

# **Work Attitudes as Correlate to Academic Performance of the Bachelor of Science in Industrial Technology Students in the University of Northern Philippines**

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## **ABSTRACT**

The quality of student's performance in Technological Education is influenced by many factors such as facilities, equipment, hand tools, instruction, methodology, and the students. The study aimed to determine the performance of the Bachelor of Science in Industrial Technology Major in Automotive Technology students in University of Northern Philippines, Vigan City, Ilocos Sur, Philippines and the influence of some factors. The descriptive-correlational research design and documentary analysis were used. The performance was measured in terms of knowledge, manipulative skills and work attitudes. It was found out that the BSIT Program had a pool of highly qualified faculty and had

more than adequate physical resources. The student respondents had fair grades in their general education subjects and good grades in technology major subjects. The level of performance of students along knowledge was good; very good along manipulative skills; and very high along work attitudes. The students' level of performance along knowledge and skills was not influenced by the BSIT program profile; however, work attitudes significantly affected the students' performance. The students' level of performance along knowledge and work attitudes was not influenced by their scholastic achievement. However, there are some aspects of skills, namely, diagnostic and speed/time which are significantly influenced by their scholastic profile.

**Keywords** - Technological Education, performance, BSIT, descriptive-correlational design, University of Northern Philippines

## INTRODUCTION

Education is an important tool in all stages of national development. If used towards constructive ends, it enhances the individual's personal worth. A person's value to the nation is almost in direct proportion to the efforts expended in learning. Investment in education for the whole citizen tends to increase its productive power. The international community of nations has recognized education as a fundamental human right (Mohammed, 2015) and was also agreed in the Millennium Development Goals, which acknowledged education as an indispensable means.

In a world of swift technological change, it is neither enough nor of prime importance to equip students with the skills essential to their jobs. The real challenge is to equip them with more core knowledge and skills that will enable them to adapt successfully in the future the jobs and environment that might require different skills. In line with the educational development goals of the country, the University of Northern Philippines, continuously strives. To improve its curricular offering, skills development focused on middle-level to first-level skills manpower.

The Philippine government has recognized the need for classifying, standardizing and certifying the skills occupation in as early as 1974. The Labor Code empowered the TESDA to establish National Trade Skill Standards now being called National Certificate, in consultation with workers and employers' organizations and appropriate government authorities and administer the standards.

It is expected that the quality of instructors reflects the results of education. This statement is in consonance in the Chapter 3 of “Effective Learning and Teaching-Project 2061” which says that students respond to their own expectations of what they can and cannot learn. They believe they can learn something and they usually make headway. Thus, teachers need to provide students with challenging, but attainable learning tasks that could help them succeed.

Primarily, the two important factors to be considered in the classroom are the learner and the instructor. With this, the Technological Education instructor is expected to master his subject matter and improve his instructional skills. Moreover, he displays quality workmanship.

The Bachelor of Science in Industrial Technology (BSIT) program is intended for the student to become a craftsman or technician that may lead him to land a job in the industry, manufacturing, transportation, construction, service jobs, and other industrial occupations which are usually established in the different communities. Thus, the preparation of BSIT students is manifold to help them enter into the industries and constructions or to be self-employed. This is expressed in the mission statement of the college i.e. to prove the students the necessary knowledge, skills and attitudes to become highly productive technicians with the potential of becoming managers in their field of specialization.

The program has the following objectives: 1) To provide students with technical and vocational knowledge, skills and attitudes needed for local and national development; 2) To prepare and train students in specific trade and technical area of specialization for self-employment in industrial establishments or agencies; 3) To train students to cope with the demands of time; and 4) To transfer technology to different communities who need vocational knowledge and training to uplift their economic condition.

Automotive Technology is one of the most important technology programs in demand in the labor sector. Almost 80% of the whole population in the community has vehicle from two wheels up. The result of the study was utilized by the academe or technology education to find ways to promote technological literacy among the students in a broad and encompassing nature. This is to address the needs of the students to learn how to adapt to technological change and how to deal with forces that influence their lives and potentially control and shape their future.

## FRAMEWORK

As to the Philippine Statistics Authority NSO-NCR (2014), it showed that as of January 2013, 37.94 million persons were employed and classified as the labor force which comprised of 92.9% of the total employment rate. Translating the above figure, it disclosed that there is a demand as to the number of skilled workers to expanding industries in the local market alone and expectedly the same in the global industry. Consequently, there is a big challenge among technological institutions in the Philippines since they have a crucial role in molding or developing the skills and abilities of students. This is for the students not just to get a job, but to have a better job in the future. Along this line, technological institutions should provide graduates who are responsive to the local and global industries. Constant revisions and improvements of educational facilities are indeed necessary.

