

Internal and External Factors Affecting the Students' Achievement in Science

Analyn M. Balvestamin¹ and Perlito D. Jomoad²

¹Secondary School Teacher, Bonifacio National High School, Department of Education

²Faculty, Misamis University, Ozamiz City

Abstract— Students' performance in school is a product of a variety of factors. This study identified the predictors of students' achievement in Science. The descriptive-correlational design was used in the study. The respondents of this study were the 130 high school students chosen through a systematic sampling design. In this study, the Internal and External Factors Affecting Students' Achievement in Science questionnaires were used. Documentary analysis was employed to gather data on students' achievement being represented by Mean Percentage Scores (MPS) for one grading period. The study utilized the Mean, Standard Deviation, Pearson Product Moment Correlation Coefficient, and Stepwise Multiple Regression Analysis as the statistical tools. Results revealed that students were competent, and the adequate provision of school facilities and learning resources was evident. Family support in terms of parental supervision and spiritual nurturing was very high. More than 80 percent of the students had higher ratings in Science. Student competence, parental supervision, spiritual nurturing, social and emotional well-being, and socio-economic status could influence the students' achievement in Science. Factors like parental supervision, student competence, social and emotional well-being, and socio-economic status are strongly correlated with the student's achievement in science.

Keywords— external factors, internal factors, parental supervision, spiritual nurturing, student competence.

I. INTRODUCTION

Over the years, it has always been the government's focus through the Department of Education to emphasize science and technology education. Now and then, science teachers undergo training and workshops to hone their knowledge and skills in this particular discipline. School curricula are also subject to periodic review and study to suit the learners' needs and keep up with the pace of times (Bilbao et al., 2015).

Science is a very old discipline. Nobody can identify the beginning of science. Science has already existed from the genesis of time, and it is interwoven with the people and where they live. It covers ideas, concepts, and systematic explanations about the world. Science involves systematic observation and experimentation. Humans have embarked on scientific activities to comprehend everything around them. They have persistently observed and studied the natural and physical worlds to find meaning and answers to numerous questions. They create noble ideas, later known as philosophy, to provide alternatives or possible explanations to certain phenomena (Seráfica, Pawilen, Caslib, & Alata, 2018).

In making a scientific inquiry, scientists use various empirical approaches, techniques, and procedures to collect data from nature, examine and analyze the data,

and construct knowledge based on it. This knowledge relates to living organisms, non-living matter, energy, and events that occur naturally. To analyze data, scientists often, but not always, use mathematics, but they always apply logical arguments that obey strictly empirical standards and healthy skepticism (de la Cruz, 2013). Thus, teachers need to assist or guide their learners to acquire scientific and technological skills (Bilbao et al., 2015; Esguerra, Bantang, Dapul, & Salazar, 2016).

Knowing the principles of science enables people to understand, appreciate, and interact better with others and with the environment (Odzen-Yilmaz & Cavas, 2016). The occurrence of lightning and thunder or a rainbow in the sky can be explained by the principles and laws of science. People can understand why rain falls, why there are days and nights, and why there are low tides and high tides. Modern means of transportation, systems of communication, and advancements in medicine, agriculture, and industry are brought about by applying the principles of science. The patterns in nature that people see every day help them bet a sense of how nature behaves. Science involves the careful observation of nature and the discovery of natural laws that can be put to work for the benefit of humankind. Thus, useful information about the world around must be communicated (Evangelista, Follosco, & Pili, 2017).

Today human beings are no longer satisfied with explanations that relate natural events to the work of supernatural powers. Through the years, they have learned to observe events closely and begun to note patterns of occurrences. From there, they have made intelligent guesses or hypotheses that serve as the foundation for making more concrete generalizations. They have learned to test hypotheses and made predictions. This sequence of processes has led to the development of the scientific method. Once one understands the scientific method, he will begin to gain more information about the world around him (Capco & Yang, 2017). Traditionally, science is defined as a systematized body of knowledge. Today, it has evolved to encompass a wider dimension: a product, a process, a way of thinking, and a community endeavor (Religioso, Vengco, & Navaza, 2017).

