

## Status of Chemistry Teaching of the MSU Community High Schools and the National High Schools of Marawi City and Lanao del Sur

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### Abstract

The scenario depicted in the findings of this study is a showcase of non-existence of procedural literacy, depriving the young learners to experience exposures to the methods and procedures used in scientific literacy, of which such exposures cannot be separated from the presence of adequate equipment, instructional materials, and administrators' support. Undoubtedly, the low chemistry achievement of the students can be attributed to the deplorable situation experienced in the different high school respondents. It is therefore, recommended that science teachers must strengthen their pedagogy, content and knowledge (PCK) in science; chemistry teachers must undergo regular professional growth through advanced studies, trainings, seminars and conferences; school administrators must perform the roles on focusing to manage teacher effectiveness and effective classroom instruction; manage the provisions on the adequacy and functionality of instructional materials, supplies, laboratory equipment and facilities necessary for the quality chemistry teaching.

**Keywords:** methods and procedures, quality chemistry teaching, science teachers, teacher effectiveness

### Introduction

Teaching and learning are two very important aspects of educational system. The two aspects are inseparable; one aspect is the complement of the other. If one of the two aspects is absent educational system is impossible to exist. Teaching is the responsibility of the teacher, a professional adult person trained for the job. It involves the intelligent arrangement of the environment and resources of learning that will look the right kind of responses from the learners. Learning is done by the learners by using optimally the learning resources. Learners are a group of maturing individuals under the care of the teacher.

In the Philippines, quality teaching is very important in all subject areas in every level of learning. So, teacher in every field must be effective and efficient in order to yield meaningful learning. In fact Calmorin (1994) stressed that the kind of teacher needed in the field is both diligent and intelligent who can deliver the goods and services to the students efficiently, effectively, and

economically. In other words, competent and efficient teacher is needed so that instruction can be improved to attain quality education.

Laws mandating for quality education include some provisions of the 1987 Philippine Constitution where one of the sections states “The State shall protect and promote the right of all citizens to quality education at all levels and shall take appropriate steps to make such education accessible to all” (DECS Service Manual, 2000). With respect to this mandate, the teachers play the significant role with regards to the educational aspect of society. They are responsible to educate the individual members in society. The future progress and development of society depend on them. But often, teachers are blamed for the many ills in society because accordingly they do not teach effectively, efficiently, and competently. Consequently, quality education is not achieved by the society due to this reason. Progress and development may not reach by the nation because of the poor quality of education.

This is always true in the Philippines as Bilbao et al., (2006) opined that in 1991, the Congressional Commission to Review and Assess Philippine Education (EDCOM) came out with the finding that the quality of Philippine education is continuously declining and that the teachers are at the heart of the problem. This is due to the reason that many teachers at all levels do not have the minimum qualifications for teaching. In particular, the proportion of high school teachers of science and mathematics who do not have even the minimal preparation for teaching the subject ranges from 54.6 percent to 60.0 percent. This report is confirmed in Angara’s message during the SUCTEA Convention on February 16-18, 2011, for having remarked that many teachers in the public school system who teach mathematics and science in elementary and high school are not qualified. Only about nine of every 100 mathematics and science teachers hold a master degree while only two pursued doctoral studies.

In the earlier years where the national performance of the students was measured by National College Entrance Examination (NCEE) where the input of the teachers reflects on the outcome of students, EDCOM (1992) findings revealed that the results of NCEE and the International Assessment Examination (IEA) showed that Filipino students generally perform poorly in mathematics and science. Cognizant to this deplorable status of the Philippine education, it requires the present educational system to strengthen the teaching and learning of science particularly the field of chemistry because it is the partner of society for technological advancement. Teachers who are competent in teaching the field are highly needed, as outlined in the 1987 Philippine Constitution in Article XIV, Section 10, it is stressed that “science and technology are essential for national development and progress; the State shall give priority to research and development, invention, innovation, and their utilization, and other services; it shall support indigenous people, appropriate and self-reliant, scientific and technological capabilities, and their application to the country’s productive system and national life” (Salandanan et al., 2006). Foundation on this national requirement should stem from the basic education especially in the secondary level.

