

Potential predictors of academic performance in science in a state university

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ABSTRACT

Science has made the world find the many things that people enjoy today especially those that have made their lives easy. Being an important indicator of a country's development, Science has been given importance by the government and the society. This study considered the possible factors that could predict the academic performance of students in Science at UP High School Cebu. The study utilized descriptive survey employing multiple regression to determine which among the factors considered can predict academic performance in Science. Results showed, at 0.05, that only Science anxiety and teacher's efficacy are significant potential predictors of academic performance in Science. These interesting results deviate from most similar studies which showed that attitude towards Science, Science motivation, and perceived stress affect the academic performance. One of the recommendations indicated that further studies should be conducted to find out other possible predictors of academic performance in Science among UP High School Cebu students.

Keywords: academic predictors, intrinsic factors, science anxiety, teacher's efficacy

I. INTRODUCTION

Science is considered as a country's partner for progress. Whenever one speaks of national development, one can never exclude the role of science. Nalini Ratnasiri (2006) recognized that it is a well-established fact that science and technology impact all aspects of our lives as well as the planet we live. It is one of the main driving forces of the economic growth of nations.

The results of Trends of International Mathematics and Science Study (TIMSS) has been one of the standards that many countries around the world, including the Philippines, used in assessing the current status of Mathematics and Science education of the country. TIMSS assessment is being conducted among the fourth and eighth grades every four years since 1995.

The archive of TIMSS showed that the Philippines only participated in the assessment from 1995-2003. In 2003, in terms of the Grade 8 Science achievement, Philippines ranked 42nd out of 46 countries who participated, where it got 377 average scale score, compared to Singapore which ranked 1st in the Science

category with a 578 average scale score. As for Grade 4 Science achievement, Philippines ranked 23rd out of 25 countries who participated, having a 332 average scale score, compared to Singapore which again ranked 1st in the same Science category with a 565 average scale score (Martin, Mullis, Gonzalez, & Chrostowski, 2004). Such results place the Philippines' average scale score significantly lower than the international average.

On the other hand, every near end of the school year, the Department of Education (DepEd) conducts National Achievement Test (NAT). It is a standardized examination in the Philippines that is given to students to determine their level of achievement, their strengths and weaknesses in the five subject areas which are, English, HeKaSi (Heograpiya, Kasaysayan at Sibika/ Geography, History, and Civics) for the elementary, Filipino, Araling Panglipunan (Social Studies) and Mathematics for those in high school. For the academic year 2011-2012, the mean average percentage of Science achievement for Grade 3 was 55.15 which means that about 5.5 questions out of 10 were answered correctly. Grade 6, on the other hand, was 67.66, which means that about 6.6 questions out of 10

were correctly answered. Lastly, the Fourth Year was 40.53, which means that only around 4.1 questions out of 10 were answered correctly (PSA, 2013).

In developing countries like the Philippines, one can often hear parents of a low-income family telling always their kids to finish their studies because they have no other wealth to leave to them when they are already gone, except education. No matter where one goes, education is always given importance.

The Aquino administration gave education the lion's share of the 2014 budget under the General Appropriations Act (GAA). Of the P2.265 trillion budget, a total of P841.8 billion goes to the social services which include education, P309.43 billion goes to the DepEd. In the current Duterte administration, a GAA amounting to P3.35 trillion will give its highest share of P544.1 billion to education (Elimia, 2016).

While the government is doing its best to support the education sector, one must, however, realize that budgetary constraint is not the only factor that affects the academic performance of students. In this study, some possible factors were considered on whether it can influence the performance of students in Science. These factors consist of student's attitude towards Science, Science motivation, Science anxiety, perceived stress level, and teacher's efficacy. Specifically, the study would like to answer the following questions: (1) What are the levels of attitude toward Science, Science motivation, Science anxiety, and perceived stress of the students; (2) What is the teacher's level of self-efficacy; (3) Are the following factors potential significant predictors of academic achievement in Science: (a) attitude toward Science, (b) science motivation, (c) science anxiety, (d) perceived stress, and (e) teacher's efficacy; and (4) What could be formulated based on the findings of the study?

