The Mastery of Science Competencies Among Grade V Pupils

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ABSTRACT

This study was conducted to examine the socio-economic-cultural factors that are affecting the mastery of science competencies of Grade V pupils. It utilized the descriptive-evaluative and qualitative method. Results of the study revealed that most of the respondents were high school graduates with a monthly income of 4,000 and below. Based on these findings, educational attainment and parents' income have a significant relationship to pupil's performance. Respondents were likewise aware that income, child-rearing practices and attitudes towards education greatly affect the competencies of pupils in Science & Health V.

Keywords: *Socioeconomic Status, Cultural factors, Science competencies, Performance*

INTRODUCTION

Competency-based learning is an approach to education that focuses on the learner's demonstration of desired learning outcomes as central to the learning process. A key characteristic of competency-based learning is its focus on mastery, where learners are not allowed to continue until they have demonstrated mastery of the identified competencies. However, learner's mastery in science competencies was greatly affected by their parent's socio-economic cultural factors. Socio economic status based on income, occupation, education and social prestige can profoundly influence the learner's attitudes toward school, background knowledge, school readiness, and academic achievement. Working class and low-income families experience stress that contributes to child-rearing practices, communication patterns, and lower expectations that may handicap children when they enter school. These factors do not only affect the academic performance, but also make it possible for children from low background to compete well their counterparts from high socio-economic background under the same academic background (Hill et al, 2004)

Adewale (2002) had reported that in a rural community where nutritional status is relatively low and health problems are prevalent, children academic performance is greatly hindered. Moreover, Morgan, Farkas, Hillemeier, and Maczuga, (2009) studied on children from low socio-economic status households and communities and found out that these children developed academic skills more slowly compared to children from higher socio-economic status groups. However, Slavin (2006) indicated that there are some compensatory programs which are designed to help students from low income families to overcome learning problems which can be associated with their social economic status that have been successful.

It is evident from the cited studies that socio-economic-cultural factors affect the achievement and performance level of pupils in school. In Cortes District, most of the Grade V pupils have not mastered their competencies in Science and Health subject especially in the 3rd and 4th grading period. The researcher observed that those pupils who got low score in this subject were children who came from impoverished homes or of low-income families. Klein Knitzer (2007) asserted that children of low-income families are far below than those of more advantaged peers. However, there is a range of factors that affect the quality of performance of the students (Waters & Marzano, 2006). These series of variables are to be considered when identifying the affecting factors towards the quality of academic success.

The present study determined if these factors are present in the local setting. Thus, the study attempts to find out the mastered and least learned competencies of Grade-V pupils in Science and Health subject, whether the socio-economic-cultural factors really affect the mastery level of these competencies. A study on these factors is important to identify what hinders the academic achievement of the children in school. The findings of this study serve as basis in developing instructional materials particularly worksheets in science which focus on the specific competencies of pupils

RESEARCH METHODOLOGY

The study used a combination of the descriptive-evaluative and qualitative methods of research. The descriptive design focused on the socio-economic-cultural factors that affect the learning competencies of Grade V pupils in Science and Health. Mastered and the least learned competencies was determined through the conduct of test in the third grading period. The quality of academic performance of the pupils was evaluated through their achievement scores during 3rd grading period of the school year 2013-2014.

The mono-grade and the multi-grade schools of Cortes District, Division of Surigao del Sur were the locale of this study. Only thirteen elementary schools out of fifteen were utilized for this investigation, where the instruments were validated.

The universal sampling technique was utilized because the subjects of the study were the Grade V pupils who were tested for competencies and the respondents of the study were the parents of the Grade V pupils in Cortes District.