Beder (1989) stated that University education has much to do with providing credentials and prestige to a fortunate group of young people, equipping students with vocationally relevant skills. In fact, education that is vocationally oriented and is being looked down in both Britain and the United States during the 19th century. Common people were trained for a specific vocation whilst 'gentlemen' were educated.

However, others, while agreeing that the development of effective behavior is essential to student's achievement, Brophy (1986), believed that basing the instructional adaptation on student preferences does not improve learning and may be detrimental. According to Reid (1987), several different instructional techniques are used for students who have problems in learning, remembering, and communicating information. One of the techniques is Direct Instruction which is based on systematic curriculum design and highly structured, fast-paced lessons wherein students participate actively and often. The other is learning strategies to enhance memorization or problem-solving skills where teachers may also assist their students to work around individual learning disorders.

From an educator's viewpoint, schools exist to serve both society and the individuals, striking that balance must necessarily limit individualized education (Davidman, 1981). Also, the actual impact on classroom teaching may be limited unless teachers can be persuaded to use that knowledge (Grasha, 1984). One solution to this problem might be the possible impact of teaching and learning styles and at the same time to develop "cultural-sensitive pedagogy".

In the study of Cooper and McIntyre (1996) which aimed to explore the professional knowledge, ideas which teachers use in their day-to-day classroom teaching that are not generally made explicit by teachers and which teachers are not likely always to be conscious of using (p. 19). Suhr (1988) describes a grading scheme based on peer and professor evaluation. Students are asked to rate the class participation of each of their classmates as high, medium, or average. If the median peer rating is higher than the instructors' rating of the students, the two ratings are averaged.

Some journal articles on cognitive and learning styles (unfortunately, the two terms are sometimes used interchangeably) in elementary (e.g., Carbo, 1984; Pizzo, 1982), secondary, postsecondary (e.g., Grasha, 1984; Pettigrew & Zakrajsek, 1984; Sapp, Elliott, & Bounds, 1983; Schmeck & Grove, 1979), adult education (e. g., Dorsey & Pierson, 1984), and vocational education (e.g., Birkey, 1984; Fourier, 1984; Gregorc & Butler, 1984; Walker, Merryman, & Staszkiwicz, 1984) also corroborate to the coverage of the study.

## **OBJECTIVES OF THE STUDY**

The study aimed to determine the status of the Bachelor of Science in Industrial Technology program in terms of faculty, physical, hand tools resources, the scholastic profile of the students, their level of performance along knowledge, skills, and attitudes. Finally, to find out if there is a significant relationship between the performance of students and the BSIT program status, and students' scholastic profile.

## **METHODOLOGY**

The study made use of the descriptive-correlational research design. It involved descriptions, recordings, analyses and interpretation of conditions of the respondents of the study. Documentary analysis was also used to verify the facts that were reflected in the survey checklist. The descriptive method was also used to determine the BSIT program status and the students' scholastic/academic achievement of the Second-Year Students enrolled in the College of Technology of the University of Northern Philippines, Vigan City, Ilocos Sur while the correlational method was utilized to determine whether the performance of the students along knowledge, skill and work attitudes can be influenced by other related factors and scholastic profile of the students.

The research instruments used in the study were the questionnaires on knowledge and skills of the TESDA. A written request was made to the TESDA Provincial Director of Ilocos Sur prior to the conduct of the survey. The 16 teachers on whom the study focused were selected on the grounds of there being some consensus among their pupils about strengths in their teaching, and their availability and willingness to participate. 'Good teaching' was defined as what was seen to be good in particular occasion by the particular teacher, and his or her pupils. Of the 16 teachers, four were primary school teachers and the other 12 were from ten different subject departments of the secondary school.

Each teacher was observed for a 'unit of work' of between two and six hours, and was interviewed about the observed teaching after every lesson and again at the end of the whole unit. To ensure that it was the teachers' authentic accounts of their teachings that were articulated, some ideas to achieve this involved:

- Emphasizing what was good about the teaching, in the eyes of the teachers and their pupils;
- Focusing on specific classroom events which occurred when both teacher and researcher were present;
- Avoiding the imposition of any researcher assumptions about good teaching or about how to make sense of teaching;
- Helping teachers to remember the things they did well, the most important element to interview the teachers very soon after the observed lessons.

