

PROPOSED CAPABILITY ENHANCEMENT PROGRAM FOR PUBLIC ELEMENTARY SCHOOL SCIENCE TEACHERS

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Abstract. The study aimed to develop and propose a capability enhancement program for public elementary school science teachers in District 1-A, San Carlos City Division. The findings revealed that the respondents were mostly in the process of pursuing their masters' degree; non- science major; relatively young or just have short teaching experience in teaching Science; and most of them had attended Division training in Science. Further findings had shown that the public elementary school science teachers are "Highly Capable" on Learning Environment and "Capable" on Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning, and Assessment and Reporting, domains based on the PPST. In addition, educational attainment and area of specialization were not significantly related to their level of capability in the five domains of PPST while the length of service of science teachers was not significantly related to the learning environment, curriculum and planning. However, it is related to the domains Content Knowledge and Pedagogy, Diversity of Learners and Assessment and Reporting which indicated "Moderate Relationship". Lastly, on the level of trainings in Science attended, only Domain 2 Learning Environment was found to have no significant relationship with the level of trainings in science attended. However, the level of trainings has a "strong positive relationship" with the domains on Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning and Assessment and Reporting.

Keywords. capability enhancement program, public elementary school, science

1 Introduction

In the Philippines, education has declined few years back due to poor teacher performances. These have greatly affected the quality of education in the country (Blui, 2013). Furthermore, according to the Manila Times issued on August 29, 2018, the Philippine education today has deteriorating quality due to inadequately trained teachers. These are the concerns which the Department of Education (DepEd) is trying to address by raising the performance level of teachers. Evidences show unequivocally that good teachers are vital to raising student achievement, i.e., quality learning is contingent upon quality teaching. Hence, enhancing teacher quality becomes of utmost importance for long-term and sustainable nation building. The changes brought about by various national and global frameworks such as the K to 12 Reform and the ASEAN integration, globalization, and the changing character of the 21st century learners necessitate improvement and adaptability of education, and a call for the rethinking of the current teacher standards.

As stated in Division Memorandum No. 132 s. 2019 and Memorandum Circular no. 18 s. 2018, all teachers should promote and upgrade their practice in teaching and continuously improve their capabilities in accordance with the international standards. These would surely help to improve the achievement level of learners and teachers' performance especially in science. Since science is one of the most difficult subjects to teach.

In the Philippines, Science education cannot be considered as a strength unlike English and Filipino. Our country has exhibited a consistently abysmal performance in international surveys such as Trends in International Mathematics and Science Study (TIMSS) – an international assessment of student achievement in science and mathematics. Another report reflecting the poor performance in science are those in the published reports stating that with the seventy-five percent (75%) standard proficiency level of pupils' achievement established by the Department of Education in all learning areas, the achievement rate of pupils falls below the minimum performance particularly in science. The result of the 2016-2017 National Achievement Test in Science Grade 6 in San Carlos City Division posted by the Bureau of Education Assessment of the Department of Education, was 56.10% or Low Proficient. Furthermore, the results of the Performance Appraisal for Learners in Science (Elementary) in San Carlos City Division conducted last 2017-2018 is quite disappointing with the rating of 43%. In all learning areas, science was 2nd from the bottom.

Like in any other countries, Science always has a place in the K-12 curriculum here in the Philippines, but it receives less emphasis especially at the elementary level. Lack of science expertise among teachers and school leaders can have implications for selecting curriculum materials, observing classroom instruction, making hiring decisions, and allocating resources for professional learning opportunities in science (National Research Council, 2015). Many elementary teachers do not receive an adequate amount of professional learning to gain the confidence needed to teach science (McClure et al. 2017). The result of the Performance Appraisal for Teachers in Science conducted by the San Carlos City Division last 2017 was 68% or not proficient. It shows that Science teachers were not fully equipped with the knowledge that they should possess.

Trainings in Science are conducted in school thru Learning Action Cell (LAC) sessions wherein Science experts are invited to share their expertise based on the training needs of the teachers. But only limited time are given to them since it is done 3 to 4 hours in a session. It is also done in the division level through training workshops to be attended by 1 representative from every school only. So, the other science teachers are not given the opportunity to attend such science trainings since only the school science coordinators or master teachers are the ones to attend.

