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K-12 Constructivist Teaching Approach: Effect on Mathematics Performance of Grades VII and VIII Students at Sulu State College Laboratory High School

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Abstract

This study was designed to investigate the effect of the K-12 Constructivist Teaching Approach on the Mathematics Performance of the grades VII and VIII students in Sulu State College Laboratory High School. 138 selected grade VII students were used as respondents in the study. A checklist questionnaire was used to collect the data on the profile of the respondents. Grading sheets were collected from the class adviser of grade VII (2014-2015) and grade VIII (2015-2016) for gathering the grades in Mathematics. The performance of the students was represented by the percentile average grades in Mathematics. Frequency and percentage distribution were used to determine the profile. Mean was used to determine the level of performance of the students. The t-test for independent samples in One Way Analysis of Variance was used in testing the hypotheses. Five problems were answered, and two were tested.

The analysis and interpretation of the data show the following significant findings: The majority of the respondents are female; the father and mother are government employees with an income of 5-10 thousand pesos. The level of performance of the grade VII students in Sulu State College Laboratory High School is approaching proficiency during the school year 2014-2015. The level of performance of the grade VIII students in Sulu State College Laboratory High School is approaching proficiency during the school year 2015-2016. The two null hypotheses were accepted. There is no significant difference between the level performance of grade VII and grade VIII students in Mathematics under constructivist approach of teaching. There is no significant difference between the performance of the grades VII and VIII students when the data are grouped according to gender and socio-economic status.

The study concluded that the level of performance of the grades VII and VIII students is approaching proficiency. These levels of performance do not differ significantly.

Keywords: *Constructivist Teaching Approach, Mathematics Performance, K-12 Curriculum, Socio-Economic Status, Gender and Learning*

INTRODUCTION

The interest in developing quality education is at the heart of teachers, school administrators, and the government. This is the primary purpose of Curriculum development, ever since time immemorial; curriculum makers are always looking towards a curriculum that is directed towards improving the quality

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of education. Today, the K-12 Basic Education Curriculum is being fully implemented. Everyone in the educational system is looking forward to its success; on one hand, they believe this is the core to improve the Filipino quality of life, and on the other hand become a fruitful and holistic person in society. This curriculum aimed to produce quality graduates who would be able to compete globally in terms of knowledge and skills. Research and studies have been made as to why many Filipino graduates are seemingly inferior compared to the graduates of other Asian countries, and it was found that our basic curriculum is lacking and needs to be upgraded by adding 2 years.

A warning for highly intellectual members of a democratic society like the Philippines. You are entitled to give your comments and suggestions for the good of your people. The president and the cabinet members are not alone in deciding on beneficial arguments and motions of the government to create productive and useful policies. Nevertheless, the Department of Education (DepEd) successfully reached the term for full implementation of the **K-12 curriculum** as part of the successful directives of President Benigno S. Aquino III to recap the content of his speech, which said, "*We need to add two years to our basic education. Those who can afford to pay for up to fourteen years of schooling before university. Thus, their children are gaining admission to the best universities and securing the best jobs after graduation. I want at least 12 years for our public-school children to give them an even chance at succeeding."* The law of the land, the 1987 Philippine Constitution, promulgated that, *"The State shall establish, maintain, and support a complete, adequate, and integrated system of education relevant to the needs of the people and the society*. "Such a mandate gives justice to the basic rights of every Filipino child: the right to quality education and the right to a quality life (Yusop, 2016).

Republic Act No. 10533, An act of enhancing the Philippine basic education system by strengthening its curriculum and increasing the number of years for basic education, section 2, Declaration of policy "The state shall establish, maintain and support a complete, adequate and integrated system of education relevant to the needs of the people, the country and society-at-large. Likewise, it is hereby declared the policy of the State that every graduate of basic education shall be an empowered individual who has learned through a program that is rooted on sound educational principles and geared towards excellence, the foundations for learning throughout life, the competence to engage in work and be productive, the ability to coexist in fruitful harmony with local and global communities, the capability to engage in autonomous, creative, and critical thinking, and the capacity and willingness to transform others and one's self.

