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# Knowledge, Skills and Work Attitude as Correlates to Job Performance in Exploratory Adtech Program of Grade 8 Students

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## ABSTRACT

The enhanced K-12 Basic Education Program seeks to provide a quality 12-year basic education program that each Filipino is entitled and in consistent with Article XIV, Section 2 (I) of the Philippine Constitution which states that the state shall establish, maintain, and support a complete adequate, and integrated system of education relevant to the needs of the people and society.The study aimed to determine the level of performance of the Grade 8 Adtech students of the Philippine Science High School Ilocos Region Campus, San Ildefonso, Ilocos Sur in S.Y. 2013-2014. The study made use of descriptive correlational research design. Results showed that the overall grade exhibited a "very good" level of performance in the curricular subjects. Knowledge test of the student obtained

an "Excellent" grade, and students' work attitude is highly important. The student performance along knowledge (0.284), skills (0.301); attitude (0.272) in the Exploratory AdTech Program resulted that no significant relationship. The correlation coefficients between the level of performance of the students in Exploratory AdTech Program and the students' performance along attitudes, manifested a significant relationship. Matching of competency requirements and standards of the 12-year basic education are necessary to acquire skills and match the College Readiness Standards for further education and future employment of students.

***Keywords*** **–** Education, performance, Grade 8, Adtech, descriptive correlational method, Ilocos Sur, Philippines

## INTRODUCTION

The world is undergoing unprecedented changes brought by the rapid advancement of information and communication technologies, trade liberalization, and globalization (UNESCO, 2010). Many countries in the world have at least 12 to 13 years of combined primary and secondary education. The Philippines is one of the few countries in the world with 10 years of elementary and secondary education (UNACOM, 2010).

The four Asian countries like Brunei, Malaysia, Singapore and Hong Kong have a curriculum that supports 21st century learning to enable all students achieve enhanced language and mathematical abilities; a broadened knowledge base, increased competence in critical thinking, independent learning, interpersonal skills and increased exposure to other learning experiences in moral, civic, physical and aesthetic access (Gwang-Jo Kim, 2014).

According to the findings of Buelva (2000), Philippines is one of only three countries in the world (the other two being Angola and Djibouti) and the last country in Asia that still follows a 10-year pre-university cycle. Basic education has been assessed every year, but still, students who finished basic education still do not possess sufficient mastery of basic competencies. One reason is that students do not get adequate instructional time or time on task. President Benigno S. Aquino III (2010) in one of his public speeches said, "Reforms are needed to achieve substantial improvement. We need to add two years to our basic education. I want at least 12 years for our public school children to give them an even chance at succeeding, to enhance K+12 basic education programs."

Academic performance and achievements are said to be the center of the educational system. These could be appreciable indicators of school effectiveness. Integrative teaching effectiveness can be directly assessed through the academic performance of the pupils as shown by their achievement level within subject area boundaries. General education can and should make an important contribution in helping the students develop intellectual curiosity, inquiry and analysis; to build skills of logical analysis; to gain understanding and competence in using the different forms of reasoning employed in various fields; and to deepen respect for all areas of knowledge.

In the context of a new school program, the Philippine Science High School (PSHS) in Ilocos Region based at San Ildefonso, Ilocos Sur adheres to the new school program, the K+12. The Department of Science and Technology (DOST) mandated PHS a free scholarship with especial emphasis on subjects in Sciences. This is according to Section 2 of Republic Act 3661 that established the first Philippine Science High School Campus in 1964.

The K+12 program has two objectives: a) To give every student an opportunity to receive quality education based on an enhanced and decongested curriculum that is internationally recognized and comparably develop a curriculum that is rational and focused on excellence; produce a pool of highly qualified and adequately trained Mathematics, Science and English at all levels; and produce graduates who are globally competitive and whose credentials are recognized internationally; and b) To change public perception that high school education is just a preparation for college; rather, it should allow one to take advantage of opportunities for gainful career of employment and /or self-employment in a rapidly changing and increasingly globalized environment.