RESULTS AND DISCUSSION

Table 2. Socio-Economic Profile of the Grade V Parents/Guardians

Socio-Economic Profile			
Indicator	Categories	N	%
Educational Attainment	College Graduate	47	16.8
	College Undergraduate	40	14.3
	High School Graduate	69	24.6
	High School Undergraduate	44	15.7
	Elementary School Graduate	45	16.1
	Elementary School Undergraduate	35	12.5
	No Schooling	0	0
Total		280	100
Occupation	Farmers	79	28.2
	Small-Scale Businessmen	52	18.6
	Fishermen	51	18.2
	Housewife/Housekeepers	37	13.2
	Laborers	22	7.9
	Government Employees	22	7.9
	Private Employees	4	1.4
	Drivers	4	1.4
	Dressmakers	2	.7
	Retired Private Employee	1	.4
	Retired Teacher	1	.4
	Barangay Kagawad	1	.4
	Barangay Tanod	1	.4
	Carpenter	1	.4
	OFW	1	.4
	Pastor	1	.4
Total		280	100
Parents' Income	Php 30,000 above	9	3.2
	Php 20,000-29,000	14	5
	Php 10,000-19,000	21	7.5
	Php 5,000-9,000	49	17.5
	Php 4,000 below	187	66.8
Total		280	100
Size of the Family	7-10 children	44	15.7
	5-6 children	83	29.6
	3-4 children	109	38.9
	1-2 children	43	15.4
	0 -no child	1	.4
Total		280	100

As gleaned in Table 2, of the 280 parent respondents only 35 were elementary school undergraduates. Majority of the respondents were high school graduates. During the interview, when teachers were asked if educational level of the parents can influence the academic achievement of the pupils, responses revealed that majority of them answered yes. They believed that parents with highest educational attainment can help their children follow-up the lessons taught in school..

On monthly family income, only 9 or 3.2% of the parents have an income ranging from Php 30,000.00 and above. One hundred eighty seven or 66.8% of the respondents have the monthly family income ranging from Php 4,000.00 and below, which is considered by the National Statistics Office (NSO) as below poverty line. According to the Family Income Expenditure Survey (FIES) conducted by the NSO in 2012, a Filipino family of five needed Php 5,458.00 to meet the basic food needs every month and Php 7, 821.00 to stay above the poverty threshold (basic food and non-food needs) every month..

As gleaned on the same table, most number of the respondents were farmers having the frequency of 79 or 28.2%, while 22 or 7.9% were government employee. During the interview, all of the 13 Science Teachers in the district responded that parents' occupation affects the performance of the pupils. Majority of them argued that some occupations deprived the parents of the time to adequately monitor the educational progress of their children. On size of the family, data indicates that most of the respondents have 3-4 children in the family having the frequency of 109 or 38.9%. Only one (1) or .4% without child in the family.

Table 3. Cultural Profile of the Grade V Parents/Guardians

Cultural Profile			
Social Groupings/Tribe	Mamanwa	6	2.1
	Manobo	2	.7
	Boholano/Bol-anon	256	91.4
	Kamayo/Kadi	6	2.1
	Cebuano	5	1.8
	Tagalog	1	.4
	Bicolano	1	.4
	Ilongga/Ilonggo	1	.4
	Waray	1	.4
	Ilocano	1	.4
Total		280	100
Dialect Spoken at Home /Language	Bol-anon	205	73.2
	Surigaonon	65	23.2
	Kamayo/kadi	4	1.4
	Ilonggo/Ilongga	2	.7
	Cebuano	2	.4
	Tandaganon	1	.4
	Tagalog	1	.7
Total		280	100
Religion	Roman Catholic	157	56.1
	Iglesia Filipina Independiente	61	21.8
	Iglesia ni Cristo	11	3.9
	Baptist	5	1.8
	Pentecostal/Born Again	29	10.4
	Seventh Day Adventist	7	2.5
	Philippine Ecumenical Christian Church	6	2.1
	Simbahan Diosnong Kahayag	2	.7
	Jehovah's Witnesses	1	.4
	Banal	1	.4
Total		280	100
Child-Rearing Practices	Authoritarian	12	4.3
	Permissive	1	.4
	Ambivalent	11	3.9
	Negligent	4	1.4
	Democratic	252	90
Total		280	100
Attitude Towards Education	Positive	238	85
	Negative	21	7.5
	Indifferent	18	6.4
	Uncertain	3	1.1
Total		280	100

The dominant tribe in Cortes District was the Boholanos having the frequency of 256 or 91.4%, while the least number of tribes were the Tagalogs, Bicolanos, Ilongga/Ilonggos, Waray and Ilocanos.

On language, 205 of the respondents spoke Binol-anon at home (Bol-anon) having the percentage of 73.2%. This indicates that pupils' parents were mostly Bol-anon in nature. Only 1 or .4% spoke Tagalog and Tandaganon. On religion, 157 or 56.1% of the respondents were Roman Catholic. Only one (1) or .4% were members of the Jehovah's Witnesses and Banal. As shown in Table 2 on child-rearing practices, ninety percent (90%) were democratic parents as indicated by the high percentage of the responses. Only 1 or .4% was permissive. This means that most of the parent respondents were open when it comes to decision making, shows fairness to his/her children or treated them equally. H/she has a consistent support by guiding their children and supporting them for healthy development.

