

Science Education Program in Leyte Normal University: Teachers' Perspective

Engr. Justina T. Lantajo, Ph.D.

Abstract: This study focused on Science Education Program (SEP) in Leyte Normal University based on teachers' perspective. From the findings of this study, all teachers in the SEP did not only meet but surpassed the general requirements of the Commission on Higher Education (CHED) as per CMO No. 52, Series of 2007: Article II Section 3. Most of them are specializing in Biology. Moreover, many of them have 6 – 10 years of science-teaching experience, slightly confident and their research involvement was rated Excellent as revealed from the result.

Keywords: Science Education, science-teaching experience, teaching confidence, teachers' perspective

I. INTRODUCTION

THE 21st century made remarkable progress in science, science education, and technology. The important role played by science as one of the pillars of development is now recognized by all nations. Drori (2000) pointed out that every nation, big and small, rich and poor— acknowledges the paramount role of science and scientific education to provide good living conditions for their citizens and to achieve international status as well as economic stability.

Teachers' pedagogical skills and mastery of subject matter are critical to effective teaching. Since the service conditions for teachers remain very poor in most countries, an important component of any effort to improve science education is the need to improve the prestige and attractiveness of the teaching profession, such that talented individuals are attracted to the profession and are able to share their knowledge and enthusiasm with students (Ad-hoc Review Panel on Science Education, 2011).

There are government institutions that are responsive in strengthening the science teacher education program. More innovative ideas have been advanced that include the review of science pre-service curricula, the involvement of teachers and students in research projects and the establishment of science centers.

To strengthen and further improve the quality of teacher preparation in the Philippines, CHED has identified Centers of Excellence (COEs) and Centers of Development (CODs) for Teacher Education. These COEs are expected to stimulate and expedite the development of world-class and responsive teacher education programs, and to initiate projects that will strengthen other non-COE teacher education institutions, especially in their respective regions. To realize these tasks, identified COEs are given funds for developmental projects

Engr. Justina T. Lantajo, Ph.D., is a Science Faculty of Leyte Normal University, Tacloban City, Philippines.

and other non-monetary subsidies such as faculty scholarships and research grants (Ladia, et.al, 2012).

The identified COEs and CODs are expected to serve as catalyst in attaining and fulfilling the program's mission of producing professionally competent and morally upright teacher education graduates.

This study evaluated the teachers' perspective on Science Education Program in Leyte Normal University along the following areas: educational attainment, professional examination passed, science-teaching experience, research involvement and teaching confidence.

II. LITERATURE REVIEW

An educational system that aims to offer quality education for all its clients should be able to count on teachers who are well trained and adequately paid. It should be capable of independently following the evolving processes and structure of knowledge, and have the necessary competencies to take into account the growing interdependencies at both the global and local levels that impact on schools (Ibe, n.d).

The teacher has always been a vital factor in the educational system. On her, more than on anyone else rests the responsibility of education. Factors related to teaching competence such as educational attainment and number of years in teaching was identified (Valle, 2002). He said that the younger the teacher in the service, the more active he is in the performance of his duties considering the idealistic nature of the young.

The success of science education programs is dependent to a large measure on the quality of the teacher. She determines to a large extent what is taught; how it is taught; and how learning is measured. A successful teacher needs not only imagination and enthusiasm but also a good academic reputation. He cannot teach effectively unless his knowledge goes beyond the subject, (Arcena, 2004).

Students' achievements are influenced by the quality indicators of many teachers. In fact, not all that were identified can account for students' achievement in the classroom. Quality indicators such as academic preparation, licensure status, teaching experience, involvement in professional development programs, and teaching confidence can capture teacher quality significantly (Orleans, 2007). Hence, these indicators were used to assess the quality of science teachers in this study.

No matter how superior a teacher's pre-service education has been, his preparation is never complete on the importance of in-service education. It should be his lookout and responsibility to keep abreast with the new developments, of what is happening in the educational system particularly in his field, about the new trends and strategies, and other latest

developments that will contribute to his professional growth. Lardizabal, et.al. (1991) stress that the key factor in any teaching learning situation is the teacher.

In agreement with parent's common sense and result of researches, the teacher is the single most important school based element in students' learning and gaining a positive attitude toward schooling (Lessinger and Salowe, 2001). However, the faculty will only be able to fulfill his educational purposes if he is well prepared, competent and committed to the profession in a condition conducive to teaching and learning.

In the view of Day (1999), he asserts that if there is one factor that has the greatest impact on professional effectiveness of the teacher, it is professional growth. He stands as the interface in the transmission of knowledge, skills and values. In other words, effective and efficient faculty members are those who are educationally qualified as it broadens the teacher's insights into educational problems with a concomitant increase in success in teaching and learning.

In-service trainings give teachers the opportunity to obtain information about promising practices and techniques for improving the quality of instruction. It also transmits the findings of research to effective teaching (Ornstein and Levine, 1984).