The study posited that the teacher-related and program-related factors are associated with learning competencies of the Grade 8 students in Adtech. Thus, the researcher felt motivated to conduct an assessment of the effectiveness of the implementation of the Exploratory Adtech in the Grade 8 program of K+12 of the Philippine Science High School Ilocos Region Campus by assessing the performance of the students in their last year of Exploratory Adtech Program or their last year in Junior high school. The findings will be utilized to improve more the implementation of Grades 7 and 8 in the Exploratory Adtech subject offered specifically in the Industrial Arts that align to Science- the Basic Electricity and Electronics.

For students, it is also expected that learning would become a valuable experience for them because their opinions would be taken into account for future planning of the Adtech Grade 8 program activities based on their honest

evaluation of the factors affecting their learning competencies, and the Adtech program as a whole.

Student performance in school as stated by Bacon (2011) is based on finding resources associated with school systems, the school curriculum and the quality of education provided to students. Through this study, it is also hoped that the administrators would realize the need for improvement on staff, instructional materials, tools and equipment, and other facilities needed in implementing the Adtech Grade 8 program. Through hands-on activities, the students combined intellectual stimulation and expanded learning (Dewey, 1916). In addition, Korwin and Jones (1990) stated that hands-on demands that students interact with their learning environment that plays an important role in technology education curriculum.

## OBJECTIVES OF THE STUDY

The study determined the level of performance of the Grade 8 Adtech students of the Philippine Science High School Ilocos Region Campus, San Ildefonso, Ilocos Sur in S.Y. 2013-2014. Specifically, it sought to find out the level of adequacy of physical resources of the Adtech Exploratory Program along: a) classrooms; b) equipment; c) hand tools; and, d) library. Also, it sought to find out the level of performance of the K+12 students in their grade 7 curricular subjects along: a) Academic Subjects; b) Mathematics; c) Integrated Science; d) Computer Science; e) Social Science; f) English; g) Filipino; h) PEHM; i) Values Education; and, j) Adtech Basic Electricity.

## METHODOLOGY

### Research Design

The study involved descriptions and record analysis to verify the facts that were reflected in the survey checklists. The study made use of the descriptive research design to determine the work attitudes as correlates to job performance in Exploratory Adtech Program of Grade 8 students. It also determined the Grade 8 Adtech Program status and the students' scholastic/academic achievement, while the correlational method was utilized to find out the performance of the students in terms of knowledge, skills and work attitudes whether it influenced by Grade 8 Adtech– related factors and scholastic profile of the students.

**Participants and Research Site**

The research participants are the 81 Grade 8 Adtech students of Philippines Science High School, San Ildefonso, Ilocos Sur, Campus. The researcher sought permission from them prior to the conduct of the survey.

**Profile of the Adtech Administrators**

Half of the administrators belonged to the 37 and 33 age brackets, respectively. The data showed that the administrators of the Philippines Science High School are relatively young. Thus, the faculty are energetic to lead the institution. The administrators are female. They are holders of doctorate and masters' degree with doctorate units, respectively. Educational attainment serves as the basis for getting special job and level of work in employment as well as the wages appertaining thereto.

The two administrators' area of specialization are mathematics and physics, respectively. They have rendered service in Philippines Science High school for 12 years.

They have attended seminars of which more than five are international, more than 15 are national, more than 15 are provincial and more than 15 are institutional, respectively. Education and training in formal education determine the individual's level of qualification for employment. They are members of more than five organizations.

The two administrators hold the position as Special Science Teacher 1V, designated as Curriculum Instruction Service Division and Science, Mathematics and Technology Head, respectively. They hold permanent position.

**Profile of the Faculty**

The faculty belonged to 30 and 26 age brackets. They are relatively young and energetic to teach their field of specialization. They are female. They are holders of master's degree with doctorate units and master's degree, respectively. The data revealed that Philippine Science High School met the educational teacher qualification prescribed by the Professional Regulation Commission. Pursuing higher studies is to widen their horizon in their field of specialization. They hold Physics as their area of specialization.

