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Impact of Mathematics and Science Instructional Practices, Curriculum and Academic Achievement to the Career Choice of Laboratory School Graduates of University of Rizal System-Morong

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Abstract

School institutions' thrust is to produce quality graduates who will play significant roles in the development of the community, the society and the economy. With the idea that schools influence students in many aspect and ways, the study attempted to determine if the curriculum and instructional practices employed by a school which serves as a clinical experience and practice sites for pre-service teachers and experimental teaching activities, known as a laboratory school, affect the career choice of laboratory school graduates and its senior students' course preference. The findings revealed that instructional practices that engage students to actively participate in their own learning, the teaching practices that enhance the development of complex cognitive skills, processes used by the teachers together with a school curriculum that emphasizes the development of Science and Mathematics, affect the career choice of its graduates who mostly took Scientific and Professional courses.

Keywords: curriculum; instructional practices; career choice

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1. Introduction

In today's technology driven world, educational institutions continuously adopt with the change of technology and to the needs of the society. The aim of education in any country mandates the kind of citizen educational institutions aims to produce [1].

In the Philippines, it was reported that there is high demand of jobs waiting for graduates who would be pursuing careers related to science and technology but only above half of the demand were produced as graduates in these fields [2]. The importance of developing scientific and technological competence as a means of attaining national development goals addresses the interests and demands of a growing need of the country.

The low performance of the Philippines in the Trends in Mathematics and Science Study (TIMSS) in 1999 and 2003 strengthen the need to attend to the problem in the development of students' performance in science and mathematics.

To address the need to develop science, mathematics and technology performance of students, the Philippine government encourages school institutions to adopt science and mathematics curriculum in response to Republic Act 7678 which states that "The state shall give priority to research and development, invention, innovation and their utilization and to science and technology education, training and services".

In the Philippines, there are six types of schools with special science and mathematics curriculum. These are the schools that use the Philippine Science High School System, the Regional Science High Schools, Science and Technology Oriented High Schools, University Rural High School/Laboratory Schools, and other Public Science High School and private schools with science and mathematics curriculum. The University of Rizal System Laboratory high school is one of the university laboratory schools that responded to the call to address the need to augment the need of high school graduates who will be inclined to take science and mathematics courses. The curriculum include regular secondary curriculum but with additional science, mathematics and technology subjects, elective subject and research subjects.

The ultimate criterion by which the effectiveness of curriculum development may be judged is in the degree to which the learners are provided with better and continually improved educational experiences that result to the production of various types of educational growth including interest and taste that contribute to the education of the individual and help him to become useful, upright, and effective member of the society he lives in [1]. Thus, the ultimate goal of en effective science and mathematics curriculum is the produced graduates who took and will be taking science and mathematics related courses.

This prompted the researcher to determine the impact of science and mathematics curriculum, instructional practices and achievement of students to the career choice of the graduates of the laboratory school.

2. Methodology

The study employed both descriptive method and research and correlation method of research. Both qualitative and quantitative data were considered in the study. The study considered all the 78 fourth year students of SY 2013-2014 as student respondents and the 76 graduates of the laboratory school in the year 2013 as the alumni respondents. Of the 76 alumni respondents, 10 were considered respondents who underwent unstructured interview to collect qualitative data. A total of sixteen teachers from the laboratory school, 9 science teachers and 7 math teachers, who were randomly selected and were considered as teacher-respondents. A validated questionnaire checklist was used to determine the perception of the respondents on the curriculum, instructional practices and instructional materials of the science and math curriculum disseminated to the teachers, alumni, and students. Questionnaire checklist on the school factor, importance and interest in science and mathematics were given to the alumni. The study was conducted in June 2013. The results of the National Achievement Test for the past five years and the final grades of graduates in Science, Math, Research and General Average were also considered data of the study. Data ware statistically analyzed through SPSS ver.19.

The study is limited only on the perception of the students and teachers on the impact of science and mathematics curriculum to students' career preference. The data of the study is also limited to one of the two laboratory schools that uses science and mathematics curriculum in the province of Rizal.

3. Literature and Study Review

The following literatures and studies discuss the importance of science mad mathematics curriculum and the impact it make in the achievement of students. It also discusses the influence of the curriculum to the course choice of the students. The applicable instructional practices, teaching strategies and instructional materials needed in the promotion of science and mathematics curriculum is also discussed.