The highest quality teachers, those most capable of helping their students learn, have deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). The preparation that teachers receive before beginning their work in the classroom, however, varies significantly around the world and even within the least developed countries.

Professional development can help overcome shortcomings that may have been part of teachers' pre-service education and keep teachers abreast of new knowledge and practices in the field. This ongoing training for teachers can have a direct impact on student achievement. Effective professional development may take many forms; it should not be limited to formal off-site kinds of programs. Dialogue and reflections with colleagues, peer and supervisor observations and keeping journals are all effective ways for teachers to advance their knowledge (UNICEF, 2000). An effective teacher is one who has honed his skills in the art of teaching. He demonstrates proficiency in the use of language, adapts varied teaching strategies, recognizes change, applies innovations, revises techniques for optimum results and allows himself to be guided acknowledge principles and theories in education (Anderson, et.al., 2000).

Jacob and Lefgren (2008) examine how differences in teacher quality affected student achievement in a mid-sized school district. They find large differences in value-added measures of teacher effectiveness (teacher heterogeneity) but small effects of teacher qualifications like experience and education. They find that school principal rankings of teachers are better predictors of teacher performance than are observed teacher qualifications.

III. METHODOLOGY

The method of research utilized in this study was the descriptive-evaluative method. The descriptive method describes the nature of a situation as it exists at the moment of

the study and explores the causes of particular phenomena, Sevilla, et.al. (1992).

Purposive sampling was employed in the study. It is a sampling technique in which a sample is taken because they are rich in information (Best and Khan, 2006). The respondents of this study were the teachers who taught the science courses in the Science Education Program.

This study was conducted in Leyte Normal University proclaimed as Center of Excellence for Teacher Education by the Commission on Higher Education since April 1996 to 2001 and August 2008 until May 31, 2014 (CMO No. 11, Series of 2012).

A researcher-made and modified questionnaire was the research instrument used where the pool of items was patterned and adapted from previous studies. Some of these questions were modified to suit the demands of the present study. The instrument evaluated the teachers' perspective on Science Education Program in Leyte Normal University along the following areas: educational attainment, professional examination passed, science-teaching experience, research involvement and teaching confidence. The questionnaire utilized the Likert Scale format. The method of scoring was indicated in the method of data analysis below.

Scoring. The following scoring procedures were arbitrarily adopted for purposes of classifying the numerical values with their corresponding description and interpretation.

Teachers' perspective. The categories with the corresponding interpretations were adopted as shown in Table 1.

TABLE I
DESCRIPTION OF THE TEACHERS' EDUCATIONAL QUALIFICATION CATEGORY

Teachers' Educational Qualification	
Category	Description
Doctoral Degree	Very High
MA with units in doctorate	High
Master's Degree	Moderately High
Major Specialization	
Course	Description
Science (Physics, etc.)	On Course
Non-Science	Off Course
Professional Examination	
Passed	Description
2 and above	Very High
1	High
Science-Teaching Experience	
16 years and above	Experienced
11 – 15	Moderately experienced
6 – 10	Less experienced
5 years or below	Novice

Research Involvement. Research involvement of the faculty in the university was given a corresponding point which will account for his/her research productivity in every semester. This shall however, be supported with a document as evidence. The points with its corresponding rating are given in Table 2.

TABLE II
RESEARCH INVOLVEMENT OF THE FACULTY IN THE UNIVERSITY

Points	Description
18 below	Poor
19 – 36	Below Satisfactory
37 – 54	Satisfactory
55 – 72	Very Satisfactory
73 above	Excellent

The above Point System was referred from the University's Research Manual which serves as the basis in conducting researches and other related activities conducted by the faculty and students (undergraduate and graduate) in the university. This Research Manual is coupled with implementing guidelines, (The LNU Research Manual, Revised 2011).

Teaching Confidence. The questionnaire was scrutinized and critiqued by the members of the Panel Committee prior to field-testing. After modifications were made on the questionnaires based on the suggestions of the Panel, the instruments were further subjected to a "dry run" specifically in this university. The part-time science teachers served as the respondents in the validation of the instrument. Corrections and suggestions given by the respondents were also considered for the refinement of the contents of the questionnaires.

The teaching confidence of the science teachers were based from the scale given in Table 3.

TABLE III
THE TEACHING OF SCIENCE TEACHERS

Mean Range	Description
4.51 – 5.00	Very Confident
3.51 – 4.50	Confident
2.51 – 3.50	Moderately Confident
1.51 – 2.50	Slightly Confident
1.00 – 1.50	Not Confident

Before the conduct of the study, a permit was sought from the Office of the Vice-President for Academic Affairs, Research and Planning of the university. Upon approval of the permit, the researcher administered the survey instruments to the respondents. Prior to answering the survey instruments, respondents were briefed by the researcher on the purpose of the research work. She then explained whatever points of clarification were raised on all the items in the questionnaires.