The respondents have four and two years teaching experience, respectively. They had attended seminars of which more than 10 are provincial and more than 10 are institutional, respectively. Cooperative trade training is given in occupation itself, while the schools provide the related instruction and needed skills. Further,

a teacher grows professionally when he attends in service trainings and seminar. They are members of more than two organizations and both hold the position as Special Science Teacher II. They are designated as Physics, Chemistry and Adtech Teacher and Physics and Adtech Teacher, respectively. They hold permanent position.

**Instrumentation**

The questionnaire used in this study was adapted from the Desired Learning Competencies in Grade 8Adtech in Basic Electricity Curriculum Module Book in determining the level of performance of the students. Free test was conducted to validate the Desired Learning Competencies. The research instrument used in work attitude and on physical resources was adapted from Bajet (2000) with his permission. This was designed and structured to capture the necessary data needed in the study. Questionnaires for student respondents were elicited from physical resources. The items in these instruments will be measured by a five-point rating scale described as follows: 5-very adequate; 4 more than adequate; 3 adequate; 2 less than adequate; and 1- not adequate.

Questionnaires for students elicited from knowledge test are questions coming from the different Learning Outcomes of the K+12 Basic Education Curriculum Technology and Livelihood Education learning module composed of questions for Basic Electricity. The data were treated statistically through frequency, percentage, weighted mean and simple correlation.

## RESULTS AND DISCUSSION

**Level of Adequacy of Physical Resources of the Adtech Exploratory Program**

The Adtech Exploratory Program of the Philippine Science High School requires a reasonable time or laboratory work to supplement the lectures given by the instructors. This necessitates the availability of some physical resources to be used by the students.

**On Classroom.** Three classrooms are properly lighted and ventilated. Each classroom contains a pair of teachers' table and chair, a total of 81 chairs for the students, LCD projector, and multimedia speakers with individual tool cabinet. Out of the three classrooms, there were two rooms that contain a display cabinet for Adtech project outputs. There is also a bulletin board for information of activities intended for the updates and issues in the subject. However, the students demand improvement in some aspects, like dressing rooms. They do believe that

a dressing room must be provided as a standard facility in the technical work place. Also a wiring board should be installed in the classrooms.

Many educators stressed that basic instructional materials will have to be developed very carefully since these may be the only materials most of the students will have in the process of education. They should provide for the desirable values and the skills and knowledge proposed to be learned in each learning level and adequate achievement of quality.

**On Equipment and Hand Tools.** Equipment and hand tools are needed in class/shoproom work. Since these are the most commonly used tools in the Adtech subjects, every student should have a grip of these tools for him to be familiar with them and their uses. The Philippine Science High School, San Ildefonso campus had wirings.

This finding implies that laboratory shop equipment and tools are very important factors in the acquisition of knowledge and manipulative skills of students. Only through practice can the students put into use the theories they have learned. Teaching and learning can be facilitated with a favorable environment, which includes adequate facilities, equipment and other instructional materials and aids. The school plant as a whole provides an important means of developing aesthetics, intellectual, psychological, social and moral education of the learner. Thus, it is important that school administrators should possess a thorough working knowledge about the school plant.

In addition, effective teaching and learning cannot take place without good facilities, instructional materials, educational tools and devices. These give support to the curriculum and provide teaching useful aids to instruction. Physical facilities development must, therefore, be given as much concern as curriculum and staff development in every school system if quality is to be attained.

Furthermore, the use of media materials in teaching is now inadequately accepted in all levels of education. A method of teaching that depends really on textbook is now considered inadequate. The necessity of the use of instructional aids and the corresponding appropriate teachings making the teaching and learning process more effective, economical and functional. Visual materials have greater use in the classroom than either audio or multi-sensory materials. Such aids include: display boards; filmstrips; overhead transparencies; slides and specimens and objects.

**Level of Performance of the K+12 Students in Their Grade 7 Curricular Subjects**

The student respondents' overall grade exhibited a "very good" (82%) level of performance in their Grade 7 curricular subjects. Hands-on activities will further visualize and conceptualize abstract ideas which are believed to be more effective on imparting the lessons. Students get fascinated with the tools when they experience manipulating them.

The result emphasized that for students to become practitioners of the arts of engineering and technology, they must first acquire both the empirical and theoretical knowledge; the first one refers to the knowledge of experience while the second refers to the knowledge of thought. Empirical knowledge is based on observation of others. Theoretical, on the other hand, refers to ideas and conclusions learned from experience and its systematically organized study and thoughts.

