigned and selected through a deliberation by the subject area coordinator and principal before the start of the school year. This selection of teachers was based from teacher's teaching competency, class management skills and experiences.

Table 10

Relationship of Teachers' Perception towards PLC and Student Achievement

	Teachers' Perception towards PLC	Student Achievement
Teachers' Perception towards PLC	1	0.845
Pearson Correlation		0.034
Sig (two tailed)		
Student Achievement	0.845	1
Pearson Correlation	0.034	
Sig (two tailed)		

Table 10 shows that there is a significant relationship between the two variables. This means that changes in Teachers' Perception towards PLC were significantly correlated with changes in the Mean Grade after PLC. In the study, Pearson's r is 0.845. This number is close to 1. For this reason, there is a significant relationship between Teachers' Perception towards PLC and student relationship measured through mean level grades of students.

The result of this study regarding teacher's perception is congruent with Roberts (2010) and Hughes (2006). According to Roberts (2010), teachers in the Midwestern school district perceived they have strong skill levels within all three themes of PLCs and find it beneficial to improving student achievement. Also, the research study of

Hughes (2006) shows that professional learning communities empowered the faculty and administration to work collectively and provided quality instruction.

Since there is a strong relationship between teachers' perception in PLC and student achievement, this suggests that teachers performed what they perceived. The five dimensions of PLC have been manifested by teachers with a rating of **VERY SATISFACTORY** that helped students achieve good rating performance. These dimensions serve as guidelines to creating an environment conducive of implementing change initiatives. Hipp and Huffman (2003) presented the attributes of five dimensions. This attributes were evidently practiced in Elizabeth Seton School that resulted to a strong relationship between teachers' perception in PLC and student achievement.

Mathematics teachers in Elizabeth Seton School meet regularly to identify the competencies that need improvement as measured through the result of students' quarter examination. These examinations are based on the standards set for mathematics education as written on the Revised Basic Education Curriculum (RSEC). These standards allow the summative assessment to measure the needed competencies to be attained by students. After determining students' strengths and weaknesses, teachers then collaborate within their subject area department to think of appropriate teaching strategies that would suit the level and needed skills of students and provide meaningful interventions and activities. These collaborations also include

revisions of learning plans, modification of instructional materials and realignment of goals, activities and assessment tools. These interventions and strategies are employed by teachers in the whole learning process of Elizabeth Seton School. These practices evidently show that Elizabeth Seton School achieved all the five dimensions of PLC: shared and supportive leadership, shared beliefs, values and vision, and shared personal practices, collective learning and application, and supportive conditions.

PROBLEM 4: *Is there significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation?*

Regarding the research question: *Is there significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation*, relative data on the mathematics grade-level averages through mean were used to show the significance of students' achievement.

This research question was answered through data gathered from the respondents that were tabulated, tallied and analyzed. To interpret the data gathered, t-test was considered to be the most appropriate statistical tool to measure the significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation.

Table 11*Grade-Average Through Mean Paired Sample Test Result*

Grade Level and School Year	Paired Differences			t	p-value	p-value is <0.05	p-value is <0.01	Decision	Remarks
	Mean	SD	Std. Error Mean						
Grade 7 2011-2012	-0.9283	0.7963	0.3253	-0.9201	0.036	✓	✗	Reject	Significant Difference
Grade 7 and Grade 8 2011-2013	-1.4917	1.0777	0.3111	-4.626	0.001	✓	✓	Reject	Highly Significant Difference

Table 11 shows that the mean difference of the paired sample for SY 2011-2012 is -0.9283 while that of SY 2012-2013 is -1.4817, both negative since the grades increased in average.

Table 11 also shows that the p-value for SY 2011-2012 is less than 0.05 which implies that there is a significant difference on the grades of the students. It is sufficient to conclude that there is an improvement on student achievement after one year of PLC implementation.

For SY 2012-2013, the p-value is less than 0.01 which implies that there is highly significant difference on the grades of the students. It is very sufficient to conclude that there is an improvement on student achievement on the second year of PLC implementation.