Human beings have embarked on scientific exploration to understand everything around them. They have consistently observed and studied the world to find meanings and seeks answers to varied queries. Moreover, they have developed noble ideas, later known as philosophy, to provide alternative or possible explanations to certain phenomena. The three domains of science education are performing scientific inquiry work, understanding and applying scientific knowledge, and developing and demonstrating scientific attitudes and values (Garcia, Laurente, Montebon, & Auditor, 2015).

Science program helps learners learn significant concepts and theories, important skills like process skills, critical thinking abilities, and life skills relevant to everyday life. In addition, science education develops positive attitudes such as the love of nature and creativity. Science learning, however, is seen to be a complex task for basic education learners. There are varied factors that affect learning in Science. For example, robust predictors like students' interests and socio-economic conditions are determinants of students' science achievement. There are also claims that science learning is influenced by the students' ability to comprehend a written message, family background, and school-related factors like facilities and equipment, to name a few.

Adequate learning materials and school facilities could affect the students' performance in school to the same degree (Ndirangu, 2015; Yelgien & Karaman as cited by Paclipan, 2019). It was also found out that family is the

most important influence on students' achievement in school (Hanushek, 2016; Tizard et al., 2017; Muller, 2018; Han et al., 2015). Family income is also seen to impact students' school performance (Muller, 2018). How parents deal with the children at home determines the learning performance of their children in science (Mailhot & Feeney as cited by Paclipan, 2019; Wilder, 2014). It was also claimed by Andrada (2020) & Corpuz (2020) that students' social and emotional well-being could boost their performance in school.

The foregoing information has motivated the researcher to go into this study. She wanted to identify the factors having a strong association with the student's achievement in science and determine which among these factors could predict their achievement.

This study was conducted in order to determine the internal and external factors that affect the students' achievement in science.

The specific objectives are the following:

1. Determine the level of perceived internal factors that affect students' achievement in Science in terms of competence, school facilities, and learning resources;
2. Determine the level of perceived external factors that affect students' achievement in Science in terms of extra-curricular activities, family support, social and emotional well-being, and students' socio-economic status;
3. Determine the level of students' achievement in Science;
4. Explore the significant relationship between the level of perceived internal factors and students' achievement in Science;
5. Explore the significant relationship between the level of perceived external factors and students' achievement in Science; and
6. Identify which among the independent variables predicts singly or in combination the students' achievement in Science.

II. METHODS

Research Design

This study utilized the descriptive-correlational research design. The design is used to determine the degree of association or relationship between variables. Descriptive-correlational research is concerned with

data description, characteristics, and correlations (Creswell, 2005).

The design was considered appropriate in the study, which acquired factual, accurate, and systematic data on the predictors of students' achievement in Science. In addition, a correlational analysis was used in testing the relationship between the levels of perceived internal and external factors and students' achievement in Science.

Research Setting

The study was conducted in Bonifacio National High School, Liloan, Bonifacio, Misamis Occidental. Rice fields surround the school; thus, most of the students' parents are farmers, if not rice traders. Since Liloan is situated at the southernmost part of Misamis Occidental, the school also caters to the education of students from Tambulig, Zamboanga del Sur. For the school year 2019-2020, the total enrolment of the school is 1,211. The common language spoken is Cebuano. The other languages spoken are Subanen, Ilonggo, Filipino, and English.

Respondents of the Study

The respondents of this study were the 130 Grades 9 and 10 students who were selected using the systematic sampling design. Thus, every nth element of the student population of 250 was included to constitute the sample of the study.

Instruments

The study used the following instruments:

A. Internal Factors Affecting Students' Achievement in Science Questionnaire (Appendix A). This questionnaire is a researcher-made instrument. It has 32 indicators with three constructs: competence, school facilities, and learning resources.

The researcher validated the questionnaire and pilot-tested it to selected students. The instrument yielded a Cronbach's Alpha Coefficient of 0.81. Hence, the instrument is valid and reliable.