II. THEORETICAL FRAMEWORK

This study is anchored on three major theories of learning, namely, Social Learning Theory, Motivation Theories of Abraham Maslow and John Keller, and the Attribution Theory of Weiner (1986), Heider, Kelley, Jones, and Ross.

The Social Learning Theory, formulated by Albert Bandura, deals on the explanation of human behavior whose basis is the continuous interaction between cognitive, behavioral, and environmental factors. This theory proposes that new information and behaviors can be learned by people through observation of other people. This process is known as observational learning or modelling.

There are three core concepts that consists the Social Learning Theory. The first idea is that people learn

through observing. The second idea is that essential parts of the process are mental states. And lastly, if something has been learned, it does not automatically elicit behavioral changes. Motivation is an important component of learning process. Abraham Maslow in 1943 presented a paper titled "A Theory of Human Motivation", in which he introduced his concept of hierarchy of needs. Such concept suggests that people are motivated to fulfill basic needs before moving on to the next or other needs. The hierarchy is presented in a pyramidal form in which the base is the most basic need – physiological needs. It is followed by safety, belongingness, esteem, and topmost is the self-actualization.

Learning is usually ascribed on some aspects. The Attribution Theories of Weiner (1986) and that of Heider, Kelley, Jones, and Ross recognized that people find explanation to events that happen in their daily lives. Further, the theory supposes that it is normal for people to look for explanations or causes that can be attributed to whatever successes or failures they get into. Students who feel that they are more in control over the outcome will possess the motivation to successfully finish a given task. Understanding why a certain outcome happens is needed for students to feel they are in control.

Attitudes have been studied for more than 40 years. In the academe, it has been studied to see if it is a good predictor for students' subject and course preference, or whether it affects academic performance (Koballa, 1988; Osborne, Simon, & Collins, 2003). Glasman and Albarracin (2006) found a relationship between subject and course preferences and attitude, in general.

Positive attitude towards science can motivate student's interest in Science and Science-related courses (Norwich & Duncan, 1990). Attitudes have influence over students' academic achievement, in which it may increase or decrease its performance (Papanastasiou & Zembylas, 2004). Shingley (1990) stated that the achievements of students in science have significant relation with their attitude towards the subject. Moreover, Cook and Mulvihill (2008) looked into the attitude towards Science of the non-science majors and suggested that one of the ways to develop the scientific literacy of the students is to develop positive attitudes towards Science.

Another factor that may affect performance in a Science class is anxiety, which by definition, it means the feeling of fear or nervousness about what might happen. On the other hand, in one of the articles available, science anxiety is an unexplainable panic on exams in science classes (Mallow, 2006). Nadeem, Ali, Maqbool, and Zaidi (2003) found that university students who

showed science anxiety had an impact on their academic achievement. Their study revealed that as science anxiety increases, the students' academic performance decreases.

Dobson (2012) revealed that students with problems in anxiety were more likely to show lower levels of academic achievement, self-concept and self-efficacy. The author explained that anxiety reduction requires the attention of students, teachers, and parents. The authors indicated in their study that mindfulness meditation, metacognition, coping, teacher involvement, and test question order are anxiety reduction strategies that have to be explored. It further suggested that problem-based learning is a teaching method proven to increase students' levels of positive metacognition and should also be examined.

Ford (2003), as cited in Lyneham (2009), revealed the prevalence of anxiety. It showed the consequences of students with high level of anxiety, such as less satisfying social interaction, have higher instances medical health problems, hesitates to go out from home, misses a number of good opportunities, and possess greater stress. The study further showed that academically, those students with high level of anxiety would have reduced academic performance and are underachieving, poor engagement in class would have school refusal, and would eventually drop out of school. On the bigger scale, the study suggested that high level of anxiety among students could lead to long-term economic losses for individual and the society.