The result reveals that PLC is effective in improving students' achievement. It also shows that students benefited because they have improved their mathematics grades. The result of the current research study is parallel with the research studies of Burdett (2009) and Roberts (2010) where it is noted that there is a statistically significant improvement on student achievement scores in the area of Mathematics through professional learning communities. As stated by Hord "as an organizational arrangement, the PLC is seen as a powerful staff development approach and a potent strategy for school change and improvement." (1997)

Although there are other factors that may affect students' achievement, it is still evident that constant teachers' collaborations and empowerment such as revisions of learning plans, modification of instructional materials and realignment of goals, activities and assessment tools contributed in the improvement of students' achievement. These interventions and strategies are employed by teachers in the whole learning process of Elizabeth Seton School. In fact, this is congruent to Stuewe (2012) where the improvement in the eighth grade test scores from 2010 to 2011 indicated that PLCs may

have potential to make positive impacts on student test scores, even after one year of implementation.

CHAPTER 5

Summary, Conclusions and Recommendations

This chapter presents the summary, the conclusion, and the recommendations of the study. This study aimed to determine the teachers' perception on PLC and its relationship with students' achievement. This study also determines the effectiveness of PLC in improving students' achievement in the area Mathematics in Elizabeth Seton School.

The study revealed the following findings:

1. The teachers' perception on PLC was satisfactory on the first year of its implementation and very satisfactory on its second year of implementation.
2. There is a significant relationship between teachers' perception on Professional Learning Communities and student achievement (as measured by the mathematics grade).
3. There is a significant difference/improvement in student achievement (as measured by the mathematics grade) after the first year of PLC implementation.
4. There is a highly significant difference/improvement in student achievement (as measured by the mathematics grade) after the second year of PLC implementation.

CONCLUSIONS

Based on the findings, the following conclusions are made:

1. Teachers' perception towards PLC improves as they become more familiar or accustomed to using it. The more positive the teachers' perception towards PLC is the higher the mean mathematics grades of the students
2. Students' achievement improves with the use of Professional Learning Community.

RECOMMENDATIONS

While a single study cannot provide a sound basis for the practice of implementing PLCs, this study would suggest a way to increase scores/grades in mathematics is to have a well-established PLC. In fact, the findings of this study indicate that the increase in student achievement will not only be substantial, it will also be statistically significant.

However, this is one study. The following recommendations are based on the findings of the study.

1. Teachers should be appreciative of PLC and practice the five dimensions of professional learning communities detailed by Huffman and Hipp (2003) in their respective school, grade level, or subject area to help students improve their grades.

2. As concluded in Vescio and colleagues' (2008) study, professional learning communities and the classroom practices of teachers are significantly related to each other. Thus, schools should heighten the inclusion of professional learning community in their practices.
3. Professional Learning Community should be observed regularly by the empowered teachers to improve student achievement as established by Hughes (2006) in her study on PLC's effectiveness.
4. According to DuFour (1998), "The best structure for fostering collaboration is the team—the basic building block of the intelligent organization." Schools must find ways to establish and support powerful teacher learning teams. In private schools, school administrators should provide necessary funding, support and teacher training to begin establishing professional learning communities.
5. A longer time allotment should be followed to further test this relationship by conducting same research.

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APPENDICES

APPENDIX A:

Survey Data on Teachers' Perception towards Professional Learning Community

After the First Year of PLC Implementation								
Question	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5	Teacher 6	Teacher 7	Average
1a	3	4	3	3	2	4	3	3.14
1b	3	4	3	3	3	4	3	3.29
2a	4	4	3	4	3	3	4	3.57
2b	4	5	3	3	4	4	4	3.86
2c	4	5	3	3	4	3	3	3.57
3a	3	4	3	3	3	3	3	3.14
3b	3	4	4	3	3	3	3	3.29
3c	4	5	4	3	3	4	4	3.86
3d	3	4	4	3	3	4	3	3.43
3e	4	4	4	3	4	4	3	3.71
4a	4	3	2	3	3	3	4	3.14
4b	4	3	3	4	2	3	4	3.29
5a	4	4	4	4	4	3	4	3.86
5b	4	5	4	4	3	3	3	3.71
5c	4	5	4	4	3	4	3	3.86
5d	4	4	4	4	3	4	4	3.86
5e	4	4	4	4	4	4	4	4.00