The K-12 curriculum aimed at transforming the education system towards a constructivist approach, along with the practical initiation of localizing the teaching and learning processes. The teachers in mathematics and Science are pooling resources to keep the objectives on track. One of the main objectives of K-12 is mathematics education. It is believed that mathematics is one subject that pervades life at any age in any circumstance. Thus, its value goes beyond the classroom and the school. Mathematics as a school subject, therefore, must be learned comprehensively and with much depth. The twin goals of mathematics in the basic education levels- kindergarten to grade 10 are critical thinking and problem solving.

The specific skills and processes to be developed in the learners are knowing and understanding, estimating, computing and solving, visualizing and modeling, representing and communicating, reasoning, proving and decision-making, and applying and connecting, which is easily acquired through a constructivist approach and using the 21st century skills. It is believed that with the use of appropriate tools necessary in teaching mathematics, such as manipulative objects, measuring devices, calculators and computers, smart phones and tablet PCs, and the internet, and with competent teachers to do the job, realizing the K-12 goal in mathematics education would be possible.

It is therefore to the interest of the research to determine the effectiveness of the constructivist approach and teaching Mathematics in Grades VII and VIII at Sulu State College Laboratory High School

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through the results of their grade performance for two consecutive academic years, 2014-2015 and 2015-2016.

Statement of the problem.

This study investigated the K-12 constructivist teaching approach and its positive effect on the mathematics performance of grade VII and VIII students in Sulu State College Laboratory High School. It further seeks answers to the following research questions:

1. What is the demographic profile of the respondents in terms of socioeconomic status and gender?
2. What is the level of performance of the grade VII students in mathematics under the constructivist teaching approach at Sulu State College Laboratory High School for the School Year 2014-2015?
3. What is the level of performance of the grade VIII students in mathematics under the constructivist teaching approach at Sulu State College Laboratory High School for the school year 2015-2016?
4. Is there a significant difference between the levels of performance of grade VII and grade VIII students in mathematics under the constructivist approach?
5. Is there a significant difference in the level of performance of grade VII and grade VIII students in mathematics under a constructivist teaching approach when the performance is grouped according to socioeconomic status and gender?

Research Hypothesis

This study tested the following research null hypotheses:

1: There is no significant difference between the levels of performance of grade VII and grade VIII students in mathematics under the constructivist approach.

2: There is no significant difference in the level of performance of grade VII and grade VIII students in mathematics under a constructivist teaching approach when the performances are grouped according to socioeconomic status and gender.

Objectives of the Study

This study aimed to investigate the K-12 constructivist teaching approach and its effect on the level of performance of the grade VII and grade VIII students in the Sulu State College Laboratory High School. It explores further:

1. To determine the demographic profile of the respondents in terms of socioeconomic status and gender.
2. To determine the level of performance of the grade VII students in mathematics under the constructivist teaching approach at Sulu State College Laboratory High School for the School Year 2014-2015.
3. To determine the level of performance of the grade VIII students in mathematics under the constructivist teaching approach at Sulu State College Laboratory High School for the school year 2015-2016.
4. To inferentially determine the significant difference between the levels of performance of grade VII and grade VIII students in mathematics under the constructivist approach.

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5. To inferentially determine the significant difference in the level of performance of grade VII and grade VIII students in mathematics under a constructivist teaching approach when the performance is grouped according to socioeconomic status and gender.

Theoretical Framework

This study was based on the theory of constructivism which states that," Students need to construct their understanding of each mathematical concept, so that the primary role of teaching is not to lecture, explain, or otherwise attempt to transfer mathematical knowledge, but to create situations for students that will foster their making the necessary mental constructions. A critical aspect of the approach is a decomposition of each mathematical concept into development steps following a Piagetian theory of knowledge based on observation of, and interviews with, students as they attempt to learn a concept."

In the classroom, the constructivist view of learning can point towards some different teaching practices. In a most general sense, it usually means encouraging students to use active techniques (experiments, real–world problem solving) to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing. Constructivist teachers encourage students to constantly assess how the activity is helping them gain understanding. By questioning themselves and their strategies, students in the constructivist classroom ideally become "expert learners." This gives them ever-broadening tools to keep learning. With a well–planned classroom environment, the students learn HOW TO LEARN.