However, as observed, secondary graduates coming from some high schools in the country find difficulty to take up chemistry when they reach college level. The main reason for the claimed gap rests on the poor foundation in high school chemistry. Maranao educational area is not exempted from the problem. Both teaching and learning processes in the field of chemistry are not in good quality. Generally, high school graduates coming from different secondary schools of Marawi City and Lanao del Sur are behind in the content knowledge in chemistry compared to the other regions of the country.

Chemistry is an area of concern of the researcher because of its importance as a partner of society in the technological advancement. This is one of the basic subject areas in the third year

high schools prescribed in the General Education Curriculum. The subject is included in the curriculum as Science and Technology III in which the description is Chemistry and Technology (DECS Service Manual, 2000). Motivated by this concern, the researcher tried to assess the status of chemistry teaching in the different MSU community high schools and the DepEd national high schools of Marawi City and Lanao del Sur. Chemistry performance of the students is equally important to be determined.

### **Objectives of the Study**

1. To evaluate the level of the students' chemistry achievement of the respondent high schools;
2. To relate the chemistry teachers' profile with the status of chemistry teaching of the respondent high schools;
3. To relate the status of chemistry teaching with students' achievement of the respondent high schools; and
4. To design training program for chemistry teachers in order to improve the status of chemistry teaching of the respondent high schools.

### **Statement of the Problem**

Educators and researchers exert their efforts to evaluate and assess chemistry teaching-learning process through research so as to update themselves with its present status. It is a fact that assessment of teaching-learning plays an important role to improve educational system. According to Corpuz and Salandanan (2007) assessment of learning is an integral part of the teaching-learning process.

### **Significance of the Study**

Results of this study will benefit the different stakeholders of the educational system. The school administrators may provide enhancement program to improve the chemistry teaching in the region and the locale of the study in particular. Results will provide them vital information to design other effective specific program to intensify the teaching competence of the chemistry teachers. The findings of the study may give information to parents concerning the importance of their cooperation as partners of the school in educating their children.

Furthermore, the findings may bring information to every community constituents on what particular supports that they will provide for the benefit of chemistry teaching in the respective high schools situated in their localities. The findings may also provide baseline data for the curriculum planners and makers to give some important revisions in the chemistry program purposely to make it relevant to the needs of the students studying along the areas where respondent high schools are established. Finally, the future researchers also may gain some necessary information about the process of assessing the status of other subject areas included in the present curriculum designed by the Department of Education (DepEd) purposely to enhance students' achievement in other subjects.

### **Research Design of the Study**

The research employed the descriptive-correlation design. This research design is appropriate for the study because it provided description of the different variables investigated in the study which include the profile of the chemistry teacher respondents, teaching-learning process methodologies, association between variables like aspects of status of chemistry teaching and profiles of teacher respondents. The study focused only on assessment of chemistry teaching of

the MSU community high schools and the national high schools of Marawi City and Lanao del Sur. The researcher used the grade point average (GPA) in chemistry at the end of the academic year 2010-2011 as a measure of the students' chemistry achievement of the high school respondents.

### **Method of Procedure**

Descriptive-correlation design was employed to correlate teachers' personal and professional profiles with teaching approaches and methods used by the chemistry teachers. These variables together with instructional materials and supplies; laboratory equipment and facilities; and administrators' support are also correlated with the third year students' chemistry achievement of the respondent high schools in the school year 2010-2011.

### **Collection of Data**

After the proposal had been presented and approved by the dissertation committee, permission from the head of each respondent school was sought for the conduct of the study. Upon the issuance of permits from the aforementioned heads of schools, the researcher personally distributed and administered the questionnaire to the chemistry teachers in the different respondent high schools. In the administration of the questionnaire the researcher explained the nature of the study and its purpose in order to get the sympathy of the respondents to answer the questionnaire honestly. Instruction to be followed in answering the questionnaire was also vividly explained to the respondents to avoid misconception. Clarifications of the respondents with regards to some items which are not clearly explained were being entertained by the researcher.