Table 1: In determining the level of the perceived internal factors affecting the students' achievement in Science, the following scale was used:

Responses	Continuum	Interpretation
5 – Strongly Agree (SA)	4.20 - 5.0	Very High (VH)
4 – Agree (A)	3.40 - 4.19	High (H)
3 – Undecided (U)	2.60 - 3.39	Average (A)
2 – Disagree (D)	1.80 - 2.59	Low (L)
1 - Strongly Disagree (SD)	1.00 - 1.79	Very Low (VL)

B. External Factors Affecting Students' Achievement in Science Questionnaire (Appendix B). This instrument is researcher-made. It has four constructs: extra-curricular activities, family support, students' social and emotional well-being, and students' socio-

economic status. The researcher validated the questionnaire and pilot-tested it to a group of students. The instrument yielded a Cronbach's Alpha Coefficient of 0.80. Therefore, the instrument is valid and reliable.

Table 2: Below was the scale used.

Responses	Continuum	Interpretation
5 – Strongly Agree (SA)	4.20 - 5.0	Very High (VH)
4 – Agree (A)	3.40 - 4.19	High (H)
3 – Undecided (U)	2.60 - 3.39	Average (A)
2 – Disagree (D)	1.80 - 2.59	Low (L)
1 - Strongly Disagree (SD)	1.00 - 1.79	Very Low (VL)

C. Students' Achievement in Science. The documentary analysis was used to determine the students' achievement in science. The Mean Percentage Score (MPS) for one grading period was utilized and this was

obtained by the researcher from the office of the principal. The computation of MPS was based on the DepEd guidelines.

Table 3: Students' achievement ratings and interpretation.

Rating	Interpretation
90 – 100	Outstanding(O)
85 - 89	Very Satisfactory(VS)
80 - 84	Satisfactory(S)
75 - 79	Fairly Satisfactory(FS)
70 – 74	Did Not Meet Expectations (DE)

Data Collection

Before the study was conducted, the researcher sought approval from the Graduate School, Division Superintendent and school administrator. Upon approval, the researcher gathered the research respondents and personally explained the aim of the study, the research instruments, and the conduct process of the study. The health protocol was observed when the respondents gathered by the researcher. The questionnaire were distributed to the respondents and they were retrieved right on that day. After this, tallying was done according to the approved objectives of the study. The other processes of the research undertaking like computation, analysis and interpretation of data followed in their order.

Ethical Considerations

The researcher explained thoroughly to the respondents the purpose of the study. As a result, the respondents voluntarily accepted to participate in the research by signing informed consent. The researcher made sure that anonymity and confidentiality of the research are maintained throughout the study. The researcher prioritized requests for the dignity and privacy of research respondents. Moreover, the research avoided any deception or exaggeration about the purpose of the study. This study observed the principle of honesty and transparency, avoiding any type of misleading information in the process. The researcher also assured the respondents that the data or information gathered would be used in this study only.

Data Analysis

The statistical tools below were used in analyzing the data of the study:

- **Mean and Standard Deviation.** These instruments were utilized to describe the perceived internal and external factors and students' achievement in science.
- **Pearson Product-Moment Correlation Coefficient.** This was employed to test the significant relationship between perceived internal

and external factors and students' achievement in science.

- **Stepwise Multiple Regression Analysis.** It was utilized to identify which among the independent variables predicted singly or in combination the students' achievement in science.

III. RESULTS AND DISCUSSION

Level of Perceived Internal Factors Affecting Students' Achievement in Science

The level of perceived internal factors that affect students' achievement in science is shown in Table 4. In this study, internal factors include competence, school facilities and learning resources. Data revealed that the students were competent (WM=3.66). The school facilities (WM=3.69) and learning resources (WM=3.66) were adequate.

Competence. Findings revealed that students have possessed knowledge in solving problems independently, discussing prevailing issues with their classmates, giving meaning to what is read, applying learning to real-life situations, initiating activities in school, and recalling facts easily. Moreover, the students could comprehend a paragraph read, draw conclusions, do approximations, make sound judgments, follow a scientific procedure, reflect on ideas, categorize or sort objects, relate new ideas with past knowledge and share experiences with their classmates and friends.