Conceptual Framework

The constructivist teaching approach is the new teacher's weapon to teach mathematics effectively. The performance of the students in grade VII and grade VIII will manifest the effect of the constructivist teaching approach on the performance of the students in mathematics. The diagram below shows the interaction of all the variables employed in this study:

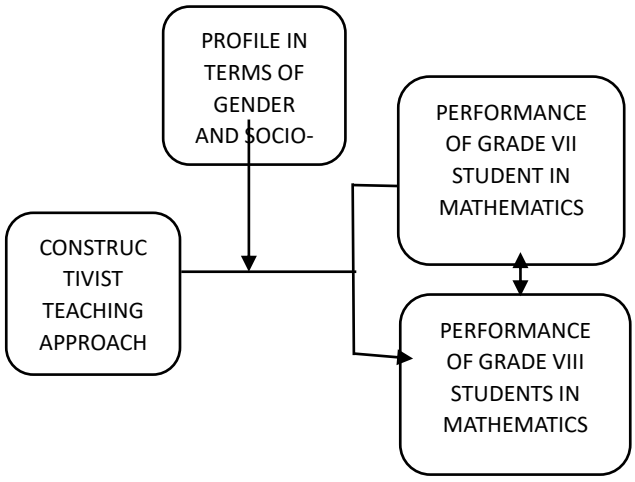

Figure 1: Conceptual Paradigm of the Study

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Significance of the Study

Since the K-12 curriculum started its implementation, there has been no scientific research conducted to date on the performance of mathematics under the constructivist approach of teaching in Sulu State College Laboratory High School. This study is the first of its kind aimed at determining the effect of the constructivist approach of teaching on the performance level of the grade VII and grade VIII students in the Sulu State College Laboratory High School. It explores further to determine inferentially the difference in the levels of performance of the grade VII and grade VIII students in mathematics; therefore, the results will:

1. Provide quantitative evidence and qualitative information to the teachers on the constructivist teaching approach.

2. The levels of performance of the grade VII and grade VIII in mathematics provided quantitative data or information for curriculum programmers, the level of performance of the students under the K-12 curriculum through a constructivist teaching approach.

3. The study of the level of performance of the students can provide the teachers with scientific information that could become a source of assessment of the effect of the teaching method.
4. Provide scientific information to the school head to assess the mathematics curriculum under the constructivist teaching approach in the K-12 programs. Since the K-12 curriculum requires the teachers to use the constructivist approach and the localization of the resources in teaching.

5. Provide evidence to initiate remediation for students who are found to have low grades in mathematics. So that the school administrator, teachers, and parents can create innovative programs that can support the improvement of mathematics teaching.

Scope and Limitations

This study focused on the effect of a constructivist teaching approach on the mathematics performance of the grade VII and grade VIII students of Sulu State College Laboratory High School. The results of this study are confined to discovering the level of performance of students in mathematics as a result of the constructivist teaching approach.

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This study was conducted in the Sulu State College Laboratory High School. It utilized ready data in the registrar's office. The mathematics performance of the grade VII and grade VIII students was analyzed using the average percentile grades in mathematics of the grade VII students during the school year 2014-2015 and grade VIII students during the school year 2015-2016.

Definition of Terms

Constructivist Teaching Approach – refers to the K-12 teaching strategies that allow grade VII and grade VIII students of Sulu State College Laboratory High School to construct their understanding of each mathematical concept, so that the primary role of teaching is not to lecture, explain, or otherwise attempt to transfer mathematical knowledge, but to create situations for students that will foster their making the necessary mental constructions.

Performance of Grade VII Students – refers to the Average Percentile Grades of the grade VII students in the mathematics school year 2015-2016.

Performance of Grade VIII Students – refers to the Average Percentile Grades of the grade VIII students in the mathematics school year 2015-2016.

Profile in terms of gender refers to the sexual personal characteristics of the grade VII and grade VIII students in Sulu State College Laboratory High School.