3.1 Special Science and Mathematics Curriculum

Man's needs change as time progress. Due to these vast changes in man's way of living and on the continuous development of technology, educational institutions must respond and be able to adopt to the changes in order to help the society cope with change. This leads to the curriculum innovation of schools.

In the changing need of man, educational curriculum also adopt with change. The curriculum content and scope need to be continuously updated, innovated and improved to conform to the needs of the students and society, and make it relevant and responsive to the rapidly changing global environment

[3]. The significance of educational aims or objectives, with the assertion that the aim of education, give school administration and supervisors a general idea of the type of citizens that they expect the school to produce [1]. Since in today's modern world, technology continuously affects man's everyday life. Students must then be ready and be equipped with the change which they can best learn from school, a reason why innovation of school curriculum takes place. This is also the reason why most schools shift to science and mathematics curriculum so that their graduates can lead the technological advancements in the future.

Special science curriculum is designed to ensure that the students upon graduation from a secondary school, will be able to learn more independently, acquire academic excellence and develop the capability to cope with new knowledge in technology (DOST-SEI). Special Science curriculum places major emphasis on knowing basic facts, understanding science concepts, applying science concepts to solve problems and develop explanations using laboratory equipment and performing science experiments [4]. Special science curriculum is the Secondary Development Program (SEDP) based curriculum enriched with supplemental activities for Science and Technology and Mathematics Classes and with additional subjects in science. It is also called enriched curriculum. Special science curriculum is effective in enhancing creative thinking and critical thinking abilities, laboratory performance skills, content mastery and scientific attitude among the students [5].

Various local studies were made on special science curriculum. One reflected that the effectiveness of special science curriculum in selected Department of Science and Technology Special Education Institute (DOST-SEI) node schools in Manila, Philippines. It revealed that some of the strength of special science curriculum includes integration of the lesson to the recent technological trends and development, the school's provision of advanced information in science and technology and the teachers encourage students to develop critical thinking skills [6].

In the United States, mathematics curriculum emphasizes problems solving, communication, reasoning, and mathematical connections [6,7]. Positive effects have been observed in several mathematics curricula that focus on problem solving and conceptual understanding is also found [9].

This is the same objective of the special mathematics curriculum done locally. Curriculum in mathematics, is the development of mathematical habit of mind, a procedural understanding of an "understanding of how to put all numbers and operations together" via the identification and operation of variables and the display and interpretation of data [10]. Mathematics also promotes very high level of effectiveness in promotion of research readiness among computer science students [11].

3.2 Instructional Practices in a Science and Mathematics Curriculum

Employment of teaching strategy is one of the factors involved in the learning process of students [12]. In a special school that provides science and mathematics curriculum, non-traditional instructional practices are required since the primary aim of science curriculum is to help Filipino learners gain a

functional understanding of scientific concepts and principles linked with real life situations, and acquire scientific skills, attitudes and values necessary to analyze and solve daily problems [4]. Apart from this, development of critical thinking and problem solving skills among students is also one of the major objectives of a special science curriculum [6,5].

Student-centered instructional practices are employed in a mathematics curriculum more than the traditional, chalk-board method of teaching. The National Council of Teachers of Mathematics (NCTM) in 2000 discussed that mathematics curriculum needs to be employed with reformed teacher instructional practices. It was mentioned that classroom instructions that uses logic and mathematical evidence to verify results rather than relying on the teacher as authority; emphasizes mathematical reasoning rather than memorizing procedures; focus on conjecture, inventing, and problem solving rather than mechanical answer finding and making connections among ideas and applications of mathematics rather than seeing them as isolated concepts and procedures. Furthermore, the use of standards-based or reform practices was positively related to achievement on both tests for student in integrated math courses, whereas the use of reform practices was unrelated to achievement in more traditional algebra and geometry courses [13].

Teachers' competency in using variety of instructional techniques/strategies in teaching is the key factor to come-up with a successful implementation of a special science curriculum [14,6], and on the implementation of special mathematics curriculum [11]. This is since development of order higher thinking skills is one of the objectives of this curriculum. It is further added that in attaining the objectives of educational experience greater attention must be given to higher-level knowledge outcomes such as understanding of concepts and principles, problem solving, interpreting data and the ability to use tools of inquiry [1]. Science teacher should use cooperative learning to develop and enhance both the basic and integrated scientific process skills among students [5]. Nonetheless the most commonly used methods in teaching science as revealed by her study were experimenting, reporting, demonstrations, discussion, field trip, constructing project and using audio-visual materials [4].