## **RESULTS AND DISCUSSION**

### **Status of the BSIT Automotive Technology Program**

#### **Faculty Resources**

Out of six Automotive Technology faculty, three or 50% hold master's degree, two or 33.33% have earned units on doctoral program, and one is currently pursuing a master's degree. This implies that all the faculty respondents are highly qualified and still want to enhance the basic academic preparation and professional skills by enrolling in graduate courses. The findings suggest that the higher the educational qualification of teacher, the better will be his performance.

This supports the statement of Cambridge University Reporter in 2003 that academic performance is frequently defined in terms of examination performance. In the study, academic performance was characterized by performance in tests, course work and performance in examinations of undergraduate students.

According to the UCU prospectus, admission points are weights attached to the applicant's past academic records (UCU, n.d. ) and according to the Uganda Universities and Other Tertiary Institutions Act (2001), there are three main entry schemes to higher education in Uganda, the direct entry (A' level), the mature age entry scheme and diploma entry 15 scheme. The admission points were characterized by direct entry scheme (A' level), diploma entry scheme and mature age scheme.

**On Years of Experience in Teaching Automotive Technology.** Three or 50% of the faculty respondents have been in the teaching profession for 8-11 years. Two or 33.33% have been teaching for more than 16 years; and one has been teaching for three years. This means that most of the automotive technology instructors are "seasoned" teachers owing to their length of service in teaching.

**On Seminars and Training Attended.** Four or 66.67% of the faculty respondents have not yet attended seminar related to automotive technology in the national level. However, two or 33.33% were able to attend 1-5 seminar/training in the national level. Five or 83.33 were able to attend 1-5 seminars/training in the provincial level. Five also attend 1-5 seminars/training in local level and one of the faculty respondents has more than 10 seminars/training attendee in the local level.

The data reveal that the instructors are highly growing professionally when he attends in-service trainings and seminars. The knowledge he gains in such further improves his competence as an instructor.

### **Physical Resources**

Physical resources as an indicator for the BSIT program status (mean=3.48) is at "adequate" level. This implies that the equipment used for instruction, hand tools and shop facilities with the exemption of dressing and tool rooms which were perceived as "adequate". Physical resources are enough to accommodate the number of students enrolled in this course.

**On Equipment for Instruction.** Automotive technology requires a reasonable time for laboratory work to supplement the lecture given by the instructors. This necessitates the availability of some equipment to be used by the students. Equipment is "more than adequate" with an overall mean rating of 3.62. This implies that the aforementioned equipment needed during lectures and laboratory hours are available for use, and these enhance the development of the manipulative skills of the students

**On Hand Tools.** Hand tools are needed in shop work. Since these are the most commonly used tools in an automotive shop, every automotive technology student should have a grip of these tools to be familiar with it and its uses. Hand-tools were assessed by the respondents also as more than adequate. This implies that hand tools are enough for use in the laboratory and these enable the instructors to train the students in the proper use of these hand tools.

**On Shop Room Facilities.** Shop room facilities is rated “adequate” with an overall mean of 3.30. The laboratory, lecture, and library area are at “more than adequate level, while dressing and tool room are rated “less than adequate”. This implies that the students demand improvement in some shop facilities like dressing and tool rooms. The students believe that even if they are males (which means that they can just change their uniforms to working clothes anywhere in the shop area), dressing rooms should still be provided as a standard facility in the technological department. The tool room is also needed in as much as they feel that shop area must be organized and that the tools must be kept properly.

### **Scholastic Profile of the BSIT Automotive Technology Students**

In Mathematics and English, 29 or 70.73% students got an average grades between 2.6-3.0 with equivalent of “Fair”. Eleven or 26.83% got 2.1-2.5 which means “Good” and one obtained an average of 1.6-2.0 or “Very Good”. In Physics, 35 or 85.37% got 2.6-3.0 and six or 14.63% got 2.1-2.5. In Psychology, 31 or 75.61% got 2.6-3.0, eight or 19.51% got 2.1-2.5, and two or 4.88% got 1.6-2.0. Further analysis showed that most students have grades described as “Fair” which means that their achievement in the above-mentioned general education subjects is just above the passing mark.