Profile in terms of Socio-Economic Status – refers to the monthly income of the parents of the grade VII and grade VIII students in Sulu State College Laboratory High School.

METHOD

The purpose of the study was to investigate the level of mathematics performance of the grade VII and grade VIII students in Sulu State College Laboratory High School and to explore differences between performance and its differences between gender and socioeconomic status.

Research Design

This study adopted a quantitative research design. The quantitative design was used to investigate the quantitative inferential relationship between the performance of the students in grade VII and grade VIII. The qualitative explanation was utilized to explore further information to establish recommendations to improve mathematics performance using a constructivist approach in teaching in the K-12 curriculum.

Research Locale

This study was conducted in Jolo, Sulu, using the grade VII and grade VIII students of the Sulu State College Laboratory High School. Sulu State College Laboratory High School is located at Serantes, Jolo, Sulu, within the compound of Sulu State College Gymnasium. It is composed of a two-story building in addition to the rooms within the ground floor of the SSC Gym. The operation of the SSCLHS is under the leadership of the Sulu State College. The principal of the school is managing under the supervision of the President of Sulu State College. Faculty members are given the privilege to be included in the college ranks. The faculty members are promoted along with the faculty members of the college.

Sulu State College Laboratory High School is the training ground of the students enrolled in the apprenticeship of Sulu State College, School of Education. The apprentice teachers undergo training for

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teaching activities in the Sulu State College Laboratory High School. The orientation of teaching followed the K-12 programs; hence, it used the constructivism approach in teaching mathematics, which best suited the purpose of this study.

Respondents of the Study

This study utilized the 138 grade VII students enrolled during the school year 2014-2015 and grade VIII, the same students enrolled during the school year 2015-2016 at the Sulu State College Laboratory High School. The target sample included in the study is shown in Table 3.1

Table 3.1 DISTRIBUTION OF RESPONDENTS

SSCLH	Male	%	Female	%	Total	%
Grade VII	51	36.96	87	63.04	138	100.0
Grade VIII	51	36.96	87	63.04	138	100.0

Sampling Design

This study used a purposive sampling design for the target respondents. The respondents were selected based on their mathematics grades. All students enrolled in grade VII with complete grades in mathematics for the school year 2014-2015 and grade VIII with complete grades in mathematics for the school year 2015-2016 were used as respondents.

The researcher secured the complete list of the grade VII students enrolled during the school year 2014-2015 and the same students who enrolled in grade VIII during the school year 2015-2016. The listings of the students were obtained from the office of the registrar of Sulu State College Laboratory High School. The basis of selection as a respondent of the study is the percentile average grades in Mathematics grade VII.

Data Gathering Procedure

The researcher secured a letter of permission from the office of the Dean of the SSC Graduate School, which was approved by the president of Sulu State College to conduct the study. The approved permit was presented to the principal of the Sulu State College Laboratory High School. The researcher utilized the registrar as research assistant and class adviser of grade VIII, school year 2015-2016.

Research Instrument

This study used readymade data in the Registrar's Office. The grades and gender of the students were obtained from the promotional reports school year 2014-2015. The occupation of parents and income were obtained using a checklist questionnaire answered by the grade VIII students during the school year 2015-2016.

Validity and Reliability

Since the researcher used the readymade data: The grades of the students in Mathematics for grade VII and grade VIII, which were taken from the Office of the Sulu State College Laboratory High School Registrar, their reliability and validity were genuine and authentic.

Statistical Treatment of Data

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There are five specific research questions in this study. Question number 1 was analyzed using frequency and percentage distribution. For questions 2 and 3 mean and standard deviation were used. Question number 4 was analyzed using a t-test for an independent sample. Question number 5 was analyzed using a t-test for gender and an analysis of variance, one-way factor for socio-economic status.