Thus, it is important that schools using science and mathematics curriculum have teachers who are equipped and well trained to execute teaching using variety of instructional strategies effectively used in these kind of curriculum, [6,14,5]. Furthermore, in-service training should be conducted among science teachers to better execute effective cooperative learning in the classroom to ensure that scientific process skills are enhanced among students [6].

3.3 Instructional Materials

Another factor considered in the success of curriculum is the availability of instructional materials used in teaching. The aim of education is to determine the curriculum, the kind of teaching procedure and instructional materials that should be used in the classroom. The curriculum has to mean all the experience of the child in and out of the school for which the school is responsible [1].

Teaching material, which are "tools of the trade", must measure up the rigorous demands of daily instruction [15]. Teachers must be able to place students in proper curricular materials, detect, instructional tactics that will enhance learning, maintain motivation, correct shortcomings of materials and monitor student performance.

Emphasis on the importance of availability of instructional materials in teaching in schools using science and mathematics curriculum [11,4].

The availability and efficiency of instructional materials in teaching is a factor to be considered to determine the effectiveness of a science and mathematics curriculum. Instructional materials and aids, such as textbooks, reference books, tables of information, periodicals and magazines, mathematical instruments and computers are strengths of mathematics curriculum to promote research readiness [11].

In the local setting, there is inadequacy of instructional materials needed in teaching science and mathematics. It is reported that the weaknesses of special science curriculum include insufficient number of laboratory rooms and equipment, incomplete set of library materials and the chemicals in the laboratory are not readily available [6]. Instructional materials and aids, such as textbooks, reference books, tables of information, periodicals and magazines, mathematical instruments and computers are strengths of mathematics curriculum to promote research readiness [11].

3.4 Factors Affecting the Student' Career Preference

The ultimate criterion by which the effectiveness of curriculum development may be judged is the degree to which the learners are provided with better and continually improved educational experiences that results to the production of various types of educational growth including interest and taste that contribute to the education of an individual and help him to become useful, upright, and effective member of the society he lives in [1]. Thus, it is necessary that interest of students must be identified and be further developed so that they can easily identify their preferred career in the future.

There are various factors that affect the career choice of students. These include school factor, family factor, economic factor etc. With these factors, school environment is one of the considered factors that affect students' course preference.

School environment particularly school administrators and guidance counselor students make good career choice in the future. Furthermore, parents, teachers, and school counselors are all involved in students' career decision-making process [16].

Exposure of students to career related technical and academic subjects also known as elective subjects in the Philippines also helps in students' decision making in career choices in college. Career Technical Education (CTE) was perceived positively by middle school and high school counselors in Tenessee, and the need for career awareness should begin in a student's early years before high school [16].

The high school curriculum of the student can affect the choice of course of students. In the identified the factors associated with the courses taken by the graduates if the special curriculum of Catanduanes National High School from 2000-2004, it was found that only 42.17% of the respondents have taken the course related to engineering, science and technology. Of this, Engineering & Technology accounts to 15.06% of the samples. The factors associated with the courses taken by the respondents are socio-demographic profile, motivational factors and school-related factors. She further added that the career guidance program provided by the school also influenced the respondents in choosing their courses due to its varied sessions and counseling given to the graduates [14].

4. Result

Table 1 presents the mean value and standard deviation of the curriculum, instructional practices employed by Mathematics and Science teachers and the provided instructional materials in school.

Of the factors, curriculum and instructional practices employed by mathematics teachers have the highest general mean value. Teachers, students and alumni believe that the Mathematics and Science curriculum provided by the laboratory school are designed to promote creativity and scientific thinking among students as well as to develop problem solving and reasoning skills and mathematical connections among students.

Mathematics and Science teachers are generally rated outstanding in their instructional practices (mean=4.62, sd=.370; mean=4.59, sd=.383). Students believe that the highest points of Mathematics teachers is on their way of developing problem solving skills among students which is connected to the perception of graduates that mathematics teachers gives students opportunity to create solutions to real world problems.

On the other hand, Science teachers are rated highest by both graduates and students on their use of logical evidences to verify scientific problems rather than relying on ones procedure or judgment on answers. Both Mathematics and Science teachers are believe that they are using different teaching strategies that promote higher order thinking skills among students.