After the Second Year of PLC Implementation								
Question	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5	Teacher 6	Teacher 7	Average
1a	3	5	4	4	4	4	3	3.86
1b	3	4	3	3	3	4	3	3.29
2a	4	4	4	4	4	4	4	3.86
2b	4	5	4	4	5	4	4	4.29
2c	4	5	3	4	4	3	4	3.49
3a	4	4	4	3	4	3	3	3.57
3b	3	4	4	3	3	3	3	3.29
3c	4	5	4	4	4	5	4	4.28
3d	3	4	4	3	3	4	3	3.43
3e	4	4	4	4	4	4	4	4.00
4a	4	3	3	3	3	4	4	3.42
4b	4	4	4	4	3	3	4	3.71
5a	4	4	5	4	4	3	4	4.00
5b	4	5	4	5	3	3	3	3.43
5c	4	5	4	4	3	5	4	4.14
5d	4	4	4	4	4	4	4	4.00
5e	4	4	5	4	5	4	4	4.28

APPENDIX B:

School Professional Staff as Learning Community Questionnaire

Directions: This questionnaire concerns your perceptions about your school staff as a learning organization. There are no right or wrong responses. Please consider where you believe your school is in its development of each of the five numbered descriptors shown in bold-faced type on the left. Each sub-item has a five-point scale. On each scale, circle the number that best represents the degree to which you feel your school has developed.

Date: _____
Name: _____
School: _____

1. School administrators participate democratically with teachers sharing power, authority, and decision making.	1a.	5	4	3	2	1
		Although there are some legal and fiscal decisions required of the principal, school administrators consistently involve the staff in discussing and making decisions about school issues.		Administrators invite advice and counsel from staff and then make decisions themselves.		Administrators never share information with the staff nor provide opportunities to be involved in decision making.
1b.	5	4	3	2	1	
		Administrators involve the entire staff.		Administrators involve a small committee, council, or team of staff.		Administrators do not involve any staff.
2. The staff shares visions for school improvement that have an undeviating focus on student learning, and these visions are consistently referenced in the staff's work.	2a.	5	4	3	2	1
		Visions for improvement are discussed by the entire staff such that consensus and a shared vision result.		Visions for improvement are not thoroughly explored; some staff members agree and others do not.		Visions for improvement held by the staff members are widely divergent.
2b.	5	4	3	2	1	
		Visions for improvement are always focused on students, teaching, and learning.		Visions for improvement are sometimes focused on students, teaching, and learning.		Visions for improvement do not target students, teaching, and learning.
2c.	5	4	3	2	1	
		Visions for improvement target high-quality learning experiences for all students.		Visions for improvement address quality learning experiences in terms of students' abilities.		Visions for improvement do not include concerns about the quality of learning experiences.

3. The staff's collective learning and application of the learnings (taking action) create high intellectual learning tasks and solutions to address student needs.	3a.	5	4	3	2	1
		The entire staff meet to discuss issues, share information, and learn with and from one another.	Subgroups of the staff meet to discuss issues, share information, and learn with and from one another.	Individuals randomly discuss issues, share information, and learn with and from one another.		
	3b.	5	4	3	2	1
		The staff meet regularly and frequently on substantive student-centered educational issues.	The staff meet occasionally on substantive student-centered educational issues.	The staff never meet to consider substantive educational issues.		
	3c.	5	4	3	2	1
		The staff discuss the quality of their teaching and students' learning.	The staff does not often discuss their instructional practices nor its influence on student learning.	The staff basically discuss non-teaching and non-learning issues.		
	3d.	5	4	3	2	1
		The staff, based on their learnings, make and implement plans that address students' needs, more effective teaching, and more successful student learning.	The staff occasionally act on their learnings and make and implement plans to improve teaching and learning.	The staff do not act on their learnings.		
	3e.	5	4	3	2	1
		The staff debrief and assess the impact of their actions and make revisions.	The staff infrequently assess their actions and seldom make revisions based on the results.	The staff do not assess their work.		
4. Peers review and give feedback based on observing one another's classroom behaviors in order to increase individual and organizational capacity.	4a.	5	4	3	2	1
		Staff members regularly and frequently visit and observe one another's classroom teaching.	Staff members occasionally visit and observe one another's teaching.	Staff members never visit their peers' classrooms.		
	4b.	5	4	3	2	1
		Staff members provide feedback to one another about teaching and learning based on their classroom observations.	Staff members discuss non-teaching issues after classroom observations.	Staff members do not interact after classroom observations.		