As to attitude of the parents towards education, responses revealed that 238 or 85% out of 282 parents have positive attitude towards children's education. Only 3 or 1.1% was uncertain. This means that Boholanos or Bol-anons are positive with regards to education and they are eager to send their children in school, however, their income is not enough that's why some parents could not send their children to school simultaneously.

Table 4. Extent of Socio-Economic-Cultural Factors Affecting Science and Health Competencies of Grade V Pupils

Socio-Economic-Cultural Factors	Mean	DI
1. Educational Attainment	3.25	Moderate Extent
2. Occupation	3.24	Moderate Extent
3. Parents' Income	3.58	Great Extent
4. Size of the Family	3.13	Moderate Extent
5. Social Groupings/Tribe	3.00	Moderate Extent
6. Religion	3.19	Moderate Extent
7. Dialect Spoken at Home/Language	2.95	Moderate Extent
8. Child-Rearing Practices	3.50	Great Extent
9. Attitude towards education	3.54	Great Extent
OVER-ALL	**3.26**	**Great Extent**

Based on the result, of the nine (9) socio-economic-cultural factors, three (3) are within the descriptive interpretation of Great Extent (GE) and six (6) are on the DI of Moderate Extent (ME). Among the socio-economic-cultural factors, item number 7 or dialect/language spoken at home has the least mean value while item number 3 or parents' income has the greatest mean value, followed by item number 9 or the attitude towards education and item number 8 or the child-rearing practices. Both items are within the DI of Great Extent (GE). This shows that the respondents were aware with a great extent that parents' income, child-rearing practices and attitude towards education greatly affect the competencies in Science and Health. Based on the over-all mean of 3.26, the respondents' awareness is on Great Extent (GE). In other words, parents of the Grade V pupils are greatly aware on the effects of socio-economic-cultural factors to the Science and Health competencies of Grade V pupils in the District of Cortes as described in the scoring procedure.

Table 5. Mastered Competencies in Science and Health V

Mastered Competencies	Item Number	Total No. of Correct Responses	Percentage (%)
Identify the kinds of simple machines	5	231	75
Identify activities where simple machines are used	12	231	75
Observe how rocks differ in shape, color, hardness and texture	18	233	75

As shown in Table 5, the Grade V pupils mastered only 3 items out of 50. These are item numbers 5 with 231 total number of correct responses, 12 with 231 correct responses, and 18 with 233 total number of correct responses. The table also shows that out of 34 competencies enumerated, only 3 competencies were mastered by the pupils that corresponds to the items mentioned above having 75% mastery level, and all the rest of the reflected competencies were nearly mastered and least learned. Thus, it is an indicator, based on their academic performance in Science and Health V that most of the Grade V pupils were lack of mastery of the competencies in 3rd grading.

Table 6. Least Learned Competencies in Science and Health V

Least Learned Competencies	Item Number	Total No. of Correct Responses	Percentage (%)
Practice precautionary measures in using simple machines	4	150	49
Practice electrical energy conservation measures	11	152	49
Identify the main parts of each kind of simple machine	13	152	49
Describe how each simple machine makes work easier and faster	15	120	39
Describe simple machines which multiply force/ speed	17	139	45
Infer how rocks are formed	20	145	47
Differentiate igneous, sedimentary and metamorphic rocks from one another	24	145	47
Describe the effect of unequal heating of land and water	36	145	47
Practice precautionary measures before, during and after typhoon	41	130	42
Compare the ability of land and water	44, 47, 49	108	35
		142	46
		138	45
Trace the origin and path of typhoons that hits the Philippines	50	144	47

Table 6 shows the least learned competencies of Grade V pupils in Cortes District. Out of 50 items test in Science and Health, thirteen (13) items and eleven (11) competencies were unmastered which were considered as the least learned competencies. This implies that pupils have not yet mastered the rest of the competencies in the 3rd grading period since, majority of the Grade V pupils achieved low mastery in Science and Health competencies. Thus, the result tells that we are far to the target which is 75 %mastery level.