Sufficiency of Instructional materials is generally rated outstanding by teachers, students and alumni. It can be noticed that teachers gave the lowest mean value with the most consistent answers of the three respondents (mean=4.41, sd=.159). Both students and graduates believe that there are sufficient instructional materials for both students and teachers' use but the teachers believe that there is only satisfactory number and incomplete laboratory supplies/materials and chemicals (mean=3.31, sd=.602), and very satisfactory number of laboratory equipments and reading materials and table of information that would provide students with current idea and concepts in research. Since Research is one of the additional subjects in Science, teachers believe that students should be provided with enough reading materials that they can use as a basis in conceptualizing their research study.

Table 1: Curriculum, Instructional Practices of Mathematics and Science Teachers and Availability of Instructional Materials in the Laboratory School of University of Rizal System

	Teacher			Student			Alumni			Total		
	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI
Curriculum	4.64	.121	O	4.71	.046	O	4.45	.067	O	4.62	.304	O
Instructional Practices of Mathematics Teachers	4.66	.374	O	4.64	.474	O	4.60	.237	O	4.62	.370	O
Instructional Practices of Science Teachers	4.44	.519	O	4.63	.477	O	4.60	.241	O	4.59	.383	O
Instructional Materials	4.41	.159	O	4.77	.337	O	4.52	.222	O	4.59	.384	O

Table 2 shows that there is no significant difference between the perception of the Teachers, Students and Alumni on the Instructional practices employed by the mathematics and science teachers $F(2,158) = 0.755$, $p>0.05$ and $F(2,156) = .374$ $p>0.05$. On the other hand, teachers, students and alumni differ on the perceived relevance of the curriculum and instructional materials used by the laboratory school, $F(2,165) = 9.394$, $p<0.05$ and $F(2,165) = 19.864$ $p<0.05$.

Table2. ANOVA result of the perception of the Respondents

Factors		Sum of Squares	df	Mean Squares	F	Sig.	VI
	Between Groups	2.522	2	1.261	9.394	.000	S
	Within Groups	22.149	165	.134			
Curriculum	Total	24.672	167				
Instructional Practices	Between Groups	.078	2	.039	.282	.755	NS
	Within Groups	21.916	158	.139			
of Math Teachers	Total	21.994	160				
Instructional Practices	Between Groups	.290	2	.145	.989	.374	NS
	Within Groups	22.870	156	.147			
of Science Teachers	Total	23.159	158				
	Between Groups	3.002	2	1.501	19.864	.000	S
	Within Groups	12.469	165	.076			
Instructional Material	Total	15.471	167				

Thus, teachers, students and alumni, although all rated the Mathematics and Science curriculum employed by the laboratory school of University of Rizal System to be outstanding, have different

perceptions on the curriculum and sufficiency of instructional materials offered by the laboratory school. This could be since the teachers, being the key player in school institutions, know better the curriculum and the needed materials used in giving instructions.

Table 3. Mean value of the Importance of School, Math and Science for the Students

Factor	Mean	Standard Deviation	Verbal Interpretation
School Factor	4.26	.354	Very Important
Importance of Math and Science	4.06	.505	Important

The table above depicts that students believe it is very important to go to school (mean=4.26, sd=.356), particularly, they believe in pursuing a college degree after high school. They also believe that it is important to go to school to be successful in the future.

Table 4. Mean Value and Ranking of Math and Science Importance

Math and Science Importance		Mean Value	Ranking
1.	Get 95% grade in my math subject.	3.05	1
2.	Get a 95% final grade in Science.	3.49	2
3.	Compute data with the use of statistics.	4.31	3
4.	Design and conduct a science project/research.	4.67	4
5.	Develop hypothesis on the my research project.	4.71	5
6.	Interpret results of experiments.	5.99	6
7.	Construct and interpret graphs.	6.17	7
8.	Classify plants that I observe.	6.50	8
9.	Determine the lifespan batteries a 2 volt battery will take.	7.32	9
10.	Determine the time it would take to travel from Morong to the University Belt with the driving speed of 55 km/h.	7.84	10

When it comes to the importance of math and Science subjects, the student believe that having good grades in Math and Science increase the chance of obtaining higher total average grade (mean=4.66, sd=.505). They also believe that doing good in Math subject will open al lot of venues to take different career opportunities. When students are asked to rank the importance of Science and Mathematics, as presented in Table 4, getting high grades in Math and Science are the top answers presented with the least mean values. Top 4-6 in the rank are the skills they need in doing research studies which includes the design and conduct of research studies, development of hypothesis, computing data with the use of statistics, constructing and interpreting graphs and results. The bottom three includes the computational skills in answering problems in Math and Physics.