5. School conditions and capacities support the staff's arrangement as a professional learning organization.

5a.	5	4	3	2	1
	Time is arranged and committed for whole staff interactions.	Time is arranged but frequently the staff fail to meet.	Staff cannot arrange time for interacting.		
5b.	5	4	3	2	1
	The size, structure, and arrangements of the school facilitate staff proximity and interaction.	Considering the size, structure, and arrangements of the school, the staff are working to maximize interaction.	The staff take no action to manage the facility and personnel for interaction.		
5c.	5	4	3	2	1
	A variety of processes and procedures are used to encourage staff communication.	A single communication method exists and is sometimes used to share information.	Communication devices are not given attention.		
5d.	5	4	3	2	1
	Trust and openness characterize all of the staff members.	Some of the staff members are trusting and open.	Trust and openness do not exist among the staff members.		
5e.	5	4	3	2	1
	Caring, collaborative, and productive relationships exist among all staff members.	Caring and collaboration are inconsistently demonstrated among the staff members.	Staff members are isolated and work alone at their task.		

APPENDIX C:

Copyright Letter and Permission

Email Letter of Copyright Permission

Re: SEDL Copyright Request Form
From: Nancy Reynolds <nancy.reynolds@sedl.org>
To: Ma. EdilynChiao <edschiao@yahoo.com>

Dear Ma. EdilynChiao:

Thank you for your interest in SEDL's School Professional Staff as Learning Community Questionnaire (SPSLCQ) developed by Shirley Hord in 1996.

I am attaching PDFs of the SPSLCQ and SEDL's License Agreement for your review. I'm also sending you a Word document of references on using the SPSLCQ and on professional learning communities in general that I hope will be useful to you. Please review, print, sign, and return the SEDL License Agreement to me. If you would like to keep a copy with both of our signatures, please print, sign, and return two copies to me and after I receive and sign them, I'll return one copy to you with both of our signatures. If you prefer (and you don't require original signatures), you may print, sign, scan, and return SEDL's License Agreement to me as an e-mail attachment. After I receive and sign it, I'll do the same in returning it to you with both of our signatures.

*Nancy Reynolds
Information Associate
SEDL
Information Resource Center
4700 Mueller Blvd.
Austin, TX 78723
512-391-6548 (voice)
512-476-2286 (fax)
nancy.reynolds@sedl.org
<http://www.sedl.org>
Advancing Research, Improving Education*

To: Ma. Edilyn Chlao (Licensee)
Elizabeth Seton School
BF Resort Village
Las Pinas City, NCR 1740
Philippines

From: Nancy Reynolds
Information Associate
SEDL
Information Resource Center—Copyright Permissions
4700 Mueller Blvd.
Austin, TX 78723

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Date: September 27, 2013

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Thank you, again, for your interest in SEDL's *School Professional Staff as Learning Community Questionnaire*. If you have questions about SEDL's License Agreement, please contact me at 800-476-6861, ext. 6548 or 512-391-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,

Nancy Reynolds for SEDL

Date signed

Agreed and accepted:

Signature _____

Date signed

Printed Name _____

APPENDIX D:

Certification of Editing

CERTIFICATION

This is to certify that the seminar paper entitled **PROFESSIONAL LEARNING COMMUNITY: TEACHERS' PERCEPTION AND ITS EFFECTS ON STUDENT ACHIEVEMENT** prepared and submitted by **MA. EDILYN D. CHIAO** was edited by the undersigned.