The least learned/least mastered competencies would be the basis to improve more the scores in the 2015 or next year's examination. Interviews responses revealed that this is also the reason why many schools got low MPS in this subject, because pupils don't have mastery of the lessons taught by their teachers.

Table 7. Correlation between Parents Socio-Economic-Cultural Factors and Pupils Performance

Parents Socio-Economic-Cultural Factors	Pupils Performance	Correlation Value		Decision	Conclusion
		Computed	Tabular at 5%		
1. Educational attainment	24	0.815	0.754	rejected	Significant
2. Occupation	23	0.153	0.754	accepted	Not Significant
3. Parents Income	20	0.869	0.811	rejected	Significant
4. Size of the family	28	0.075	0.811	accepted	Not Significant
5. Social groupings/Tribe	23	-0.567	0.811	accepted	Not Significant
6. Religion	28	0.799	0.811	accepted	Not Significant
7. Dialect spoken at home	28	0.768	0.811	accepted	Not Significant
8. Child-rearing practices	28	-0.177	0.811	accepted	Not Significant
9. Attitude towards education	29	0.576	0.878	accepted	Not Significant

Table 7 shows that out of 9 parents' socio-economic-cultural factors only 2 correlated to pupil's performance. Results generated that educational attainment has computed value of 0.815 which is greater than 0.754 tabular value and parents income has computed value of 0.869 which is also greater than the tabular value of 0.811. Thus, the hypothesis is rejected. It means that both factors have a significant relationship to pupil's performance. The result implies that the poor academic performance of the learners is likely a result of the parent's socio-economic factors. Thus, it is an indicator that pupils from low socio-economic status developed academic skills more slowly compared to pupils from higher socio-economic status.

**WORKSHEETS IN SCIENCE AND HEALTH V
THIRD GRADING
(MATRIX)**

Worksheet Number	Objective/Competency
1	Observe that electricity can produce heat and light
2	Practice precautionary measures related to electricity
3	Explain the use of electricity in the home and community
4	Describe simple machines which multiply force and speed
5	Practice precautionary measure in using simple machine
6	Observe how rocks differ in shape, color, hardness, texture
7	Classifies rocks according to color, shape, hardness, texture, size of crystals Differentiate rocks as to color, shape, hardness, texture, size of crystals
8	Infer how rocks are formed
9	Identify igneous, sedimentary and metamorphic rocks Describe how igneous, sedimentary and metamorphic rocks are formed
10	Infer how some forces contribute to the weathering of rocks Identify the forces that break rocks
11	Infer that certain conditions/situations lead to the formation of different rocks
12	Demonstrate how rocks are broken down into pieces through the action of water Explain how other factors contribute to soil formation e.g. plants, weather, animals
13	Identify the processes involved in the water cycle e.g. evaporation, condensation, precipitation
14	Describe changes that happen to water during each process. Relate temperature to the processes in the water cycle.
15	Observe the effect of heat on land and water Describe the effect of unequal heating of land and water i.e. low and high pressure
16	Compare the ability of land and water to absorb and release heat
17	Describe what a typhoon is
18	Trace the origin and path of typhoons that hit in the Philippines
19	Describe the condition in the environment before, during and after a typhoon
20	Explain the meaning of typhoon signals
21	Practice precautionary measures before, during and after a typhoon
22	Identify ways to conserve the environment to lessen the harmful effects of cyclones/floods
23	Apply knowledge of the weather to daily life activities
24	Describe the effect of unequal heating of land and water
25	Identify the kinds of simple machines
26	Describe how an electromagnet works

Conclusion

The Grade V parents/ guardians of Cortes District, Division of Surigao del Sur are mostly high school graduates, with an income ranging from Php 4,000.00 and below. Mostly were farmers having 3-4 children in the family. Majority of the parents were Boholanos who spoke Binol-anon as their dialect/language used at home. Mostly were Roman Catholic. Majority of them were democratic parents with positive attitude towards children's education. The Grade V parents/guardians of Cortes District need to enhance their knowledge regarding the effects of socio-economic-cultural factors to the Science and Health learning competencies of pupils. The Grade V pupils have not mastered the most of the Science and Health V learning competencies, since the percentage is far to the target which is 75%.

Educational attainment and parents' income are two socio-economic factors that are positively correlated to pupils' performance. Instructional materials like worksheets in Science and Health V are needed to increase Science and Health learning competencies of Grade V pupils.

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