Motivation is simply defined as the desire to do things. In school, motivation may play an important role in the academic performance. In dealing with motivation and performance, there are two general ways in which motivational beliefs can affect positive academic outcomes (Linnenbrink & Pintrich, 2001). First, the relationship strategies and academic performance have been suspected of being affected by motivational ideas. For example, implementing an inquiry-based approach would result in students showing more interest in Science which in turn, would lead to higher levels of academic performance. This assumes that more adaptive motivational processes would result from a good classroom instruction. This would lead to positive academic performance (Wigfield & Eccles, 2000).

As opposed to the mediational model, motivational beliefs have also been suspected as a moderator for academic outcomes. For example, methods of Science instruction that is challenging and more constructivist based could be beneficial to students who like Science. In contrast those students who are less likely or who fail to recognize the value of Science (Wigfield & Eccles, 2000).

Amrai, Motlagh, Zalani, and Parhon (2011) noted that for human beings, to achieve their goals, needs, and instincts, they should acquire the sufficient motivation. For students, the motivation for academic achievement is of great importance. The researchers acknowledged further that motivation accounts for the reasons behind people's behavior and defines why they behave in that manner.

For students to be motivated, they must join in activities that are beneficial (Koballa, 1988). Singh, Granville, and Dika (2012), from their research among the eighth graders, showed that motivation strongly influenced science achievement. Glynn, Brickman, and Taasobshirazi (2007) in another study revealed that motivation to learn is linked with their science GPA. Students revealed to the researchers that they were motivated to spend time in studying Science because for them, it is relevant to their life, health, society, and the world. Obrentz (2012) investigated the impact of motivation and teaching strategies for students in the basic college chemistry, found out that those students who were highly motivated to learn Chemistry showed a good academic performance on the subject, as opposed to those students who are less motivated. Motivation, though, is not the only factor that could affect the academic performance of a student in class. Some studies would also show other factors such as stress, could have an impact on the school performance of a student.

Stress is commonly described as the reaction of an individual towards a stimulus that hampers one's state of balance, mentally or physically. It is always present in one's life and is therefore unavoidable. During stress, hormones such as adrenaline (fight or flight response) and cortisol surge up to address the unbalanced state of the body.

Stress is categorized into two, acute stress and chronic stress. The so-called acute stress is otherwise known as "little stress," and psychologists suggest that this is needed because this can make individuals active and alert. On the other hand, chronic stress is something that is unwanted because it is long term and has detrimental effects.

When a person is under stress, there are possible things that could happen. These are the rise of blood pressure, breathing and pulse rates, and muscle becomes could become tensed, the digestive system could slow down, inability to sleep, and weakened the immune system.

In the academe, many pieces of research have been conducted to consider the effects of stress on the academic performance. Womble (2003), in her research on the impact of stress on the college students,

identified some stressors that are common, such as ability to manage time, financial problems, lack of sleep, some social activities, and for some students who are already mothers, even having children can contribute to their stress. However no relationship was found between perceived stress and academic performance due to a limited sample size, the respondents still identified top two stressors in their lives as students – lack of sleep and social activities.

Hatcher and Prus (1991) identified factors in college universities that are contributing to students' stress such as academic situational constraints, and these includes fraternity and sorority activities, job responsibilities, and having boyfriend or girlfriend as it can take away their time.

Health-related concerns can likewise contribute to stress among students. Hammer, Grigsby, and Woods (1998) identified the amount of exercise, nutritional needs, and social support from fellow students can influence the academic performance. Too much exercise can be detrimental to one's academic performance as found out by Trockel, Barnes, and Egget (2000). They further asserted that nutrition could also be a problem with college students. Some may find difficult to cook adequate meals. Those who are in dormitories are just learning to live by their own, some of them find that learning how to cook could be a stressor at times.

Some students also have part-time jobs. Calderon, Hey, and Seabert (2001) found that those who are working and at the same time studying have a significant decrease in their academic performance because of lack of time for studying.