### **Results and Discussion**

On correlational analysis between the teachers' profiles and the different aspects describing the status of chemistry teaching, yielded the following: on **(a) teaching approaches**, the correlation process manifested *moderately to highly positive* relationship between the following profile variables and approaches of teaching: Age with inquiry, integrated, and interdisciplinary approaches; monthly income with inquiry, integrated, interdisciplinary, and mastery approaches of teaching; ethnicity with multimedia; length of service with integrated, interdisciplinary, and mastery learning; educational attainment with multimedia, interest learning centers, and visiting community resources; field of specialization and professional growth with the conceptual, inquiry, and discovery; lastly, academic rank with interdisciplinary, integrated, mastery and multimedia; those profile variables which did not manifest positive relationship with any of the teaching approaches are civil status, eligibility, and appointment status; for **(b) teaching methods**, the correlation process manifested *moderately to highly positive* relationship between the following profile variables and methods of teaching: Age with investigatory and cooperative methods of teaching; gender with reporting; civil status with lecture; monthly income with discussion, reporting, and investigatory methods of teaching; ethnicity with reporting; field of specialization with lecture, discussion, reporting, problem solving, cooperative, and project-based method; eligibility with investigatory; length of service with discussion and investigatory; professional growth with lecture and discussion; and academic rank with discussion, reporting, activity, and investigatory teaching methods; noticeably, no positive relationship ever existed between educational attainment and appointment status with any of the profile variables of the teachers; for **(c) instructional materials and supplies**, correlation results showed a *highly positive* relationship with the field of specialization, other profile variables of the teachers *did not show* any correlation with the instructional materials or supplies necessary for their chemistry teaching; for **(d) laboratory equipment and facilities**, the correlation results manifested that same aspect of status posed *positive relationship* with monthly income, educational attainment, field of specialization, professional growth, and a *high correlation* with academic rank profile; for **(e)**

**administrators' support**, only gender and the academic rank of the teachers have *moderately positive* relationship with administrative support.

On correlation analysis between the students' achievement and the aspects of status, correlation results showed that only inquiry and discovery teaching approaches, and the problem solving of the teaching methods used have reflected *moderately positive* relationship with students' outcome. Other aspects of status like instructional materials or supplies, laboratory equipment or facilities, and administrators' support *did not show* correlation with the students' outcome or achievement.

### **Conclusion**

Based on the results of the study, the MSU Community High /schools and the National High Schools of Marawi City and Lanao del Sur have inadequate chemistry instructional materials, supplies, laboratory equipment and facilities and if ever there are few of these materials existing in the said high school respondents, these things are not functional. This particular condition is a showcase of non-existence of procedural literacy, as stressed by Bybee (1996, as cited by Tan et al., 2003), where procedural literacy is one dimension of scientific literacy, and such relates to the aim of learning to do science. Learning to do science can be attained by exposing the learners to the methods and procedures used in scientific literacy and such exposure cannot be separated from the presence of adequate equipment and materials support which the settings of the study lacked. Undoubtedly, the low chemistry achievement of the students can be attributed to the adverse situation experienced in the different high school respondents.

The teaching approaches and methods of the teachers are far from the standard, much to the extent of the teacher's educational preparation, as expected. They should become experts of the subjects they were trained on before they can engage in teaching the subjects. In light with the foregoing findings, wherein chemistry achievement of the student-respondents portrayed a mean score lower than the expected student performance in a national level is a compelling reason for the researcher to design a proposed training program to address the discovered gaps and needs in MSU community high schools and the DepEd national high schools in the province of Lanao del Sur.

### **References**

- Abedin, S. (1998). "Determinants of mathematics achievement of fourth year students among public and private secondary schools in Lanao del Sur I, Lanao del Sur II, and Marawi City." A Doctoral Dissertation, MSU, Marawi City
- Arends, R. I. (1997). Classroom instruction and management. USA: McGraw-Hill Co., Inc.
- Arends, R. I. (2001). Learning to Teach. USA: McGraw-Hill Co., Inc
- Baniamen, N. M. (2003). "The environmental concepts integrated in teaching elementary science in Lanao del Sur I: bases for a proposal intervention program." A Doctoral Dissertation, MSU, Marawi City
- Barnes, J. (1987). Teaching experience. In M. S. Dunkin (Ed), International Encyclopedia of Teaching and Teacher. Oxford: Pergamon Press
- Bichler, R. and Snowman, J. (2000). Psychology applied to teaching. Boston: Houghton Mifflin
- Bilbao, Purita P. et al., (2006). The teaching profession. QC, Philippines: Loriman Publishing Co, Inc.
- Block, J. and Hazelip, K. (1995). Teacher beliefs and belief systems. In L. Anderson (Ed.), International Encyclopedia of Teaching and Teacher Education. Oxford Pergamon Press