The above findings imply that the students have possessed a certain level of competence which they use in life. They have possessed awareness and interest to think and learn how to learn simple things. Students have possessed the ability to analyze, criticize and infer simpler conclusions based on personal judgments. They could express their simple opinions and suggestions in the activities they hold in science. Simply put, students have already possessed knowledge and understanding of simple scientific concepts and processes required of personal decision making and involvement in school and community activities (Andrada, 2020; Hanushek, 2016)

School Facilities and Learning Resources. The study revealed that an adequate provision of school facilities and learning resources is evident in school. It means that (1) Science tools, apparatuses and materials are sufficient for student use. Materials particularly toxic chemicals are properly labeled and stored in safe and appropriate place. There is adequate lighting/ventilation of laboratory and lecture rooms, Students have knowledge on the proper use of equipment and apparatuses. Microscopes and hand lenses are provided for the study of microorganisms and minute organs. There is adequacy of records of use of materials/equipment, There is evidence that students/teachers possess knowledge on the proper use of equipment and apparatuses. There is the provision of computers, CD/DVD players, tapes or discs and other materials. There is the provision of diorama, and prepared set-ups are available for teaching.

It was also found out that students have access to library materials. The school has leaflets and brochures that inform the students and teachers of new holdings and services provided by the library. Replicas, models, cameras and films, and exhibits are also available in school.

The above findings imply that school facilities and learning resources are provided adequately by the school. The Department of Education finds ways to appropriate amounts for basic school services like the maintenance of school buildings and the provision of basic facilities and equipment. Accordingly, the learning environment sets the mood for a smooth, fruitful and enjoyable teaching-learning activity, but this is only possible if basic instructional materials are available for use.

Conditions that are contributory to learners' performance include the school setting, school facilities, policies and teacher support. When students are surrounded by a conducive environment, they are most likely to perform better in class. When the school provides the learners with enough learning materials, support and encouragement, they perform better in their school work (Corpuz & Saladan, 2017).

On the other hand, inappropriate learning materials and resources, inappropriate teaching methods and poor English language learning could adversely affect the students' school performance (Gizaw, 2019; Anggraini, 2017).

The provision of school facilities and learning resources should be an important concern of the school. The implementation of a well-planned lesson needs appropriate school facilities and learning resources. Even the best teacher trained in the latest teaching methods, well-informed about facts, and aware of the goals of education, can still fail in planning and implementing a lesson if she lacks appropriate instructional materials. A wide variety of instructional resources assist the teacher in providing direct experiences of her students. It is imperative for every school to have in its possession a variety of materials and resources for instruction, and teachers should be able to plan and organize these materials every time they use these in teaching.

Table 4: Level of Perceived Internal Factors Affecting Students' Achievement in Science (n = 130)

Constructs	WM	StDev	Interpretation
Competence	3.69	0.55	Competent
School Facilities	3.69	0.77	Adequate
Learning Resources	3.66	0.84	Adequate

Note Scale: 4.20-5.00 (Very Competent/Very Adequate); 3.40-4.19 (Competent/Adequate); 2.60-3.39 (Somewhat Competent/Adequate); 1.80-2.59 (Less Competent/Adequate); 1.00-1.79 (Least Competent/Adequate)

Level of Perceived External Factors Affecting Students' Achievement in Science

The level of perceived external factors that affect students' achievement in Science is presented in Table 5. Data revealed that the extra-curricular activities were relevant (WM=3.80). The family support in terms of parental supervision (WM=4.21) and spiritual nurturing (WM=4.21) was very high. The student's social and emotional well-being (WM=3.79) and socio-economic status (WM=3.69) were high.

The study disclosed that the extra-curricular activities held in school were perceived important, meaningful and appropriate to the students. The students claimed that these activities are appropriate to their tendencies, serve their needs, improve them physically and socially and give them satisfaction. This is supported by Sharifi & Hossein (2017), who said that extra-curricular activities are designed to meet the educational needs of students. Furthermore, students have mentioned that their extra-curricular activities provide special benefits to them, and with that the students give support to the

holding of these activities in school. Karunakar (2020) stressed that extra-curricular activities improve the learning environment and empower the students. They should be held beyond the confines of classrooms to create a spirited teaching and learning environment and help marginalized students realize their full potential in every sphere of life.