Lack of sleep has a major contribution to stress and likewise on the school performance of students. Kelly, Kelly, and Clanton (2001) categorized sleepers into short sleepers, who individuals, when left to set their own schedule, slept six or lesser number of hours hours. There are also normal sleepers, people who slept seven to eight hours, and long sleepers, individuals who slept nine or more hours. The study found that people who were long sleepers reported higher academic performance than those with less time for sleep.

Teachers would constitute a big portion of the pie if one speaks of academic achievement of a student. It is said that the failure or success of every child is greatly played by a teacher. As Bandura would put it, a teacher's self-efficacy can influence the behavior and achievement of students. Tschannen-Moran and Hoy (2001) identified characteristics of a teacher that will result into a better educational outcome – persistence, enthusiasm, commitment, and instructional behavior. Bandura further asserted that the task of creating learning environment conducive to the development of cognitive

skills rests heavily on the talents and self-efficacy of teachers.

According to Mahmoe and Pirkamali (2013), teachers who have a strong sense of efficacy about their capabilities can motivate their students and improve their cognitive development. However, those who have a low sense of efficacy favor a custodial orientation that relies heavily on negative sanctions to get students to study.

In another study which seeks to find out the relationship between teachers' efficacy and students' performance in the secondary schools, Adu, Tadu, and Eze (2012) found that there was positive relationship between teachers' self-efficacy and students' academic performance. They concluded that teacher self-efficacy was a potent predictor of improving students' academic performance in selected secondary school subjects, and that therefore, secondary school principals should encourage teachers' self-efficacy their schools.

III. METHODOLOGY

A descriptive survey method was utilized employing the multiple regression analysis to determine which among the factors being considered were potential predictors of the academic performance in Science.

University of the Philippines High School Cebu (UPHS Cebu) was the research locale, and it is in Gorordo Avenue, Lahug, Cebu City. It serves as a laboratory school for UP Cebu's Master of Education Program.

An entrance test is given every year to determine the students who will be accepted in Grade 7 and Grade 11. UPHS Cebu offers Grade 7 to Grade 10 for Junior High School, and Grade 11 and Grade 12 for Senior High School.

Out of 157 students who were enrolled at UPHS Cebu for the academic year 2015-2016, 80 students were selected using a stratified random sampling, with 20 students per year level being considered.

For attitude toward Science, a revised Thurstone-type scale developed by Silace and Remmers (1934) was used. In this scale, scores of 5.6 – 10.3 reflect a positive attitude, 5.5 reflect a neutral attitude, and below 5.5 reflect a negative attitude.

To measure science motivation, the standardized questionnaire developed by Glynn Shawn (2011) was used. The instrument can be accessed online (<http://www.coe.uga.edu/smq/>) and was used with direct permission from the author via the electronic mail. The following qualitative description was used: 3.21 – 4.00 very highly motivated, 2.41 – 3.20 highly motivated, 1.61 – 2.40 moderately motivated, 0.81 – 1.60 less motivated, and 0 – 0.80 least motivated.

To know science anxiety, an instrument used by

Alvaro (1978), Mallow (1986, 1994), and Udo et al. (2001) was utilized in this study. The following qualitative descriptions were used: 3.21 – 4.00 very highly anxious; 2.41 – 3.20 highly anxious; 1.61 – 2.40 moderately anxious; 0.81 – 1.60 less anxious; 0 – 0.80 least anxious.

Sheldon Cohen's (1988) Perceived Stress Scale (PSS) was used to determine the perceived stress level. PSS is the most commonly employed psychological instrument for measuring the perceived stress. It gives the degree to which instances in one's life are assessed as 'stressful'. The instrument has 10-item and 14-item versions available. The 10-item scale is used in the study because it is more recommended than the 14-item. The 10-item version been psychometrically tested, has been employed in a number of major population-based studies and represents a low respondent burden. The perceived stress level qualitative descriptions are as follows: 3.21 – 4.00 very highly stressed, 2.41 – 3.20 highly stressed, 1.61 – 2.40 moderately stressed, 0.81 – 1.60 less stressed, and 0 – 0.80 least stressed.