Those problems were also encountered by the researcher in her five (5) years of experience as science coordinator in San Carlos City Division and Grade Three Science teacher for 17 years in the public school. The researcher has therefore, endorsed and conducted the study, "Proposed Capability Enhancement Program for Public Elementary School Science Teachers". Such proposal is anchored on the idea that capability enhancement program for science teachers is a potent tool in addressing the problem on poor academic performance of pupils along science. Thus, this will help teachers identify their priority needs, positively respond to those needs and achieve their personal objectives within the context of the organizational goals (Department of Education Order No. 2, s.2015).

2 Review of Related Literature

The study of Kusumoto (2017) and the present study both aimed to assess the needs of teachers in order to develop an enhancement program based on the findings. However, the present study is different from the cited study since it includes other concerns like the problems of encountered by science teachers and their hindrances in engaging in training. In addition, the cited study involved homeroom teachers while in the present study will involve the public elementary school science teachers.

The study of Lamug (2019) on the Professional Development Needs of Senior High School STEM B Teachers is similar in the present study. The present study will also use questionnaires based on Self-Assessment Tool under the Philippine Professional Standards for Teachers to gather data to answer the research problems. The study will also describe the respondents' profile on highest educational attainment, length of service, and level of trainings attended relative to science; will determined the professional needs of the teachers; will relate profile and the professional development needs of respondents based on the level of capability; and will proposed an enhancement program to improve the competencies of the public elementary school science teachers. Lamug's respondents were STEM B Senior High School teachers in Tarlac while the present study will be the public elementary school science teacher in San Carlos City Division.

The study of Montebon (2015) on Needs Assessment of Teacher Readiness of Science Pre-service Teachers Towards a Contextualized Student Teaching Enhancement Program (STEP) evaluated the level of need of the pre-service teachers in different areas to design a contextualized student teacher enhancement program. Same with the present study but differ in the respondents. The respondents of this research were one hundred thirteen (N=113) science preservice students taking up field study courses at the Institute of Teaching and Learning of the Philippine Normal University while in the present study, the respondents will be 46 public elementary science teachers in District 1-A, San Carlos City Division. A qualitative research design was utilized in this study while the present study will be using descriptive method. A journal analysis procedure was done to determine the student perception in different areas asked in the survey questionnaire while the present study will use the SAT of the PPST to gather data.

The study of Pardito (2019) on Professional Development Plan for SHS Master Teachers in the Schools Division Office 1 Pangasinan for SY 2018-2019 aimed to develop a professional development plan to improve the teaching competencies of SHS master teachers. The present study also aims to develop an enhancement program for public elementary school

science teachers to improve the teachers' competencies. The present study will also determine the relationship between the science teachers' level of capability on the five domains of PPST framework in terms of their professional profile such as highest educational attainment, length of service, and level of trainings attended as science teachers.

The data gathering procedure are similar which basically based on the subject's responses to the instrument that used in the study such as questionnaire that elicited the profile of the respondents.

On the other hand, Aplao (2017) conducted a study to determine the needs of senior high school mathematics teachers in teaching statistics and probability which would serve as basis for conducting needed training. While Lasaten's study (2016) analyzed the assessment methods, problems and training needs of public high school teachers in English. Both are like the present study since this also investigated the needs of teachers, but the present study will focus in Science.

3 Research Methodology

3.1 Research Design

This study made use of the descriptive- developmental method of research. The Center for Innovation and Research Teaching (2017) defined descriptive research as one concerned with finding out "what is". It is descriptive because the researcher described the situation and condition prevailing during the conduct of the study. It attempted to gather information that can be used to analyze the capability level of the respondents. Descriptive research was used to observe and describe a research problem without manipulating the variables in any way. The relationship part of the study was to relate the professional profile variables of the public elementary schools Science teachers with their level of capability based on the five domains of Philippine Professional Standards for Teachers (PPST). On the other hand, this study is also developmental because the output is a capability enhancement program for public elementary school Science teachers based on the findings of this study.

3.2 Sources of Data

The first source of data was the responses of the public elementary school Science teachers in District 1-A, San Carlos City, Pangasinan based on the sub problems posited in this study. The second source of the data was the evaluation results made by the district science coordinator, school head in-charge in Science, Public Schools District Supervisor and Education Program Supervisor in Science to determine the level of acceptability of the proposed capability enhancement program for public elementary school Science teachers.