Table 5 on the other hand, presents the ranking of students' interest in Math and in Science. It shows that the top 4 items shows students' interest in learning science through experiential learning strategy which includes inventing, working in Science laboratory and visiting science museums. Students' special interest in Math is seen when being in a Math class is at the third rank while solving Math puzzles and problems are at the 6 and 7th rank. Learning science is at the bottom 4 items of the students' choice.

Table 5. Mean Value and Ranking of Math and Science Interest

Math and Science Interest		Mean	Ranking
1.	Visiting a science museum.	5.00	1
2.	Inventing	5.66	2
3.	Being at a math class	5.90	3
4.	Working in science laboratories	6.08	4
5.	Reading about new science discoveries	6.18	5
6.	Solving math puzzles	7.00	6
7.	Solving math problems	7.17	7
8.	Taking part of science fairs	7.29	8
9.	Watching science programs in TV	7.39	9
10.	Using calculators	7.91	10
11.	Working with plants and animals	8.16	11

12.	Joining Science clubs	8.22	12
13.	Learning about energy and electricity	8.28	13
14.	Solving physics problems	9.51	14

In Table 6, the performance of the students in Science, Math and in general in the National Achievement Test (NAT) for the past five years is presented. As shown, URS laboratory school did not participate in NAT on the year 2008 and 2011. It can be seen that from the year 2009 having a general mean of 49.47 which is ranked 10 of the 65 public schools In the Province of Rizal, the ranking of the performance of senior students in the national test elevated to 8th rank in year 2010 with a general mean of 46.43. Using the same Mathematics and Science Curriculum, the ranking of students' performance elevated to rank 3 for two consecutive school year with mean score performance of 48.16 and 64.59 respectively. All performances are rated to be on the average mastery level. It can also be seen that the scores of the students in Science is declining while the students' score in Mathematics is increasing for the past five years.

Table 6. National Achievement Test Performance of senior Students of URS Laboratory School

	2008	2009		2010		2011	2012		2013	
Subjects	Mean	Mean	Rank	Mean	Rank	Mean	Mean	MPS inc.	Mean	MPS inc.
Mathematics	-		10th out	31.63	8th out	-	35.62	3rd of	63.72	3rd of
Science	-		of 65	39.61	of 65	-	35.02	70	48.90	70
General Average	-	49.47	schools	46.43	schools	-	48.16	schools	64.59	schools

Table 7 presents the courses taken by the graduates of the laboratory school in the school in the year 2013. It shows that most of the graduates took Scientific Courses (f=40, 52.63%) particularly engineering courses (Civil, Mechanical, Chemical and Aeronautical Engineering) (f=38, 50%). This is followed by Commercial Courses (f=23, 30.26%) particularly accounting courses (f=16, 21.05%). Under Professional Courses (f=13, 17.10%), medicine related courses (f=6, 7.89%) and mathematics-related courses (f=4, 5.26%) dominate.

Table 7. Frequency of Courses taken by the Graduates of Year 2013

Classification of Career	Frequency	Percentage
Commercial Courses	23	30.26%
Accounting Course	16	
Management Courses	7	
Professional Courses	13	17.10%
Medicine-related courses	6	
Mathematics-related courses	4	
Education Course	1	
BS Psychology	2	
BS Philosophy	1	
Scientific Courses	40	52.63%
BS Biology	2	
Engineering Courses	38	
Total	76	100%

Table 8. Regression Analysis Results of the Factor that Affects Laboratory School Graduates' Choice of Course

	Unstandardized Coefficient		t	P-value	Verbal Interpretation
	B	Std. Error			
(Constant)	-11.800	17.584	-.671	.504	NS
Science IV Grade	.421	.197	2.140	.036	S
Math IVA Grade	-.118	.118	-.999	.321	NS
Math IVB Grade	.148	.172	.862	.392	NS
Research Grade	-.023	.188	-.120	.905	NS
General Average Grade	-.249	.240	-1.036	.304	NS
Math and Science Expectations	.002	.005	.462	.645	NS
Math and Science Interest	-.002	.002	-.353	.181	NS

R=.326[a] R Square=.106 F=1.154 P-value=.341

a. Predictors: (Constant), Science IV Grades, Math IVA Grades, Math IVB Grades, Research Grade, General Average, Math and Science Importance, Math and Science Interest

b. Dependent Variable: Course Taken

Table 8 presents the regression analysis of the Science IV Grades, Math IVA Grades, Math IVB Grades, Research Grade, General Average, Math and Science Importance, Math and Science Interest as predictors of the course considered by the graduates. As shown, there is no significant relationship between the course taken by the graduates and the Science IV Grades, Math IVA Grades, Math IVB Grades, Research Grade, General Average, Math and Science Importance, Math and Science Interest of the graduates. Furthermore, grades of graduates in Science IV is a predictor of the course taken by the graduates. More studies can be considered to determine the relationship of students' performance in science to the course preference of to those taking engineering courses.