Students acknowledge the gain of many interpersonal skills such as communication and managerial skills, teamwork, problem-solving, leadership, and self-reflection in extracurricular activities. Participation in some activities and sports promotes interpersonal skills and professional behaviors in students, which lead them to become better decision-makers in the class. In addition, participation in extra-curricular activities develops empowerment, positive identity assets, and clear educational and developmental benefits (Rettig & Hu, 2016; Hung et al., 2019).

Findings also revealed that family support in terms of parental supervision and spiritual nurturing was very high. Parents give full support to their children's education. Children are properly guided by their parents in the decision-making process. The socialization of the children is one important concern of the parents. The parents set ample time to extend spiritual and moral support to their children. Parents give advice to children in matters like marriage, choosing a career and work. It was also found out that the family makes the children respect family traditions, beliefs and values. The love,

support and encouragement given by parents have a positive impact on their children to move forward (Bondoc & Gaza, 2020), and undeniably parental support is a determinant of students' academic achievement (Magouirk, 2015; Ede, 2016; Park & Holloway, 2016; Gao, 2017; Jang & Lee, 2018; Antipkina & Ludlow, 2020; & Bubb & Jones, 2020).

In spiritual nurturing, the family makes the children respect religious leaders like priests, pastors and ministers. Parents lead a daily prayer, and Bible reading is made a daily practice. Church activities and rituals are highly respected by the family, and the family gives alms to the poor. It is also noteworthy that children are taught to respect the rights of the elderly, women and the disadvantaged.

With the above findings, it is important for the school to continue to hold and support extracurricular activities. Moreover, family support in terms of parental supervision and spiritual nurturing should be sustained by the parents. Spiritual, moral, and desirable social values need to be taught to children in simple ways to have some ideas about what is right and what is wrong. Children should also be taught good manners and right values at all times. Respect for and obedience to parents should be stressed. Many aspects concerning proper values are taught to the young. The children are taught about their duties and status in society, their roles as children, learners, parents in the future, and as workers or professionals in the future.

Table 5: Level of Perceived External Factors that Affect Students' Achievement in Science (n - 130)

Constructs	WM	SD	Remark
Extra-Curricular Activities	3.80	0.63	Relevant
Family Support			
Family Relationships	4.19	.75	High
Parental Supervision	4.21	.69	Very High
Spiritual Nurturing	4.21	.77	Very High
Financial Support	4.19	.67	High
Social and Emotional Well-being	3.79	.59	High
Socio-economic Status	3.60	.67	High

Note: Scale: 4.20-5.00 (Very High/Very Relevant); 3.40-4.19 (High/Relevant); 2.60-3.39 (Moderate/Fair); 1.80-2.59 (Low/Less); 1.00-1.79 (Very Low/Least)

Level of Students' Achievement in Science

Table 6 shows the level of students' achievement in Science. Of the 130 students, 38 obtained an "Outstanding" rating; 38, "Very Satisfactory;" 38, "Satisfactory;" and 16, "Fairly Satisfactory." Data revealed that most students performed well in Science, as indicated by their grades which are equally distributed in the "Satisfactory," "Very Satisfactory," and "Outstanding" categories. The researcher believes that at the average, students have learned simple concepts and theories in Science and important skills like process skills, critical thinking abilities and life skills relevant in school activities. Further, this group of students has developed a positive attitude towards Science like love of nature, experimentation and exploration. This finding is encouraging. Tucker-Drob, Cheung, & Briley (2014) pointed out that maximizing science performance is an important goal of the educational program, with significant implications for national and international economic and technological efforts.