Retrieval of the questionnaires was done several days after to give ample time to the respondents in answering the questions.

After the retrieval of the instruments, the responses were sorted out, tabulated and statistically analyzed.

The data generated were analyzed using statistical tools such as frequency counts and weighted means. Results from the analysis provided baseline information for curricular recommendations and possible redirections to make SEP more responsive to the demands of society and the needs of its clientele.

IV. RESULTS AND DISCUSSION

Table 4 presents the results on the selected perspective of the science teachers who were the respondents in this study.

TABLE IV
SELECTED CHARACTERISTIC OF SCIENCE TEACHERS (N = 12)

Profile Characteristics	Frequency (f)	Percent (%)	Over-all Mean	Description
Educational Qualification				
Master's Degree	6	50.0		
Master's Degree with Doctorate Units	3	25.0		
Doctorate Degree	3	25.0		
Professional Examination Passed				
LET	9	75.0		
Board Exam other than LET	1	8.3		
Field of Specialization				
Biology	5	41.7		
Earth Science	2	16.7		
Chemistry	1	8.3		
Physics	4	33.3		
Science – Teaching Experience				
Experienced	4	33.3		
Moderately experienced	2	16.7		
Less experienced	5	41.7		
Novice	1	8.3		
Points Earned On Research Involvement				
Satisfactory	2	16.7		
Excellent	10	83.3		
			1.8	Slightly Confident
Teaching Confidence				
Very confident	0	0.0		
Confident	1	8.3		
Moderately confident	2	16.7		
Slightly confident	2	16.7		
Not confident	7	58.3		

Table 4 presents the characteristics of the science teachers in terms of educational attainment; professional examination passed; science-teaching experience; research involvement in the last five (5) years and teaching confidence.

It is shown in the table that out of the 12 science teachers, 6 or 50.0% obtained their master's degree, 3 or 25.0% earned doctorate units while another 3 or 25.0% are doctorate degree holders. This means that all of the science teachers met the minimum educational qualification as required by the Commission on Higher Education (CHED).

As shown in Table 4, out of the 12 respondents, 9 or 75% were passers of the Licensure Exam for Teachers (LET) and 1 or 8.3% was a passer of a board examination other than LET. Therefore, aside from being a master's degree holder as the minimum educational qualification of the science teachers who participated in this study, most of them were eligible.

Data on the field of specialization of science teachers showed that 5 or 41.7% specialized in biology, 4 or 33.3% in physics, 2 or 16.7% in earth science and 1 or 8.3% in chemistry. This means that most of them specialized in biology and there is a need for a chemistry teacher.

It can be gleaned from Table 1 that out of the 12 respondents, 5 or 41.7% has science-teaching experience interpreted as lightly moderate, 4 or 33.3% has extensive, 2 or 16.7% has moderate and 1 or 8.3% has minimal/limited science-teaching experience. This showed that the science-teaching experience of the respondents ranges from 6 years to more than 16 years except for one (1) who has less than 5 years teaching experience.

The table further showed the points earned on research involvement by the science teachers. There were 10 or 83.3% of the respondents were rated excellent and only 2 or 16.7% obtained a satisfactory rating. The result implies that most of the science teachers were deeply involved in research work. The points earned were based from the Research Manual of the University.

On the teaching confidence of the respondents, it is shown on the last part of the table, that the mean rating obtained was 1.8 which was interpreted as slightly confident.

V. CONCLUSIONS AND RECOMMENDATIONS

As shown on the educational qualifications of the 12 teachers, 50% are Master's Degree holders, 25% are Master's Degree holders with Doctorate units and 25% are Doctorate Degree holders. With regards to the relevant professional examination passed, 75% are LET passers and 8.3% is a board passer other than LET. All the teachers in the SEP met the general requirements required by CHED as per CMO No. 52, Series of 2007: Article II Section 3. It was also found out in this study that 41.7% are specializing in Biology, 16.7% in Earth Science, 8.3% in Chemistry and 33.3% in Physics. Moreover, 33.3% has extensive science-teaching experience, 16.7% has moderate, 41.7% has lightly moderate and 8.3% has a limited science-teaching experience. As for their points earned on research involvement, 83.3% obtained a rating of Excellent and 16.7% had a Satisfactory rating. Finally, the teachers obtained a mean rating of 1.8 which is qualitatively interpreted as slightly confident.

Therefore, all the teachers in the SEP met the general requirements required by CHED as per CMO No. 52, Series of 2007: Article II Section 3. Most of the teachers are specializing Biology. Moreover, 41.7% has Lightly Moderate science-teaching experience. As for their points earned on research involvement, 83.3% obtained a rating of Excellent. Finally, the teachers were slightly confident.