5. Discussion

One of the objectives of the development of Science, Mathematics and Technology curriculum is to produce graduates who will pursue science, mathematics and technology related courses who will augment the need for engineers and scientists in the country.

Teachers, students and alumni of the laboratory school that uses Science, Mathematics and Technology Curriculum have unanimous perception that the curriculum, instructional practices of both science and mathematics teachers are outstanding and the instructional materials provided are sufficient. Good ratings on the curriculum in Mathematics and Science provided by the school could be attributed to the linearity of the design of the curriculum to the employed instructional practices provided by the Mathematics and Science teachers. This is in line with the idea that well identified curriculum should come along with specific and suited teaching procedure and instructional materials [1]. Teachers, students and alumni of the laboratory school believe that the Science, Mathematics and Technology curriculum of the school is designed to promote creativity, scientific thinking, problems solving and reasoning skills among students. The findings revealed that students and alumni believe that Mathematics teachers develops students' problem solving skills. This is supported by the statement all ten of the graduates who mentioned that their exposure to more topics in math and science influenced them in their choice of course. This is also related to the idea that critical and problem solving skills are developed among students exposed to special science curriculum [4,6,5]. Furthermore, six of the ten interviewed students mentioned that their exposure to problems in Mathematics that is related to engineering encouraged him to take the course. Both students and teachers also believe that the curriculum is designed to promote critical thinking among students. This is since students are exposed to problems of real life situations. This could have been developed since students are asked to formulate solutions to economic environmental problems through their Research subject that develop them to be critical thinkers. The ability of students to solve problems is one of the objectives of and science curriculum [4] and considered as the strength of the schools using special science curriculum of DOST-SEI [6].

Of the ten students interviewed, eight of them took engineering courses. These eight respondents are unanimous in saying that of the choice between the curriculum, subject in math and science, activities in school and guidance counselors, teachers have the greatest influence on their choice of course.

Thus, the ability of teachers to give instructions in a manner that the students develop higher order thinking skills is one of the key in achievement the objectives of the science and mathematics curriculum. Similar response of teachers. students and alumni as revealed by the results of ANOVA on the instructional practices employed by teachers in the laboratory school considered in the study strengthens this fact [6,14].

The combination of the design of the curriculum, school activities, offered subjects and the teaching strategies employed by teachers and the instructional materials they use could be the reason why the performance of the students increased their performance in the national achievement test. Although increased performance of students is seen, it is important to note that as the performance of students in Math increases, their performance in Science is decreasing. It is important to considered the interest of students are more into math subjects than in science. Thus, students must be motivated to like science subjects which could be a way to improve their science achievement.

Positive idea of student in the concept of school as revealed by the high mean value students' perception on the importance of school could be a contributory factor in the development of students' interest in their chosen course. Needless to say that since almost half of the students enrolled in scientific courses, their interest in Science and Mathematics is enhanced. This is strengthened by the perception of students on the importance of math and science wherein one of the highest mean is seen on the belief that doing good in Math subject will open a lot of venues to take different career opportunities.

The findings of the study also revealed that the interests of students are more into the activities related to Mathematics. As divulged in the findings, being in a math class is on top 3 and solving math problems is on top 7 of the ten choices while solving physics problem is on the least rank. Furthermore, when the importance of math and science is considered, students placed getting high remarks in math class on top. One possible outcome of the science, math and technology curriculum among students is the developed ability to solve problems. This is shown by the identified importance on the proper design and conduct of science project/research.

The combination of the design of the curriculum, school activities, offered subjects and the teaching strategies employed could be the reason why the performance of the students increased in the national achievement test. Although increased performance of students is seen, it is important to note that as the performance of students in Math increases, their performance in Science is decreasing. It is important to considered the interest of students are more into math subjects than in science. Focus on the development of students' interest in science should be done especially that science achievement of students is a predictor of students' career choice in a school providing science and mathematics curriculum.