Out of 41 students, 26 or 63.41% got 2.1-2.5 and 15 or 36.59% got 2.6-3.0 in Technical Drawing. In the Tech. Ed. Automotive Technology subjects, 20 or 48.78% got 2.1-2.5 and 13 or 31.71% got 1.6-2.0. Only eight or 19.51% got a “Fair” mark of 2.6-3.0. This data showed that the students obtained higher grades in Technological subjects since most of them got Good grades.

With regards to scholastic achievement, the Second-Year BSIT students obtained a mean of 2.63 in Mathematics, 2.64 in English, 2.62 in Physics and 2.62 in Psychology. The overall mean for the aforementioned general education subjects is 2.63 which has a qualitative equivalent of “Fair”. In Technological Automotive Subjects, the student respondents obtained mean ratings of 2.48 and 2.26 has a qualitative equivalent of “Good”. The Scholastic performance of the student respondents in terms of their average grades in all general and

technological subjects during their first and second year is described as “Good” with a grand mean of 2.50.

According to Wright (2016), some students enjoy traditional academic subjects, while others see it as a boring subject. Also, many agree that some people are just intellectually unprepared to excel in school. However, formal education is tremendously significant to acquire jobs, especially in a competitive economy. For students who are poor in subjects like English and Math, vocational schools provide structure and training for future employment.

***Performance of the Students***

Table 1. Performance of the Second Year BSIT Automotive Technology Students along Knowledge and Manipulative Skills

Performance Items	Allotted Points	Mean	% Performance	DR
Knowledge	50	28.95	57.9	VG
Manipulative Skills				
Diagnostic Test	15	9.22	61.47	VG
Engine Tune-up				
a. Belt Tension	5	3.07	61.4	VG
b. Fitting Hose	5	4.15	83.0	VG
c. Valve Tappet Adjustment	5	2.39	47.8	VG
d. Ignition Timing	5	2.80	56.0	VG
e. Idling	5	2.63	52.6	VG
Electrical System	20	14.44	72.2	VG
Gasoline Pump	10	7.17	71.7	VG
Techniques	20	13.44	67.2	VG
Speed Time	10	6.24	62.4	VG
Overall			65.55	VG

Legend:

- 81-above Excellent
- 61-80 Very Good
- 41-60 Good
- 21-40 Poor
- 0-20 Very poor

The students got an excellent rating in fitting hose since this task is very simple. Whereas in valve tappet adjustment, ignition timing and idling speed, which are far more complicated tasks, the students obtained good ratings. Furthermore, the table reflects the overall performance rating of the students along manipulative skills which is 65.68% with a qualitative equivalent of Very Good. This may be attributed to the interest in automotive work and intensive training they get in shop work in which are made to diagnose and/or fix defective vehicles. Skills require the learner with an opportunity to interact with the content, define learning goals, and explore new understandings through authentic, challenging tasks not just by facts alone (Isernhagen, 1999).

### On Work Attitudes

The BSIT students have Very High performance level in work attitudes as revealed by an overall mean of 4.35. The respondents have a rating of very high in the following items: observance of shop rules and regulations, attendance in class, honesty, diligence and responsibility, resourcefulness and creativity, cost-consciousness, economy and safety, concern and interest in coping with needs and problems and willingness to learn.

Table 2. Level of performance of the BSIT automotive technology students along work attitudes

Items	Mean	DR
Observance of shop rules and regulations.	4.51	VH
Moral/ethical behaviour	4.10	H
Personal/working relations with classmates	4.20	H
Attendance in class	4.54	VH
Leadership	4.17	H
Honesty, diligence and responsibility	4.24	VH
Resourcefulness and creativity	4.49	VH
Cost- consciousness, economy and safety	4.41	VH
Concern/ interest in coping with needs/problems	4.22	VH
Willingness to learn	4.61	VH
Overall	4.35	VH

This may due to the nature of shop work in which the students do not always have the same approaches to the performance of a specific task. This finding

implies that personal work values and attitudes are developed by the students as they are exposed to automotive work. Since this type of job demands physical strength and a great deal of discipline, an automotive mechanic needs proper work attitudes to persevere and complete his tasks. It can be concluded, that work attitudes among technical education students when developed and internalized in the personality become habit patterns and shape their work value systems and consequently, affect their performance on the job.