RESULTS AND DISCUSSIONS

This chapter presents the collected data, analysis, and interpretation. The presentation of data followed the sequence of the statement of the problem in Chapter I. The data was computed using the Statistics Package for Social Science (SPSS). The first problem tackled the profile of the grades VII and VIII students in terms of the socio-economic status of parents and gender. The second problem tackled the level of performance of the grade VII and VIII students in mathematics under the constructivism approach of teaching. The third problem tackled the variation of the level of performance in mathematics while the students are promoted from grade VII to grade VIII level of education. The fourth problem discussed the variation of the level of performance of the students in mathematics in grades VII and VIII based on the theories on the effect of socio-economic status and gender.

The study was centered on the theory of learning called constructivism. In this theory, Piaget claimed that children construct new knowledge by applying their current knowledge structures to new experiences and modifying them accordingly. His perspective, called *constructivism,* emphasized the active role children play in their mental growth as inquisitive thinkers. The comparison of the level of performance in mathematics was addressed in this study as the student's learned mathematics in the two successive years of learning.

Profile of the Students

Demographic profile is a term used to designate specific characteristics of an individual, group, or organized people. In this study, the demographic profile of the respondents specifically concerned the socio-economic status of the parents and the gender of the students. The socio-economic status of parents was best described in this study as about the income and occupation of the parents of the students in grades VII and VIII, inclusive of school years 2014 – 2015 and 2015 – 2016, respectively. The first research question this study addressed is *"What is the demographic profile of the respondents in terms of socioeconomic status and gender?"*

A constructed profile checklist questionnaire was launched to 146 students distributed in the three sections of grade VII students in Sulu State College Laboratory High School. Eight (8) students had no mathematics grades in grade VII. These students were not included in the study. Finally, there are 138 grade VII students included as respondents in this study. The same students were selected in grade VIII. Hence, this study used grade VII students during the school year 2014-2015. The same students were selected in grade VIII during the school year 2015-2016, successively.

Table 4.1 shows that the majority of the students in grade VII are female (63%), (37%) male. In terms of occupation of the father, 55% are government employees, 18% are self-employed, 14% are involved in business, and 13% are self-employed. In terms of the occupation of mothers, 46% are government employees, 26% are self-employed, 17% are working in the private sector, and 11% are involved in business. In terms of monthly income of parents (38%) with income of 5-10 thousand pesos, (28%) with income below 5 thousand pesos, (24%) with income 11-20 thousand pesos, (11%) with income of 20 thousand pesos and above.

The data indicates that the majority of the respondents are female, the father and mother are government employees with an income of 5-10 thousand pesos. The social standard of economic status in the global community, the income bracket of 5-10 thousand pesos income is below the average income of

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60-120 thousand pesos per annum, with daily sustenance income of 167-333 thousand pesos. The inflation rate of the social standard of life increases from day to day, the income of the majority of parents in this study can be considered as poor, the standard income of a government employee should have a daily income of at least 3 hundred pesos. The income of parents is insufficient to sustain the standard of living in the present society. The parents of the students in the Sulu State College Laboratory High School is considered in the poor bracket.

TABLE 4.1 PROFILE OF RESPONDENTS

Gender	Frequency	Percent
Female	87	63.0
Male	51	37.0
Occupation of Father		
Business	19	13.8
Private	18	13.0
Self-Employee	25	18.1
Government Employee	76	55.1
Occupation of Mother		
Business	15	10.9
Private	24	17.4
Self-Employee	36	26.1
Government Employee	63	45.7
Monthly Income of Parents		
20000=above	15	10.9
11000-20000	33	23.9
5000-10000	52	37.7
Below-5000	38	27.5
N	138	100.0

Mathematics Performance of Grade VII Students

The quality of education in every country is based on the results of the standardized evaluation at the national level. The basis of describing the level of performance is based on the level of performance in English, Mathematics, and Science, known as the academic subjects. This study used the General Percentile Grades (GPG) of the students in grade VII as a basis to assess the level of performance in mathematics. The grades in mathematics in grade VII were obtained from the office of the registrar of the high school.