ROMMEL G. NACION

English Faculty

Elizabeth Seton School, Las Pinas City

APPENDIX E:

Subject Area Coordinator Letter of Request

Mr. Ilean F. Castellano
Subject Area Coordinator, HS Mathematics
Elizabeth Seton School

Dear Mr. Castellano:

As a masteral degree candidate at Philippine Normal University, I am in the process of conducting a study on the relationship of teachers' perception towards Professional Learning Community (PLC) and the effectiveness of Professional Learning Community in improving student achievement in the area of High School Mathematics. This study is to be conducted using the School Professional Staff as a Learning Community Questionnaire (SPSLCQ). This instrument is designed to measure a school staff's perception towards Professional Learning Community focused on five dimensions of PLC.

In line with this, I would like to seek your good office for permission for allowing your teachers to utilize the questionnaire for the purpose of my study. Moreover, I would also like to request the use of Mathematics grade of high school students for the SY 2011-2012 and SY 2012-2013 as data for evaluating student achievement.

I look forward for your approval and cooperation.

Sincerely yours,

Ms. Edilyn D. Chiao
Masteral Candidate
Philippine Normal University

APPENDIX F:

High School Unit Letter of Request

Dr. Delia c. Navaza
Unit Head, High School
Elizabeth Seton School

Dear Dr. Navaza:

I am Ma. Edilyn D. Chiao, a graduate student of Philippine Normal University in Taft Avenue, Manila and currently working on my paper entitled “**PROFESSIONAL LEARNING COMMUNITY: TEACHERS’ PERCEPTION AND ITS EFFECTS ON STUDENT ACHIEVEMENT**”

It is in this regard that I wish to secure your permission to consider Grade 7 (First Year) students of SY 2011-2012 and SY 2012-2013 and Grade 8 (Second Year) students of SY 2012-2013 as participants in my research.

I am hoping for your favorable response to this request.

Thank you very much.

Sincerely yours,

Ms. Edilyn D. Chiao
Masteral Candidate
Philippine Normal University

APPENDIX G:

Certification on Plagiarism Test

CERTIFICATE

This is to certify that the special project of MA. E
Learning Community Teachers' Perception and Its Effect
authenticity test performed by the Center on January
software of the university.

PNU OR No: 132556
UCRSS CN: 2014-015
Student No: G2008123371

MA. EDILYN D. CHIAO

43 Benfran Loop, Casimiro Village

Las Pinas City 1740

(02) 8460654, 09179457371



chiao.edilyn@ess.edu.ph
edschiao@yahoo.com

Objective

My aim as an experienced teacher in an educational organization would be to render my knowledge, experiences, and expertise in all aspects starting from organizational management, to policy making to proper molding of students in terms of teaching them the values and principles of life.

Personal Data

Birthdate:	February 1, 1979	Civil Status:	Married
Place of Birth:	Mendez, Cavite	Nationality:	Filipino
Language Spoken:	Filipino and English		

Certifications

Mathematics Certification Institute of Japan (SUKEN Mathematics Certification) Level 4, 2011

Licensure Examination for Teachers, 2004

Certificate on Teachers Program (Philippine Normal University), 2003

Experiences

High School Mathematics Teacher

November 2000 – March 2009 and June 2010-Present

Elizabeth Seton School-Main, Las Pinas City

- ✚ Taught Mathematics of Investment, Advanced Algebra and Statistics to High School Senior Students
- ✚ Taught Geometry and Trigonometry to High School Junior Students
- ✚ Taught Beginning Algebra and Consumers Math to High School Freshmen Students
- ✚ Practiced Professional Learning Community and Understanding by Design in Learning Plan
- ✚ Organized cooperative learning activities.
- ✚ Implemented portfolio grading system mathematics classes.
- ✚ Tutored students seeking additional guidance with course work through Alternative Program of the School
- ✚ Assessed student performance through paper and pen tests, projects and oral recitations.
- ✚ Chaperoned students in field trips and school activities as a Class Adviser.