3.3 Statistical Treatment of Data

The professional profile of public elementary school science teachers was determined using frequency counts and percentages with the following formula:

$$Percentage (\%) = \frac{Frequency (F)}{Total Population (N)} \times 100$$

To determine the level of capability of the public elementary school science teachers, average weighted mean was used. To determine the significant relationship between the respondents' professional profile and the level of capability the Phi Coefficient was used. To determine the level of acceptability of the proposed enhancement program for public elementary school Science teachers the average weighted mean was used.

4 Presentation, Analysis, and Interpretation of Data

4.1 Relationship Between the Professional Profile and the level of Capability of Public Elementary School Science Teachers

Table 1 shows the data gathered on the relationship between the professional profile and the level of capability of the science teachers.

It is clearly reflected that the educational attainment is not significantly related to their level of capability in the five domains of PPST. The results imply that the educational attainment does not affect the efficiency and quality of teaching of the teachers. The area of specialization of the science teachers was related to their level of capability. Results are shown on Table 1. It is clearly reflected that the Phi value computed to relate the area of specialization with the level of capability, led to the rejection of null hypothesis. The results imply that the area of specialization of the public elementary school science teachers does not affect the efficiency and quality of teaching of the teachers. The length of service of science teachers, which refers to the number of years they have already rendered in teaching science subject, is related to their level of capability.

Over-all, only domains 1, 3 and 5 were found to have significant relationship with the length of service of the public elementary school science teachers in terms of level of capability. This finding means Content Knowledge and Pedagogy, Diversity of Learners and Assessment and Reporting have an impact with the length of service. The science teacher with a longer experience may have a higher level of capability or will have a different output as compared to the science teacher with a shorter length of service.

Table 1. Relationship of the Professional Profile to Level of Capability of Public Elementary School Science Teachers

Profile	Domain 1		Domain 2		Domain 3		Domain 4		Domain 5	
	Phi Value	DE	Phi Value	DE	Phi Value	DE	Phi Value	DE	Phi Value	DE
Highest Educational Attainment	0.275	WPR	0.242	WPR	0.340	MPR	0.132	NR	0.364	MPR
Area of Specialization	0.196	NR	0.031	NR	0.067	NR	0.151	NR	0.197	NR
Length of Service	0.387	MPR	0.271	WPR	0.380	MPR	0.232	WPR	0.344	MPR
Level of Trainings	0.671	SPR	0.347	MPR	0.588	SPR	0.603	SPR	0.570	SPR

The Phi value computed to relate the level of trainings in science attended to their level of capability. The level of training in Science attended have a “strong positive relationship” with the domains on Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning and Assessment and Reporting, and this led to the acceptance of the null hypothesis. This implies that neither the science teacher will be attending the training, he/she still capable on this domain. However, attending such training will surely sustain his/her level of capability.

This means that, teachers with more exposure in the trainings have higher level of capability. Furthermore, as the level of trainings higher, the level of capability also increases. Hence, the need to include Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning and Assessment and Reporting in the capability enhancement program for public elementary school science teachers to improve their teaching competencies.

5 Conclusion and Recommendation

The public elementary school Science teachers are enrolled in graduate studies, non- science major, have short length of service in teaching science and have attended division trainings in Science. The public elementary school Science teachers are capable on Learning Environment and Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning, and Assessment and Reporting. The highest educational attainment and Area of specialization are not significantly related to their level of capability in the five domains of PPST; length of service of Science teachers are not significantly related to the Learning Environment, Curriculum and Planning, However, it is related to the domains on Content Knowledge and Pedagogy and Diversity of Learners and Assessment and Reporting which indicated “Moderate Relationship”; Level of Trainings in Science Attended, only Domain 2 Learning Environment were found to have no significant relationship with the level of trainings in science attended.

However, the level of trainings has a “strong positive relationship” with the areas on Content Knowledge and Pedagogy, Diversity of Learners, Curriculum and Planning and Assessment and Reporting. The proposed enhancement program could improve the level of capability of public elementary school Science teachers

The public elementary school Science teachers should continue to pursue their higher education. Public elementary school Science teachers should continuously improve their level of capability in all the domains of PPST. School administrators should include strategic planning and time management in trainings for teachers. In-service trainings related to the

professional development of teachers will surely help teachers to improve their teaching performance. The Five- Day Capability Enhancement Program proposed in this study should be implemented by the school heads and teachers to increase the level of capability of public elementary school Science teachers in performing their tasks effectively and efficiently. It is recommended that the proposed capability enhancement program for public elementary school Science teachers should be adopted by all schools in other districts.

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