The second research question this study addressed is *"What is the level of performance of the grade VII students in mathematics under a constructivist teaching approach at Sulu State College Laboratory High School for the School Year 2014-2015?"*

Based on the records or official grading sheets of the grade VII student school year 2014-2015, the level of performance in mathematics grade VII, shown in table 2 is majority developing, that is 79 (57%) of the students with average grades ranging from 75-79 given the verbal description developing. The standard description developing in the K-12 Basic Education Curriculum identifies that the student at this level possesses the minimum knowledge and skills and core understandings, but needs help throughout the performance of authentic tasks.

The data indicates that the majority of the grade VII students in their new venture of learning mathematics acquired only minimal knowledge and skills, and a core understanding of the basic mathematics learning at the grade VI mathematics level. Grade VI mathematics skills in mathematics learning provide the fundamental knowledge or skills that eventually become prerequisites for the new adventure to improve the knowledge and skills in mathematics. In this study, the performance of the students

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might have been affected by some factors. In the first place, the students have enrolled in the new level of education. Secondly, the students are in the process of adjusting from arithmetic to mathematical concepts. The teachers in the high school might have different approaches and styles of teaching that would possibly affect the performance of the pupils in grade VII. Thirdly, the constructivism approach is a new approach to teaching in the K-12 curriculum, where both teacher and student are on the process of practicing the effectiveness of the method. Hence, the developing level of performance is due to the transition processes that underscore the mathematics learning in the K-12 curriculum.

37 (26.8%) of the grade VII students have acquired an approaching proficiency level. The student at this level has developed the fundamental knowledge and skills and core understanding and, with little guidance from the teacher and/or with some assistance from peers, can transfer these understandings through authentic performance tasks. The students can easily manipulate the computation processes with little struggle to achieve the basic learning task.

17 (12%) of the grade VII students were classified under the proficient level of performance. The student at this level has developed the fundamental knowledge and skills and core understandings, and can transfer them independently through authentic performance tasks. The students are comparatively competitive than the students in the low level of proficiency, like developing and approaching proficiency.

Sad to note that only a few, 5 (4%) of the grade VII students acquired the advanced level. The student at this level exceeds the core requirements in terms of knowledge, skills, and understandings, and can transfer them automatically and flexibly through authentic performance tasks. Students at this level can support the teaching processes in the class. The teacher can assign the students a special task to guide the weak students to perform certain tasks and activities in the classroom. Although this level is very difficult to achieve by the majority of the students, the teacher can actively encourage the students to perform tutorial activities for the week. They can be useful in the cooperative learning approach, where the students are learning in the group despite their ability of the students.

TABLE 4.2 LEVEL OF PERFORMANCE IN MATHEMATICS GRADE VII STUDENTS

	Proficiency level	Frequency	Percent
90-above	Advanced	5	3.6
85-89	Proficient	17	12.3
80-84	Approaching proficiency	37	26.8
75-79	Developing	79	57.2
Total		138	100.0

Taking the sum of the grades of all grade VII students in this study, as shown in Table 4.3, gives a mean grade of 80.12. Using the proficiency performance level in the K-12 curriculum equivalent shows that the verbal description corresponds to the mean grade is approaching proficiency. There is evidence to conclude that the level of performance of the grade VII students in Sulu State College Laboratory High School is approaching proficiency during the school year 2014-2015. The student at this level has developed the fundamental knowledge and skills and core understanding and, with little guidance from the teachers and/or with some assistance from peers, can transfer these understandings through authentic performance tasks. The student can easily manipulate the computation process with little struggle to achieve the basic learning task.

TABLE 4.3 LEVEL OF MATHEMATICS PERFORMANCE OF GRADE VII STUDENTS

Average Grade	Midpoint	Frequency	Product	Mean

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90-94	92	5	460	
85-89	87	17	1479	
80-84	82	37	3034	11056/138 =
75-79	77	79	6083	80.12
Total		**138**	**11056**	

The level of mathematics performance of grade VIII students

The third question of this study seeks to answer ***"What is the level of performance of the grade VIII students in Mathematics under the constructivist teaching approach at Sulu State College Laboratory High School, year 2015-2016?"***

Based on the records or official grading sheets of the grade VIII students' school year 2015-2016, the level of performance in Mathematics of grade VIII shown in table 4.4 is majority developing that is 76 (55%) of the students with average grades ranging from 75-78 given the verbal description developing. The standard description of developing in the K to 12 Basic Education Curriculum identifies that the student at this level possesses the minimum knowledge and skills in core understandings, but needs help throughout the performance the authentic tasks.