High School Sub-Unit Head,

June 2009-March 2010

Elizabeth Seton School-Main Las Pinas City

- ✚ Worked closely with the principal on a daily basis to ensure the smooth overall operation of the school.
- ✚ Handled discipline and orderliness of Students
- ✚ Resolved conflicts between students, teachers, parents or combinations of conflicts between various individuals.
- ✚ Assisted in yearly teacher evaluations, assisting in providing guidance students, and encouraging a positive climate in the school.
- ✚ Directed morning assemblies and other special gatherings of students for events throughout the year.
- ✚ Developed response plans for schools as required by Department of Education.
- ✚ Kept record of students' attendance and tardiness as well as offenses for the school year.

High School Intramurals Level Team Manager, 2002-2003, 2010 and 2013

Elizabeth Seton School-Main Las Pinas City

- ✚ Facilitated Intramural Practices and Cheering Competitions
- ✚ Kept record of students participation in the Intramurals

Relevant Interests

Arts and Crafts, Journalism and Creative Writing. I welcome the opportunity to coach extracurricular activities.

Educational Background

PRIMARY: Elizabeth Seton School (1986-1991)
BF Resort, Las Pinas City
Consistent Top Student

SECONDARY: Elizabeth Seton School (1991-1992)
BF Resort, Las Pinas City
Consistent Top Student

St. Mark's Institute (1993-1996)
Casimiro Village, Las Pinas City
Graduated Salutatorian

TERTIARY: Centro Escolar University (1996-2000)

Mendiola, Manila
Degree: Bachelor of Science in Accountancy
Graduated Bronze Medalist in Academics and Co-curricular Activities

Philippine Normal University (2001-2003)
Taft Avenue Corner, Ayala Blvd., Manila
Certificate of Teachers Program

GRADUATE STUDIES: Philippine Normal College (2008 – 2014)
Taft Avenue Corner, Ayala Blvd., Manila
Degree: Master of Arts in Teaching Mathematics

Seminars / Training Attended

Seminar/Training Program	Organization	Role	Date
Technology-Powered Math and Filipino Resources for Effective Learning	Phoenix Publishing House, Inc. Malate Catholic School	Participant	December 7, 2013
Enhancement of Instruction Skills Through Effective Use of Various Teaching Strategies and Art of Questioning	Elizabeth Seton School	Participant	September 11, 2013
Math Teachers Association of the Philippines and Department of Education Seminar: "Meeting The Challenges of K-12"	MTAP – DepEd – NCR Quezon City Science High School Quezon City	Participant	August 31- September 1, 2013
Math Teachers Association of the Philippines and Department of Education Seminar: "Meeting The Challenges of K-12"	MTAP – DepEd – NCR Quezon City Science High School Quezon City	Participant	October 6-7, 2012
Mathematics Teachers Association of the Philippines (MTAP) Annual Convention	MTAP – DepEd – NCR Ramon Magsaysay High School Cubao, Quezon City	Participant	October 2011
Project Based Learning Seminar	Elizabeth Seton School	Participant	May 2011
Math Teachers Association of	MTAP – DepEd – NCR	Participant	October 2010

the Philippines and Department of Education Seminar	Ramon Magsaysay High School Cubao, Quezon City		
Problem Based Learning Seminar	Elizabeth Seton School Through Intel, Phils	Participant	May 2010
Classroom Management	Elizabeth Seton School	Participant	May 2010
Basic Swimming Skills Seminar Workshop	Elizabeth Seton School – MAPEH Dept	Participant	June 5, 2009
Educational Law 101	Elizabeth Seton School	Participant	June 1, 2009
37 Tips to Pass UPCAT	SMX, Mall of Asia	Participant	June 2009
Handling ADHD and Gifted Students Seminar	Elizabeth Seton School - South	Participant	May 26, 2009
Small Group Dynamics Seminar	Elizabeth Seton School	Participant	May 20, 2009
Art of Questioning Seminar	Elizabeth Seton School	Participant	May 19, 2009
Finance 101	Elizabeth Seton School	Participant	August 25, 2008
Common Emergencies	Elizabeth Seton School – Medical Unit	Participant	December 18, 2007
Math Circle of the Philippines Seminar	St. Andrew Hall, College of St. Benilde Hotel	Participant	November 2007