To measure the self-teaching efficacy of the teacher handling the science subject, the Science Teaching Efficacy Belief Instrument (STEBI-B), modified by Enoch and Riggs (1990) was used. The following qualitative description was employed: 3.2 - 4.0 Excellent, 2.41 - 3.20 Very Satisfactory, 1.61 - 2.40 Satisfactory, 0.81 - 1.60 Fair, and 0 - 0.80 Poor

IV. RESULTS AND DISCUSSION

Table 1
Profile Factors of the Respondents

Profile Factor	\bar{x}	SD	Description
Attitude toward Science	8.500	0.806	Positive ^a
Science motivation	2.849	0.572	Highly Motivated ^b
Science anxiety	1.341	0.699	Less ^b
Perceived stress	2.353	0.528	Moderate ^b
Teacher's Self-Efficacy	3.020	0.200	High ^b
Academic Performance	85.58	4.440	Good ^c

a 5.6 - 10.3 Positive; 5.5 Neutral; below 5.5 Negative

b 3.21 - 4.00 Very Highly; 2.41 - 3.20 Highly; 1.61 - 2.40 Moderately; 0.81 - 1.60 Less; 0 - 0.80 Least

c 96 - 100 Excellent; 90 - 95 Very Good; 84 - 89 Good; 78 - 83 Satisfactory; 75 - 77 Passed; 65 - 74 Failed

Table 1 presents the different profile factors of the students. Results show that students' attitude toward Science is positive. Though having a positive attitude Science may not necessarily mean that they like the subject. However, this may imply that they find Science being universal, and by being universal it means that Science is present in our everyday life. In other words, Science, therefore, is a practical subject taught in schools.

Osborne, Simon, and Collins (2003) from their study enumerated some possible factors that could influence one's attitude toward Science. These factors include the

perception of students toward their Science teacher, science anxiety, the value of Science subject, self-esteem they perceive during a Science class, Science enjoyment, Science motivation, attitudes of the students' friends and parents toward Science, nature of the classroom environment, Science achievements, and the fear of failure on Science.

Table 1 further presents the level of Science motivation. A high degree of motivation may imply that respondents found Science as interesting and realized that Science is significant to their lives (Glynn, Taassobshirazi, & Brickman, 2007). Using inquiry-based approach in teaching such as introducing science experiments may result in students heightened interest in Science (Wigfield & Eccles, 2000). After all, motivation can define behavior which explains why some people behave in a particular manner (Amrai, Motlagh, Zalami, & Parhon, 2011).

Also shown in Table 1 is the level of science anxiety among respondents. Despite the many tasks given to students provided every day, their level of science anxiety is less. This result may imply that students are already equipped with skills that are needed to accomplish the tasks well since most of them were top students when they graduated in elementary.

UP, being the premier university of the country, a high standard of education is always uphold. Students in UPHS Cebu are no exempted and are often given challenging tasks to hone further their skills and prepare them for more challenging tasks in college since most of them will study in UP or other highly recognized universities in the country and even abroad, this may explain why their perceived stress level is moderate. Aside from challenges in school, some of these students also have problems in their personal lives and in their homes.

Table 1 also shows that Science teachers' self-efficacy in teaching is high. This may mean that the teachers were confident in the Science subject they handle probably because they were graduates of UP and they already possessed a Master's degree in their respective fields in Science. They may be able to handle the subject with ease and can let the students understand the topics they teach quite easily.

Lastly, the academic performance of students in Science is described as good based on the standard set by the school.

A multiple regression was used to predict academic performance of students in Science from attitude towards Science, Science motivation, Science anxiety, perceived level of stress, and teacher's efficacy.