Students taking up automotive courses in preparation of their future jobs must have a good interpersonal skill. This will help them establish rapport with customers and colleagues. They must use therapeutic communication in dealing with their clientele. In addition, students must have repair and maintenance tasks requiring electrical and mechanical skills. He must also know how to operate hand power tools, and standard industry equipment. He must also use and interpret diagnostic software (scan tools), computer-based software, and electronic diagnostic test equipment. In addition, he must have critical thinking ability sufficient for the diagnosis of automotive failures that will help him identify cause-effects relationships of automotive malfunctions; evaluate vehicle or instrument responses, synthesize data, and draw sound conclusions (Trident Technical College, n.d.).

Students will be more interested to study about technology if they have experienced positive learnings in technology education program which also developed a positive attitude towards technology. This will then contribute to students' technological literacy. Study also showed that students who have positive attitude toward a subject are more participative in learning during and after instruction (Popham, 1994).

### **Correlation between the Students' Level of Performance and the BSIT Program Status**

The overall correlation coefficient of 0.156 between the student respondents' performance along knowledge and program profile failed to attain significance at 0.05 probability level. This means that there is no significant relationship between the two variables. Furthermore, the students can have high knowledge in Automotive Technology regardless of the educational attainment, years of experience and trainings attended by the instructors.

Table 3. Correlation Coefficients between the Level of Performance of the BSIT Automotive Technology Students and Program Indicators

Program Indicators	K	Manipulative Skills							WA
		DT	ET	ES	GP	T	S/T	OA	
<b>Faculty Resources</b>									
Educational Attainment	.132	.172	.074	.017	.068	.091	.112	.003	.121
Years of Teaching	.081	.210	.018	.069	.054	.021	.005	.131	.121
Training/seminars attended	.094	.005	.119	.021	.181	.131	.128	.091	.114
<b>Physicals Resources</b>									
Equipment for instruction	.016	.040	.077	.148	.155	.074	.065	.078	.276
Hand Tools	.178	.195	.001	.083	.077	.029	.011	.080	.411**
Shop Facilities	.263	.183	.074	.092	.013	.157	.104	.074	.236
<b>Overall</b>	.156	.159	.004	.141	.086	.010	.005	.040	.356*

Legend:

- \*Significant at 0.01 prob. Level
- \*\* Significant at 0.05 prob. Level
- K Knowledge
- DT Diagnostic Test
- ET Engine Tune-up
- ES Electrical System
- GP Gasoline Pump
- T Techniques
- S/T Speed/ Time
- OA for Manipulative Skill Overall
- WA Work Attitudes

The respondents' performance along manipulative skills when correlated with the program indicators yielded an overall correlation coefficient of 0.040. This is much lower than the required  $r$  which means that there is no significant relationship between the two variables.

It is hoped that the positive attitudes that were acquired by the students through technology education will influence their lives and career decisions as they experience a lifetime of technological change and adaptation. With this, technology educators play a vital role. They should assess the students in the affective domain to measure attitude changes that maybe attributable to the instructional methods and curriculum (Boser, Palmer & Daugherty, 2015).

### Correlation between the Level of Performance of the Students and the Scholastic Profile

Table 4. Correlation Coefficients between the Level of Performance of the BSIT Automotive Technology Students and their Academic Performance

Academic Performance	K	Manipulative Skills						WA
		DT	ET	ES	GP	T	S/T	
General Education Subjects								
Mathematics	-.160	-.223	-.041	-.222	-.081	-.090	-.117	.311*
English	-.110	-.293	-.054	-.321*	-.069	-.079	-.107	.103
Physics	-.230	-.336*	-.064	-.431**	-.018	-.066	-.100	-.128
Psychology	-.256	-.346*	-.071	-.436**	-.033	-.074	-.112	-.126
Overall	-.227	-.356*	-.069	-.424**	-.054	-.088	-.126	-.016
Technological/ Automotive subjects								
Technical Drawing	-.262	-.166	-.152	-.106	-.035	-.110	-.176	.250
Technological subjects	-.021	-.371*	-.262	-.341*	-.263	-.282	-.298	.106
Overall	-.170	-.370	-.276	-.306	-.271	-.312	-.312*	.196

The performance of the students in engine tune-up when correlated with their academic achievement resulted to an overall correlation coefficient of .069 and -.276 in the general education and technological/automotive subjects, respectively. These values are lower than the required  $r$ , which means that there is no significant relationship between the two variables.