However, 16 students or 13 percent have obtained a "Fairly Satisfactory" rating. These students lack capabilities to deal with abstract concepts in Science. Hence, it is important for teachers to improve their teaching in Science by considering students' interests and learning styles when planning their lessons. Many students want various learning experiences in their classes and practical applications of their science lessons in real-life situations since students come from different families with difficult cultural and socio-economic positions. When teachers plan their lessons, they should always keep these in mind.

They should recognize that their previous experiences with the students, including the students' performance in class, are sources of valuable information about the students' capabilities. Many teachers observe during their classes that students' backgrounds, especially their demographic characteristics, influence their performance and attitudes toward learning Science (Lel & Matias, 2018).

Likewise, teachers should be willing to extend their time, effort, and resources to their students. Moreover, teachers should do a consistent revision and serious reflections of teaching practices that prove successful in providing learning reinforcement and enrichment (Sjostrom, 2016; Schonfelder & Bogner, 2020; Blackmore, 2019).

Table 6: Level of Students' Achievement in Science (n = 130)

Achievement	Frequency	Percent	Min	Max
Outstanding	38	29.00	90	93
Very Satisfactory	38	29.00	86	89
Satisfactory	38	29.00	80	84
Fairly Satisfactory	16	13.00	75	79
Total	130	100.00		

Note: Performance Scale: 90-100 (Outstanding); 85-89 (Very Satisfactory); 80-84 (Satisfactory); 75-79 (Fairly Satisfactory); Below 75 (Did Not Meet Expectations)

Relationship between the Level of Perceived Internal Factors and Students' Achievement in Science

Table 7 presents the data on the relationship between the level of perceived internal factors and students' achievement in science. It was revealed in the data that student competence is significantly related to their achievement in science ($r=0.537, p=0.050$). This means that the students' ability to understand, comprehend and judge influence their performance in science. However, school facilities ($r=0.181, p=0.081$) and learning resources ($r=0.181, p=0.118$) do not affect the students' achievement in science. It implies that the availability of school facilities and learning resources could not affect the students' achievement in science.

This implies that the students' competence indicated by their ability to make sound judgments, draw or infer conclusions, comprehend procedures, follow a scientific process when conducting an experiment or investigative study, reflect on ideas, and relate new information with past knowledge among others, could determine their achievement in science. In school, students who possess a remarkable level of competence could associate outside learnings with their lessons. Competent students could easily promote a positive transfer of learning in the classroom. For example, a student recalls energy transformation to understand the lesson on photosynthesis. A positive transfer is shown when previous learning is used to acquire present learning.

However, school facilities and learning resources do not significantly relate to the students' achievement in science. Even if the provision of facilities and equipment is evident in school, this could not affect the students' achievement in science. The finding of this study is contrary to the findings of Ndirangue, 2015; Yielden & Karana (as cited by Paclipan, 2019), who revealed that

adequate learning materials and school facilities could affect the students' performance in school to some degree. Actually, there are other factors that influence the students' performance in school, and to name a few are the kind of training received at home, the experience they get in the community and the quality of interaction shared with peers. Further, the students' genetic traits are a factor why they succeed or fail in school (Baguio, Felicerta, Mañosa, & Cook, 2015; Aquino, Madriaga, Valdoz, & Biong, 2015).

Inasmuch as the students' achievement in science is affected by their competence, it is suggested that students should continue to develop their intellectual skills by engaging in activities that call for critical thinking, creative imagination and deep understanding. Simple activities like investigatory project, argumentative discussion, brainstorming, Science Quiz Bee and other activities of this nature be made part of the school program (Pawilen, 2015).

Table 7: Relationship between the Level of Perceived Internal Factors and Students' Achievement in Science

Variables	r-value	p-value	Remarks
Student Competence and Achievement	0.537	0.050	Significant
School Facilities and Achievement	0.357	0.081	Not Significant
Learning Resources and Achievement	0.181	0.118	Significant

Note: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not significant)

Relationship between the Level of Perceived External Factors and Students' Achievement in Science

Table 8 shows the significant relationship between the level of perceived external factors and students' achievement in science. Data revealed that parental supervision ($r=0.594$, $p= 0.047$), spiritual nurturing ($r=0.696$, $p=0.035$), social and emotional well- being ($r=0.650$, $p=0.040$), and socio-economic status ($r=0.939$, $p=0.007$) influence the students' achievement in science.