The data indicates that the majority of the grade VIII students in their new venture of learning acquired only minimal knowledge and skills, and a core understanding of the basic mathematics learning at the grade VII mathematics level. Grade VII mathematics skills in mathematics learning provide the fundamental knowledge or skills that eventually become prerequisites for the new adventure to improve the knowledge and skills in mathematics. In this study, the performance of the students might have been affected by some factors. In the first place, the students have a continuous adjustment of the curriculum. Secondly, the students are in the process of adjusting from mathematics to algebraic concepts. The teachers in the high school might have a different approach in style of teaching that would possibly affect the performance of the students in grade VIII. Thirdly, the constructivism approach is a new approach to teaching in the K to 12 Curriculum, where both teacher and student are in the process of learning new methods and styles of learning, respectively. Hence, the development of level performance due to the transition processes in mathematics learning in the K to 12 Curriculum.

21 (15%) of the grade VIII students have acquired an approaching proficiency level. The students at this level have developed the fundamental knowledge and skills and core understanding and, with little guidance from the teacher and/or with some assistance from peers, can transfer these understandings through authentic performance tasks. The students can easily manipulate the computation processes with little struggle to achieve the basic learning tasks.

32 (23%) of the grade VIII students were classified under the proficient level of performance. The student at this level has developed the fundamental knowledge and skills and core understanding, and can transfer them independently through authentic performance tasks. The students are comparatively competitive than the students in the low level of proficiency, like developing and approaching proficiency.

Sad to note that only a few 9 (7%) of the grade VIII students acquired the advanced level. The students at this level exceed the core requirements in terms of knowledge, skills, and understanding, and can transfer them automatically and flexibly through authentic performance tasks. Students at this level can support the teaching processes in the class. The teacher can assign the students a special task to guide the weak students to perform certain tasks and activities in the classroom. Although this level is very difficult to achieve by the majority of the students, the teacher can actively encourage the students to perform tutorial activities for the weak students. They can be useful in the cooperative learning approach, where the students are learning in the group in spite of their ability of the students.

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TABLE 4.4 LEVEL OF MATHEMATICS PERFORMANCE OF GRADE VIII STUDENTS

	Proficiency Level	Frequency	Percent
90-above	Advanced	9	6.5
85-89	Proficient	32	23.2
80-84	Approaching Proficiency	21	15.2
75-79	Developing	76	55.1
Total		138	100.0

Taking the sum of the grades of all grade VIII students in this study, as shown in Table 4.5, gives the mean grade of 81.19. Using the proficiency performance level in the K to 12 curriculum equivalent shows that the verbal description corresponds to the mean grade is approaching proficiency. There is evidence to conclude that the level of performance of the grade VIII students in Sulu State College Laboratory High School is approaching proficiency during the school year 2015-2016. The student at this level has developed the fundamental knowledge and skills and core understanding and, with little guidance from the teacher and/or with some assistance from peers, can transfer these understandings through authentic performance tasks. The students can easily manipulate the computation processes with little struggle to achieve the basic learning task.

TABLE 4.5 LEVEL OF MATHEMATICS PERFORMANCE OF GRADE VIII STUDENTS

Grades	Midpoint	Frequency	Product	Mean
90 above	92	9	846	
85-89	87	32	2784	
80-84	82	21	1722	11204/138 =
75-79	77	76	5852	81.19
Total		**138**	**11204**	

Comparative performance of grade VII (SY 2014-2015) and grade VIII Students (2015-2016)

Little difference in the mean grade percentage can be observed between the performance of the grade VII and grade VIII students in mathematics in the successive years of schooling. The mean average percentile grade of the grade VII students is 80.12, while the mean average grade of the grade VIII students is 81.19, with a mean difference of 1.07. This indicates that the mean average grades of grade VIII students are greater than the mean average grades of grade VII students. The data shows that the grade VIII students have adjusted behaviorally to the teaching approach in SSC Laboratory High School, which is the constructivism approach. The data further indicated that the number of students has increased in every range of grade level.