The findings of the study revealed that more than half of the graduates of the laboratory school in the year 2013 pursued the scientific courses wherein 40% of the population took engineering courses. This

is more than the 42.17% of the respondent-graduates have taken course related to engineering, science and technology wherein only 15% took engineering courses [14]. The ultimate criterion of the effectiveness of the curriculum is in the production of various type of educational growth including interest and taste [1]. The findings presented shows that the science, mathematics and technology curriculum employed by URS laboratory school creates impact among its graduates.

6. Conclusion

An effective curriculum goes with the combination of a good curriculum design, effective teachers and sufficient instructional materials, and good school environment that result to students motivated to learn. Improvement of students' achievement is a combination of the factors mentioned. Teachers of schools offering science and mathematics curriculum equipped with applicable teaching strategies that promotes critical thinking and problem solving skills among students is the most influential factor considered by students that helped them not just in their academic performance but in deciding the course they would take in college. Exposure of students to problems that that uses real world situations, including those problems they would encounter in the specific courses they would take in college helped them in deciding the career that they would want to pursue. Truly the impact of the curriculum is seen on the persons their students would be and the choices they make after they left school.

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Appendixes

Appendix A: Curriculum used by URS Laboratory School

	Teacher		Student		Alumni		General	
The Mathematics and Science Curriculum used by the URS Morong Laboratory School...	x	sd	x	sd	x	sd	x	sd
1. adopt to the needs of the present time.	4.75	.58	4.82	.42	4.50	.50	4.67	.49
2. cater to the needs of the future graduates.	4.69	.60	4.67	.55	4.41	.73	4.55	.65
3. develop independence and critical thinking among students.	4.69	.48	4.78	.55	4.26	.70	4.54	.66
4. promote creativity and scientific thinking among students.	4.75	.58	4.83	.44	4.46	.73	4.65	.62
5. are suited to the kind of students the school has.	4.50	.63	4.63	.63	4.26	1.0	4.45	.85
6. promote linkage and cooperation in the community.	4.63	.61	4.57	.68	4.55	.50	4.57	.59
7. have subjects that are offered and provided in logical sequence.	4.25	.57	4.75	.46	4.50	.60	4.59	.56
8. are innovative.	4.75	.57	4.78	.53	4.75	.44	4.76	.49
9. are designed to promote active participation among students for the development of their complex cognitive skills and processes.	4.69	.47	4.64	.58	4.75	.44	4.70	.51
10. are designed to develop problem solving and reasoning skills among students as well as mathematical connections.	4.56	.51	4.83	.50	4.75	.44	4.77	.47
11. are designed to promote conceptual understanding among students.	4.75	.58	4.57	.69	4.00	.00	4.33	.58
12. are designed to promote inquiry-based instructions among students.	4.62	.61	4.72	.58	4.25	.44	4.50	.57
Total	4.64	.12	4.71	.05	4.45	.07	4.62	.30

Appendix B: Math teachers' Instructional Practices

My teacher in Mathematics ...	Teachers		Students		Alumni		General	
	x	sd	x	sd	x	sd	x	sd
1. use logical and mathematical evidence to verify the results of mathematical/scientific problem rather than relying on one's own procedure/judgment of the answer.	4.56	.52	4.79	.49	4.86	.35	4.81	.44
2. employ strategies that develops mathematical reasoning among students than promoting mere memorization.	4.78	.44	4.59	.59	4.55	.50	4.58	.54
3. develop problem-solving skills among students.	4.70	.44	4.02	.53	4.66	.66	4.74	.59
4. connect previously learned mathematical/scientific concepts/ideas rather than allowing the students to see the topic in an isolated concept or procedure.	4.78	.44	4.57	.71	4.78	.50	4.68	.61
5. employ cooperative learning as a teaching strategy.	4.78	.44	4.54	.68	4.59	.59	4.58	.62
6. develop and use inquiry-based instructional materials in teaching my subject.	4.44	.52	4.57	.59	4.25	.43	4.41	.54
7. develop and use instructional materials and manipulatives that promote meaningful representation of mathematical/scientific concepts.	4.56	.52	4.68	.59	4.36	.79	4.52	.70
8. expose students to open-ended assessment techniques that allow students to construct solutions	4.56	.52	4.49	.64	4.50	.50	4.50	.57
9. employ strategies that allow students to investigate and develop hypothesis on problems presented.	4.78	.44	4.71	.62	4.45	.50	4.59	.57
10. use real-world problems related to the topic and allow students to create solutions.	4.56	.52	4.66	.64	5.00	.00	4.81	.49
Total	4.66	.37	4.64	.47	4.60	.23	4.62	.37