However, extra-curricular activities ($r=0.099$, $p=0.145$), family relationships ($r=0.444$, $p=0.068$), and financial support ($r=0.224$, $p=0.107$) could not influence the students' achievement in science. Factors like extra-curriculum activities, family relationships and financial

support do not influence the students' achievement in science.

This means that the kind of supervision made by parents at home is contributory to the learning of their children, and this finding goes with the finding of Mailhot and Feeny in Paclipan (2019), who revealed that how parents deal with the children at home determines the learning performance of their children in school. Further, the present finding is supported by the studies of Hanushek, 2016; Tizard et al., 2017; Muller, 2018; Han et al., 2015; Wei-wei et al., 2016; Boonk et al., 2018; Tran et al., 2020; and Morales, 2020), who said that the family is the most important influence on students' achievement in school. Brajsa-Zgarec, Merkas & Velic (2019) stressed that greater parental supervision has positive effects on students' school achievement.

Spiritual nurturing is another factor which influences the students' achievement in science. Observance to spiritual activities like praying, Bible reading, church attendance, respect for people especially for religious leaders, and alms giving could impact students' performance in school. Spiritual nurturance develops leadership skills at an early age and these skills develop an innate love for learning. When students go to school, they would excitedly perform school activities. The spiritual training they receive at home paves way to learn better in the academics. Students with this training could do their school work independently believing that education is a matter of greater breath than many realize.

Social and emotional well-being is another variable that influences the students' achievement in Science. Feeling good, optimistic, relaxed, energetic, confident and positive could influence the students' achievement in school. Students who possess these feelings are occupied with tasks that bring satisfaction and are productive and uplifting. It is not a surprise how a healthy state of mind can help them in their school undertaking. Instead of thinking about problems, they cheer up with good thoughts of good times and joyful events that may help them in their school work. Andrada (2020) and Corpuz (2020) claimed that students' social and emotional well-being could boost their performance in school. Thus, a student with a high level of social and emotional well- being is expected to perform or even excel in the academics. Their good and happy disposition has a positive bearing on their learning performance.

Another variable that affects the students' achievement in science is the students' socio-economic status. Being provided with food, clothing and shelter and a few amenities could impact the students' performance in school. Hamlin and Flessa (2018) stressed that parents need to look into their children's well-being (e.g. nutrition and mental health as part of their supervision). They should provide the basic needs of the children since the provision of their needs is important in the

learning of their children (Jaiswal & Choudhuri, 2017; Ngussa & Nzowa, 2019).

Findings also revealed that extra-curricular activities, family relationships and family support did not affect the students' achievement in Science. This means that students could still attain optimum learning even if the provision of extra-curricular activities, family relationships and family support is not adequate.

Table 8: Significant Relationship Between the Level of Perceived External Factors and Students' Achievement in Science

Variables	r value	p value	Remarks
Extra-Curricular Activities & Achievement	0.099	0.145	Not Significant
Family Support in Terms of: Family Relationships and Achievement	0.444	0.068	Not Significant
Parental Supervision and Achievement	0.594	*0.047	Significant
Spiritual Nurturing and Achievement	0.696	*0.035	Significant
Financial Support and Achievement	0.224	0.107	Not Significant
Social and Emotional Well-being and Achievement	0.650	*0.040	Significant
Socio-economic Status and Achievement	0.939	**0.007	Highly Significant

Note: ** $p < 0.01$ (Highly Significant); * $p < 0.05$ (Significant); $p > 0.05$ (Not significant)

Predictors of Students' Achievement in Science

Table 9 presents the predictors of students' achievement in science. Data revealed that parental supervision ($t=1.139$, $p=0.035$), student competence ($t=0.645$, $p=0.042$), social and emotional well-being ($t=0.385$, $p=0.046$) and socio-economic status ($t=0.308$, $p=0.50$) could predict the students' achievement in science. Factors like parental supervision, student competence, social and emotional well-being and socio-economic status are strong predictors of the students' achievement in science.