Table 2
Model Summary Based on Multiple Regression

Model	r	r ²	Adjusted r ²	Std. Error of the Estimate	Durbin-Watson
1	.352a	.124	.112	4.1808	
2	.425b	.180	.159	4.0693	1.486

a Predictors: (Constant), Teacher's Efficacy
 b Predictors: (Constant), Teacher's Efficacy, Science Anxiety
 c Dependent Variable: Academic Performance in Science

Table 3
ANOVA

Model		ss	df	MS	F	p
1	Regression	192.200	1	192.200	10.996	.001b
	Residual	1363.350	78	17.479		
	Total	1555.550	79			
2	Regression	280.463	2	140.232	8.468	.000c
	Residual	1275.087	77	16.560		
	Total	1555.550	79			

a Dependent Variable: Academic Performance in Science
 b Predictors: (Constant), Teacher's Efficacy
 c Predictors: (Constant), Teacher's Efficacy, Science Anxiety

Table 4
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		t	p
	β	Std. Error	β			
1 (Constant)	-148.475	70.583			-2.104	.039
Teacher's Efficacy	77.500	23.371	.352		3.316	.001
2 (Constant)	-167.970	69.218			-2.427	.018
Teacher's Efficacy	84.633	22.957	.384		3.687	.000
Science Anxiety	-1.526	.661	-.240		-2.309	.024

a Dependent Variable: Academic Performance in Science

Based on the two models generated as shown on Table 2, Model 2 was considered the best model since it has the greater value for R. The model shows that of all the variables considered, only Science anxiety and teacher's efficacy came out to be significant potential predictors of academic performance in Science, $F(2, 77) = 8.468$, $p = .000$ ($p < .05$). The regression model is therefore a good fit of the data, and can be expressed as

$$\text{Academic performance in Science} = -167.970 + 84.633(\text{Teacher's efficacy}) - 1.35(\text{Science anxiety}).$$

The above expression means that for every one-point increase in the teacher's efficacy, academic performance in Science will increase by 84.633. Likewise, for every one-point increase in Science anxiety, academic performance in Science will decrease by 1.526.

Attitude toward Science and Academic Performance in Science. While there are studies which show that attitude toward Science is a factor which affects the performance of students in Science, among UPHS Cebu students, such relationship is not visible based on the results of this study. This may mean that, although the students may like Science, they still should strive harder to get good grades. Most items in their Science examinations require higher-order thinking so that a

student's positive attitude toward Science does not automatically translate into a good score. Most of their examinations will require them to explain certain situations, which in turn will need an in-depth understanding of the lessons.

This result contradicted the findings of Papanastasiou and Zembylas (2004) and Shrigley (1990) which stated that attitudes have influence over students' academic performances.

Science Motivation and Academic Performance in Science. Science motivation is not a predictor of the academic performance of students in Science among UPHS Cebu students. Their high motivation to learn Science may not necessarily translate to a higher grade because they will be interested to listen and participate in class discussions, study their Science lessons, and accomplish their tasks in the subject.

Such result of this study negated the findings of Singh, Granville, and Dika (2012), Glynn, et.al. (2007), and Obrentz (2012), all of which showed that motivation is a factor that can affect academic performance.

Perceived Stress and Academic Performance in Science. Although shown in Table 1 that the respondents perceived themselves to be moderately stressed, perceived stress is not a predictor of academic performance of students in Science among UPHS Cebu students.

The students are loaded almost every day with tasks from their academic subjects. During a casual conversation with some of them, they mentioned that during school days their regular hours of sleep would be less than five because of homework and projects they need to finish, and lessons they need to study for the examinations. Despite heavy workloads and busy schedule, perceived stress is not a predictor of their academic performance in Science, maybe because most of them are top students from their elementary schools. They may already have developed the skills needed to manage their stress. Further, the school also gives students some time to relax through different programs sponsored by their Supreme Student Council and the Guidance Office.

This result negated that of Womble (2003), and Hatcher and Prus (1991) stating that stress is detrimental to students' academic performance. The result further disagreed with that of Kelly (2008) which showed that less amount of sleep among students would lead to low academic performance.