Appendix C: Science teacher's Instructional Competence

My teacher in Science ...	Teachers		Students		Alumni		Gen.	
1. use logical and mathematical evidence to verify the results of mathematical/scientific problem rather than relying on my own procedure/judgment of the answer.	4.43	.53	4.79	.41	5.00	.00	4.87	.33
2. employ strategies that develops mathematical reasoning among students than promoting mere memorization.	4.57	.53	4.37	.78	4.50	.50	4.44	.65
3. develop problem-solving skills among students.	4.71	.48	4.54	.75	4.70	.46	4.62	.62
4. connect previously learned mathematical/scientific concepts/ideas rather than allowing the students to see the topic in an isolated concept or procedure.	4.71	.48	4.64	.68	4.59	.59	4.62	.63
5. employ cooperative learning as a teaching strategy.	4.14	.90	4.76	.65	4.41	.49	4.57	.62
6. develop and use inquiry-based instructional materials in teaching my subject.	4.43	.53	4.58	.75	4.50	.50	4.53	.63
7. develop and use instructional materials and manipulatives that promote meaningful representation of mathematical/scientific concepts.	4.14	.37	4.68	.69	4.50	.50	4.57	.61
8. expose students to open-ended assessment techniques that allow students to construct solutions.	4.14	.90	4.53	.66	4.25	.43	4.38	.59
9. employ strategies that allow students to investigate and develop hypothesis on problems presented.	4.43	.97	4.63	.67	4.75	.43	4.68	.58
10. use real-world problems related to the topic and allow students to create solutions.	4.71	.48	4.75	.56	4.50	.50	4.63	.54
Total	4.44	.51	4.77	.34	4.52	.22	4.59	.38

Appendix D: Instructional Materials

	Teachers		Students		Alumni		General	
	x	sd	x	sd	x	sd	x	sd
1. The school provides textbook for each student.	4.50	.632	4.93	.250	5.00	.000	4.92	.289
2. The school library has reference materials such as encyclopedia, atlas and maps.	4.13	.500	4.78	.419	5.00	.000	4.82	.404
3. The teachers has charts, diagram, globes, maps, picture aid during his/her teaching demonstration	5.00	.000	4.57	.772	4.00	.712	4.35	.783
4. The school has complete laboratory equipment.	4.00	.632	4.74	.551	4.50	.503	4.56	.576
5. The school has complete laboratory supplies/materials/chemicals.	3.31	.602	4.87	.377	4.50	.503	4.55	.636
6. The teacher conducts periodic achievement evaluation.	4.94	.250	4.67	.551	4.50	.503	4.62	.523
7. The school provides laboratory manual for each student.	4.69	.602	4.88	.364	5.00	.000	4.92	.317
8. The school has overhead projector/LCD projector.	4.63	.619	4.86	.354	4.75	.436	4.79	.426
9. The school has CD/DVD materials used in teaching.	5.00	.000	4.83	.473	4.50	.503	4.70	.499
10. The school has computer for each student to use.	4.38	.500	4.43	.822	3.50	.503	4.01	.808
11. The school has available reading materials and tables of information that provide students with current ideas and concepts in research.	4.00	.000	4.87	.442	4.50	.503	4.62	.523
Total	4.41	.16	4.77	.33	4.52	.22	4.59	.38

Appendix E: School Importance

	x	sd
I believe that...		
1. It is important t got to school to be successful in the future.	4.84	.49
2. I am accountable for my own academic success.	4.65	.53
3. My teachers influence me to do better in school.	4.50	.68
4. Teachers in my school give challenging questions that allows me to think more.	4.54	.55
5. I learn more everyday.	4.58	.67
6. My teachers help me to learn more.	4.65	.53
7. My school gives emphasize in the subjects Math and Science.	4.69	.49
8. Teachers in my school are highly competent and qualified.	4.62	.58
9. Most of student in my school have intentions on going to college after graduation.	4.93	.25
10. Teachers play one of the key roles in my academic success.	4.71	.51
11. My school gives activities that trigger me to do better in Math and Science.	4.38	.67
12. My school offers subjects that allow me to apply the concept of Math and Science in reality.	4.50	.62
13. Students who drop-out of school can still find jobs.	3.43	1.0
14. My classmates encourage me to get better grades in my subjects.	4.07	.84
15. My school allows me to see my potentials and talents and provides avenue where I can use these skills.	4.38	.69
16. Going to school is a waste of time.	1.38	.93
17. The classes in my school are challenging.	4.36	.71