The kind of supervision provided by parents to children is a strong determinant of the children's achievement in Science. This is supported by Brajsa-Zganec, Merkas and Velic (2019), who claimed that parental supervision has positive effects on children's school achievement. Similarly, it is claimed that parental involvement has a significant contribution to children's academic and

social development (Boonk et al., 2018; Wei-wei et al, 2016). The quality of parental supervision provided by parents in the aspects of education, socialization, spiritual nurturance, and decision making could determine their children's achievement in Science (Berkowitz et al., 2020). The time they spend with their children plays a vital role in students' learning (Hamlin & Flessa, 2018).

Students' competence is another factor that could predict the students' achievement in Science. The students' competence in problem solving, learning application, apperception, making personal judgments and other similar activities, could determine their performance in school particularly in science. This is supported by the idea of Sucker (2013) who claimed that one's ability or capacity is needed in learning school subjects.

In the same context, the students' social and emotional well-being is another predictor of their achievement in Science. The students' state of being happy, positive, energetic and enthusiastic could determine their achievement in science (Hamlin & Flessa, 2018). Finally, the students' socio-economic status is another predictor of students' achievement in science. The economic support provided by parents is a determinant of how their children perform in school. Many studies have found that parental support in terms of financial assistance could enhance students' achievements (Moneva, Pestano, & Vertolfo, 2020).

Since parental supervision, student competence, social and emotional well-being, and socio-economic status could predict the students' achievement, it is important for the school to collaborate with the family (Bilbao et

al, 2015). Parents are primary educators in the home. They are in charge of developing values, attitudes, and virtues. Such inculcations are also important when children play with neighbors and the community at large. With parents as supervisors, the children develop a healthy social and emotional well-being as they associate with the neighborhood and community children. In school, the teachers continue to enhance the students' experiences at home, thereby strengthening the important traits and values initially developed. In the end, the contrived attention and efforts of both "custodians" are accorded recognition by the community, thus ensuring valuable gains and attainment of educational goals. The partnership between the home and school helps make a positive place for learners to learn, grow and survive (Ede, 2016).

Table 9: Predictors of Pupuls' Achivement in Science

Stepwise Multiple Regression ($R^2=0.22$, $F=5.62$, $df=129$, $p=0.04$)				
Predictors	β (Unstandardized)	Beta (Standardized)	t	p value
(Constant)	83.459		24.356	*0.040
Parental Supervision	1.192	0.167	1.139	*0.035
Student Competence	0.712	0.080	0.645	*0.042
Social and Emotional Well-being	0.419	0.049	0.385	*0.046
Socio-economic Status	0.315	0.042	0.308	*0.050

Note: * $p < 0.05$ (significant); ** $p < 0.01$ (highly significant)

IV. CONCLUSION

The study revealed that students were competent in science as they could solve problems independently, comprehend a story read, make sound judgments, follow a scientific procedure to obtain reliable information, reflect on ideas presented in the class, apply learning to real-life situations, and the like. Extra-curricular activities were found relevant and important for students as they enjoyed holding there in school. The student's social and emotional well-being and socio-economic status were high. Few students had fairly satisfactory performance in science. The students' competence could determine their achievement in science. Parental supervision, spiritual nurturing, social and emotional well-being, and socio-economic status could influence the students' achievement in science. The study further revealed that parental supervision, competence, social and emotional well-being, and socio-economic status could predict the students' achievement in science. Based on the findings and conclusion, it is suggested that the school head and teachers may continue to provide learning resources for student use. Extra-curricular activities may be held and supported by the school even

if these activities have no significant relationship with the students' achievement in Science. Parental supervision and spiritual nurturing at home may be done seriously by every parent or guardian. On the other hand, students may diligently support their studies by performing learning tasks in school, preparing assignments or homeworks, doing library search and collaborating with classmates and teachers as they exchange ideas and opinions. Future researchers may conduct a study of this nature involving more factors that affect students' performance in science within a wider area coverage.

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