The correlation coefficient of -.424 between performance in electrical system and academic profile is significant at .01 probability level. This means that there is a very significantly relationship between the two variables, especially with the subjects Physics (-.431) and Psychology (-.436). Correlation between performance and the English subject is significant only at .05 probability level. However, the overall correlation coefficient between academic achievements in technological/automotive subjects is -.306 which not exceed the required  $r$ . This means that there is no significant relationship between the two variables though correlation with Tech Ed subjects yielded the value -.341, which is significant at .05 level.

The students' manipulative skills performance specifically in speed/time when correlated with their average in general education subjects resulted to a computed coefficient of -.126 that do not denote any significant relationship. However, when correlated with technological/ automotive subjects, it yielded the value of -.374 which is significant at .05 level.

The correlation coefficients between performance in other areas under manipulative skill; namely gasoline pump and techniques, wherein the computed values failed to exceed the required  $r$ . This finding confirms the result of the work of that there is no significant relationship between academic performance and skill performance in gasoline pump. This means that there is no significant relationship between academic profile and the aforementioned variables. Durden & Ellis (1995) reported that academic records are the most important determinants of student performance. This suggests that the higher the previous performance, the better the students will perform academically (Considine & Zappala, 2002). The findings contradict the statement of De Luca (1992) and James (1991) that problem-centered instruction as an authentic way to focus on the development of students' higher-level cognitive skills.

Furthermore, the data on the correlation between performance along manipulative skills and academic achievement imply that some subjects can influence the students' learning and development of specific skills in automotive technology. These are English, Physics, Psychology and Automotive subjects. In as much as English is the medium of instruction in automotive technology, the students need the basic communication skills to understand theories and likewise, discuss these with the instructors and classmates. Physics is also important because this subject enhances the students' understanding of the scientific processes involved and laws applied in automotive technology. Psychology provides the students with a clearer perspective into the realm of the human self. Therefore, it helps students come up with a positive understanding of the various issues and circumstances of life. Specialized subjects offered in the automotive technology program are very important in the development of a skilled mechanic. It is here the students are trained intensively in all aspects which prepare them for future jobs in the automotive world.

Furthermore, the students' performance along work attitudes when correlated with the students' scholastic profile yielded an overall correlation coefficient of  $-.010$  for general education subjects, and  $-.196$  for automotive subjects, both values of which are not significant at  $.05$  probability level. Since the computed values are lower than the required  $r$ , there is no significant relationship between the two variables. In addition, further reflects significant correlation at  $.05$  level only between work attitudes and the average grade in the subject Mathematics ( $-.311$ ). This implies that Mathematics indeed is difficult subject. Thus, a student must develop desirable attitude to pass the subject and likewise apply mathematical theories in automotive work. Heaviside (1892) said that arousing

the learner is a feeling that mathematics is indeed a fundamental reality of the domain of thought, and not merely a matter of symbols and arbitrary rules and conventions.

## **CONCLUSIONS**

The Bachelor of Science in Industrial Technology program of the College of Technology of the University of Northern Philippines had a pool of highly qualified faculty; most of them have finished a master's degree, have been teaching for more than eight years, and have attended seminars in the provincial and local levels. It also has more than adequate physical resources which make learning meaningful and the acquisition of knowledge, skill and attitudes more effective. Students in the BSIT Automotive Technology have higher grades in the major subjects than in general education subjects. The level of their performance in terms of manipulative skills is higher than their performance in the theoretical aspects of the course. It is in work attitudes where the students get the highest level of performance. The students' level of performance along knowledge and skills is not influenced by the BSIT program status. However, work attitudes greatly affect the students' performance. The level of performance along knowledge and work attitude is not influenced by their scholastic achievement. However, there are some aspects of skills, namely, diagnostic and speed/time which are significantly influenced by their scholastic profile.

Skills and attitudes inventories and constructs were found to be standardized tests and previous grades as predictor of academic performance, yielding substantial incremental validity in predicting academic performance (Crede & Kuncel, 2008). Also, professors in the developing countries should be fully equipped with high level of analytical skills; the capacity for critical reasoning, self-reflection and conceptual grasp which require the ability to learn autonomously and exercise flexibility of mind (Bagongon & Edpalina, 2009).

## **TRANSLATIONAL RESEARCH**

The findings of the study may be best translated to various media of communication for information dissemination, if not, further awareness campaign. Indigenous materials such as wall newspaper, one-act play, among others, may be designed for stakeholders from the remote areas, and social media, mass media (TV, newspaper, and radio) may be used in the information dissemination.

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