- Bracey, G. (1999). Reducing class size. *Phi Beta Kappan*, 81(3), 246-247
- Buad, S. D. (2004). "The science education program of the elementary schools In Lanao del Sur and Marawi City." A Doctoral Dissertation, MSU, Marawi City
- Calmorin, Laurenta P. (1994). Educational research, measurement and evaluation. 2<sup>nd</sup> Ed. Philippines: National Book Store Co., Inc.
- Chant, P, et al., (1990). Better links: teaching strategies in the science classroom. Australia: STAV Publishing Pty Ltd
- Cole, A. and Knowles, J. (1993). Shattered images. *Teaching and Teacher Education*, 9(516), 451-471
- Coulter, F. (1987). Affective characteristics of student teachers. In M. J. Dunkin (Ed.), *International Encyclopedia of Teaching and Teacher Education*. Oxford: Pergamon Press
- Corpuz, B.B, Salandanan, G.G., Rigor, D.V. (2006). Principles and strategies of teaching. QC: Lorimar Publishing Co., Inc.
- Corpuz, B. B. and Salandanan, G. G. (2007). Principles of teaching. QC, Philippines: Lorimar Publishing Co., Inc.
- Cruickshank, D. R., Jenkins, D. B. and Metcalf, K. K. (2003). The act of teaching. 3<sup>rd</sup> ed. NY, USA: McGraw-Hill Co., Inc.
- Department of Education Culture and Sports (2000). Service Manual
- Dimal, R.-J. M. (2004). "The teaching behaviors of public elementary school teachers and the Pupil academic performance in the Division of Lanao del Sur and Marawi City: bases for a training design." A Doctoral Dissertation, MSU Marawi City
- Disomangcop, H. M. (2001). "In-service training of secondary teachers in Marawi City and Lanao del Sur I as it relates job performance." A Doctoral Dissertation, MSU, Marawi City
- Dumrang, S. P. (2001). "The science teaching approaches and students performance at MSU External Studies High Schools." A Doctoral Dissertation, MSU, Marawi City
- Gandamra, A. A. (2000). "Factors related to attitude and achievement in mathematics and chemistry of public secondary students in Lanao del Sur I and Marawi City. Marawi City." A Doctoral Dissertation, MSU, Marawi City
- Gatab, E. M. (2003). "Factors affecting performance and management of learning outcomes of fourth year public secondary teachers of Lanao del Norte: basis for intervention program." A Doctoral Dissertation. MSU, Marawi City
- Manaol, M. P. (2009). "Teachers' effectiveness and pupils performance in the Regional Assessment for Math, Science and English: Basis for an intervention program." A Doctoral Dissertation.
- MSU, Marawi City Mecampong, N. P. and Mecampong, C. B. (2000). "Problems and benefits of the beam program for Secondary mathematics teachers in Lanao del Sur I: Basis for a proposed program enhancing mathematics teachers' competencies." A Masteral Thesis, MSU, Marawi City
- Mortaba, M. M. (2002). "An evaluation of the teaching of social studies in MSU Units: proposed to improve social studies instruction." A Doctoral Dissertation. MSU Marawi City
- Ormrod, J. (1995). Educational psychology. Englewood Cliffs, N. J.: Prentice Hall
- Santos, R.D.G. and Padua, R. N. (1998). Fundamental of educational research. Quezon City: Katha Publishing Co., Inc.
- Salandanan, G.G. (2009). Methods of teaching. Quezon City: LORIMAR PUBLISHING, INC.
- Tan, M.C., Treyes, R. S., Bentillo, E.N., Carale, L.R., Galvez, E.R, Magno, M.C, and Talisayon, V.M. (2003). Supervision of science and mathematics teaching. Quezon City: UP NISMED

- Valdez, A.V. (2008). "Effects of HOTS techniques through modular instruction teaching chemistry among high school students in MSU-Balindong Community College." A Doctoral Dissertation. MSU, Marawi City
- Villegas, A. M. (1991). Culturally responsive teaching. Priceton, N. J.: Educational Testing Service
- Zulueta, F. M. (2006). Principles and Methods of Teaching. Philippines: National Book Store, Inc.

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