Based on the findings of this study, it is further recommended that School administrators must hire additional qualified teachers to teach specifically chemistry courses.

VI. ACKNOWLEDGMENT

This process of development has been made possible due to the assistance and encouragement of great men and women who offered their shoulders so that I can stand elevated. I am deeply honored to have Dr. David A. Genotiva, Dr. Evangeline H. Cayanong, Dr. Manuel A. Pacaña and Dr. Rosario E Garcia for their critical feedback on my writing and providing many valuable comments that improved the contents of this study.

I am fortunate to have the opportunity to work with a group of energetic, fun-loving and hard-working people of Leyte Normal University especially the twelve (12) faculty members of the Science Unit who were among the respondents in the conduct of this study. Thank you for your friendship and cooperative understanding and support.

I am deeply indebted to my ever loving and supportive husband, Engr. Eduardo L. Lantajo, for his patience and understanding, a lifetime gratitude. Thank you for always inspiring me in every challenging moment of my life especially in raising our four (4) children – Czarina Rose, Justine Joy, Czar Eduard and Isabel Cassandra.

And above all to the ALMIGHTY FATHER and Mama MARY, the researcher's source of strength, wisdom, intelligence, patience and perseverance, a million thanks for without THEM, this work would not have become a reality.

REFERENCES

- [1] Ad-hoc Review Panel on Science Education from the ICSU Report. 2011. Retrieved July 15, 2012 from <http://www.icsu.org/publications/reports-and-reviews/report-of-the-icsu-ad-hoc-review-panel-on-science-education/Report%20on%20Science%20Education%20final%20pdf.pdf>
- [2] D. Anderson, et al., Confidence, knowledge and teaching strategies, 2000. Retrieved October 6, 2012 from <https://docs.google.com/>
- [3] T. Arcena. "Factors related to the performance in college chemistry of freshmen students in the integrated campuses of Leyte Institute of Technology," Unpublished Master's Thesis, Leyte Normal University, Tacloban City, 2004.
- [4] J.W. Best and J.V. Khan. A look at research in education. New Jersey: Pearson E. Inc. Publication, 2006.
- [5] CHED Memorandum Order (CMO) No. 11, Series of 2012. Extension of the designation of existing Centers of Excellence (COEs) and Centers of Development (CODs). Retrieved September 20, 2012 from <http://www.ched.gov.ph/chedwww/index.php/eng/Information/CHED-Memorandum-Orders/2012-CHED-Memorandum-Orders>.
- [6] L. Darling-Hammond. Educating teachers for the next century: Rethinking practice and policy. In G. A. Griffin (Ed.), The education of teachers (pp. 221-256). Chicago: The University of Chicago Press, 1997.

- [7] C. Day, *Developing teachers: the challenge of life-long learning*. Norwich UK: Falmer Press Taylor and Falmer Press, 1999.
- [8] G.S.Drori, Science education and economic development: trends, relationships, and research agenda. *Studies in Science Education*, (35) 27-58, 2000. Retrieved August 19, 2012 from <http://www.ed.chime-u.ac.jp/~kiyou/pdf/19.pdf>
- [9] Ibe. (n.d.). Quality education and the key role of teachers. Retrieved August 31, 2012 from <http://www.ibe.unesco.org/International/ICE47/English/Organisation/Workshops/Workshop4CompENG.pdf>.
- [10] B. Jacob and L. Lefgren, Can principals identify effective teachers? Evidence on subjective performance evaluation in education, *Journal of Labor Economics*, 26(1), 101136, 2008 <https://doi.org/10.1086/522974>.
- [11] M.A. Ladia, M., et.al., Centers of Excellence and Centers of Development for teacher education: Their contribution to the elementary teacher force, 2012. Retrieved July 31, 2012 from <http://www.ipedr.com/vol30/64-ICEMI%202012-M10066.pdf>
- [12] A.Lardizabal, A., et.al, *Principles and methods of teaching*. Quezon City: Phoenix Publishing House, Inc., 1991.
- [13] Orleans, A. 2007. The condition of secondary school physics education in the philippines: Recent development and remaining challenges for substantive improvements. Retrieved August 8, 2012 from <http://www.aare.edu.au/aer/online/0701d.pdf>
- [14] A. Ornstein and D. Levine, *An introduction to the foundation of education*. 3rd Ed. Boston: Houghton Mifflin Company, 1984.
- [15] *The LNU Research Manual (Revised 2011)*. Research and Development Office, LNU, Tacloban City, Philippines, pp. 14.
- [16] UNICEF, *Defining quality in education*. A paper presented at the meeting of the International Working Group on Education, Florence, Italy. June 2000.
- [17] D.C. Valle, *Factors related to teacher's effectiveness of villareal school district, division of samar*. Unpublished Master's Thesis. Leyte Normal University, Tacloban City, 2000