TABLE 4.6 LEVEL OF MATHEMATICS PERFORMANCE OF GRADE VII AND VIII STUDENTS

Grades	**Midpoint**	**Frequency**		**Mean**	
		Grade VII	**Grade VIII**	**Grade VII**	**Grade VIII**
90-above	92	5	4	80.12	81.19
85-89	87	17	32		
80-84	82	37	21		
75-79	71	79	76		

The next research questions this study sought to answer is "Is there a significant difference between the levels of performance of grade VII and grade VIII students in mathematics under a constructivist

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approach?" The null hypothesis is "There is no significant difference between the levels of performance of grade VII and grade VIII students in mathematics under the constructivist approach?"

Table 4.7 shows that the null hypothesis is accepted with t-value -1.688 and sig (2 tailed) value .093 greater than .05. The data indicate that there is no significant difference between the levels of performance of grade VII and grade VIII students in mathematics under the constructivist approach. The mean difference of -1.07 shows that the grade VIII students have a high mean average grade the mean average grade of the grade VIII students. The mean difference of the performance is not significant at the 0.05 level of confidence.

The data imply that the performance of the grade VIII students does not differ of the grade VII students in mathematics under the constructivist approach in the K to 12 curriculum.

TABLE 4.7 LEVEL OF MATHEMATICS PERFORMANCE OF GRADE VII AND VIII STUDENTS

Source of Variance Performance	t	Df	Sig. (2-tailed)	Mean Difference
Grade 7 – Grade 8	-1.688	274	.093	-1.07

Another research questions this study sought to answer is "Is *there significant difference on the level of performance of grade VII and grade VIII students in mathematics under constructivist teaching approach when the performance is grouped according to socio-economic status and gender?" The null hypothesis is "there is no significant difference on the level of performance of grade VII and grade VIII students in mathematics under constructivist teaching approach when the performance is grouped according to socio-economic status and gender?"*

Table 4.8 shows that the null hypothesis is accepted. The t-values for grade VIII and VII have significant (2-tailed) values greater than the 0.05 level of confidence. The data indicate that there is no significant difference between the performance of the grades VII and VIII students when the data are grouped according to gender. The performance in mathematics of both grades VII and VIII in the SSC Laboratory High School does not differ significantly. This means that the performance of the male and female students with values -.012 and .224 is not significant at the 0.05 level of confidence. The performance of male and female students in both grades VII and VIII shows homogeneity, which means that the performance of males cannot be better than the performance of female students in both grade levels.

TABLE 4.8 LEVEL OF MATHEMATICS PERFORMANCE GROUPED ACCORDING TO GENDER

Source of Variance Gender	t	df	Sig. (2-tailed)	Mean Difference
Performance in Math Grade 8	-.068	136	.946	-.012
Performance in Math Grade 7	1.525	136	.130	.224

Table 4.9 shows that the null hypothesis is accepted. The F-values in both grades VIII have significant values greater than the 0.05 significance level of confidence. The data indicates that there is no evidence to conclude that there is a significant difference in the performance of the grade VII and grade VIII students when the data is grouped according to socio-economic status. This means that the performance of the grades VII and VIII students, whether their parents are better than the others, does not differ

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significantly. The son of a well-off family cannot claim that their sons or daughters can perform better when compared with those from a low-income family group.

Table 4.9 LEVEL OF PERFORMANCE GROUPED ACCORDING TO SOCIO-ECONOMIC STATUS

Source of Variance: Income of parents		Sum of Squares	df	Mean Square	F	Sig.
Performance in Math Grade 7	Between Groups	2.624	3	.875	1.250	.294
	Within Groups	93.781	134	.700		
	Total	**96.406**	**137**			
Performance in Math Grade 8	Between Groups	1.311	3	.437	.425	.735
	Within Groups	137.791	134	1.028		
	Total	**139.101**	**137**			

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