Science Anxiety, Teacher's Efficacy, and Academic Performance in Science. Although Table 1 shows that, in general the students were less anxious, Model 2 still shows that Science anxiety, together with teacher's efficacy, are significant potential predictors of their

academic performance in Science. It is in this context that the Science teachers should have the maximum capacity to handle the Science subjects. Science may be very interesting but there are many concepts that are too abstract and others are computational. If these concepts will be handled by a Science teacher who lacks the knowledge and the skill to simplify the topic, students may find it more difficult which could possibly lead to their anxiety in Science.

This result of the study agreed with that of Nadeem, Ali, Maqbool, and Zaidi (2012), Dobson (2012), and Lyneham (2009), which all claimed that anxiety could result in a lower academic performance of students.

As previously mentioned, teacher's efficacy is a significant potential predictor of the academic performance in Science. This result agreed with that of Tschannen-Moran and Hoy (2001), Mahmoe and Pirkmalı (2013), and Adu, Tadu, and Eze (2012). This may mean that the teacher who will handle the Science subjects should be knowledgeable on the subject matter and should possess various teaching approaches in order to effect a better academic performance among students in Science.

Though the above results showed that two of the five factors being considered are significant potential predictors, it is recommended that other possible factors which could have an impact on the academic performance of students in Science should be also considered such as the family background in terms of socio-economic status, educational attainment of parents, and parental support.

Although motivation in Science is not a potential predictor in the academic performance in Science, teachers handling Science in UPHS Cebu should make the lessons always as interesting as possible to keep up the students' high level of motivation to learn Science. In teaching Science, lessons should not only be taught as it is; teachers must also relate them to the different fields so that students will realize that Science is not compartmentalized, rather it also touches on various aspects of our society. This way, students will fully see the importance of Science making it an indispensable component of the society and in our lives.

Teachers should also vary their teaching strategies and approaches in the Science lessons in order not to inflict boredom to students, because when students are bored, their attention may be lifted away from the discussion. Such may create the knowledge gap which may affect their academic performance.

Further, the Science teachers should also concretized Science concepts that are deemed too abstract especially in the field of Chemistry and Physics. Not only that many topics in Chemistry and Physics are abstract,

there also a lot of computations. As much as possible, topics should be concretized for the students to also visualize them well, thus they will be able to make representations which will aid them especially in the problem-solving process. Problem-solving, as noted by Dobson (2012), is proven to increase the students' level of metacognition or higher-order thinking that enables understanding, analysis, and control of one's mental processes, especially when engaged in learning.

In a class, there will always be students who are weak. The teacher should be conscious to detect these weak students and give them more attention. They should be combined with those students who are good in the subject. Teachers should give group seatworks and exercises, and see to it that the weaker ones are being guided as they go through the tasks.

Although perceived stress is also not a potential predictor of academic performance in Science, the teachers should still see to it that their academic requirements are reasonable enough so that they do not overload their students with many tasks which need to be finished at a very limited time. Overburdening the students will cause them to have very few hours of sleep which could be detrimental to their health. When students will have health problems, they may not be able to concentrate on their academics and may not be able to deliver the requirements in their classes. This may affect the students' academic performance.

The school's Guidance Counsellor should regularly have a consultation with the students regarding their academic workloads and academic performance. Since high levels of perceived stress can have adverse effects on academic performance, the Guidance Counsellor should implement programs that will help students cope with stress.

On the part of the teacher's competency handling Science, since the Department of Education now implements the spiraling program for Science where Earth Science, Biology, Chemistry, and Physics will be taught in every grade level, teachers must be retooled because not all are capable to handle the four areas of Science.

The researcher hopes that the findings of the study will become a basis for the school administrator, as well as Science teachers in UPHS Cebu, to further enhance their curriculum for a better academic performance in Science.

V. CONCLUSION

Certain factors affect learning. In education where the goal is for every student to learn, these factors should be interacting harmoniously to effect a more heightened more academic performance of students in Science.

In this study, Science teacher's efficacy and Science anxiety are significant potential predictors of academic performance in Science. In this regard, this necessitates that teachers should be proficient in the Science subjects they are handling to develop the optimum potential of the students in the subject.

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