In addition, humanistic view refers to the development of the individual or the learner. From this view point, the teacher accepts the responsibility of giving all for the development of an individual. Furthermore, it is necessary on the humanistic view to make the text authentic enough and to make the students the center of the teaching-learning process. According to Cardon (2000), construction of knowledge is problem-solving of learning theory that plays contemporary technology education curriculum.

**Level of Performance of the Grade 8 Adtech Students**

The data on the level of performance of the Grade 8 Adtech students of the Philippine Science High School, San Ildefonso, campus along knowledge, skills and attitudes are based on their lessons from the grading period in Grade 7.

**On Knowledge.** In administering the knowledge test, the student respondents obtained a descriptive rating of "Excellent" with a mean grade of 93%. The knowledge test had 85 items that were taken in the first and second grading period. This implies that the student respondents' performance along the knowledge test is excellent.

Learning within the technology education environment includes three primary learning theories: construction of knowledge, problem solving, and hands-on learning theories (Herschbach, 1998). Johnston (1979) argued that what is internalized is not the behavior, but the system that organizes the specific acts involved. In the technology education perspective, Herschbach added that instructions are based on cognitive theory from passive learning knowledge.

**On Skill Test.** The student respondents got a descriptive rating of "Very Good" with a mean rating of 89%. This implies that most the student respondents follow all the criteria of the skill test like the quality of work, workmanship and speed. Also, they follow the requirements and specifications for the skill test that are listed as : a) identifying circuit parts; b) analyzing circuit and parts tracing for any trouble; c) assembling circuits and parts repair with corresponding points. Each of the student respondents is assigned to his/ her respective work place to perform individually.

The finding is in consonance to the definition of Gokhale (1996) that hands-on learning theory is the basic premise that students learn as a result of doing or experiencing things in the world, and learning occurs when mental activity is suffused with physical activity.

**On work Attitude.** The Grade 8 Adtech students' work attitude as revealed by an overall mean of 4.72 is highly important.The respondents have a rating of highly important in all items: a) Observe shop rules and regulations (with a mean rating of 4.84); b) Attend regularly and punctually (4.78); c) Demonstrates honesty, diligence and responsibility and sincerity;d) Shows willingness to learn (4.74); e) Shows resourcefulness and creativity in job performance (4.71); f) Shows the concerned interest in coping with needs and problems; g) Shows willingness to learn (4.70); h) Establishes and maintain personal and working relations with fellow students (4.69); i) Accepts and performs leadership roles with integrity and sincerity(4.65) and j) Sets example in moral and ethics behavior to fellow students with a mean rating of 4.62.

These findings imply that personal work values and attitudes that are developed by the students in this type of job demand physical strength and a great deal of discipline. Working with manual needs proper work attitudes to preserve and complete the assigned tasks. Attitude is a persistent disposition to act either positively or negatively towards a person, group, object, situation, value or course. Thus, it is essential to every work or activity because it provides an internal motivation to every individual to carry on his desire to achieve his ambition and to attain better education and employment.

Beder (1989) reported that University education is highly recognized with much prestige especially to young students with privileged than those who pursue vocational courses. Educational programs that are vocationally oriented were underestimated in both Britain and the United States during the nineteenth century.

**Relationship between the Performance of the Students in the Exploratory Adtech Program and Adequacy of Physical Resources**

The coefficient of 0.284 between the student respondents' performance along knowledge; 0.301 between the student respondents' performance along skills; 0.272 between the student respondents' along attitude and Exploratory AdTech Program failed to attain significance at 0.05 probability level. This means that there is no significant relationship between the two variables, respectively. This means further that students can have high knowledge in the Exploratory AdTech Program regardless of adequacy of physical resources.

Table 1. Correlation Coefficients Showing the Relationship between the Performance of the Students in the Exploratory AdTech Program and Adequacy of Physical Resources

| Performance | r-value | r-prob | Decision |
|---|---|---|---|
| Knowledge | 0.284* | .039 | Reject Ho |
| Skills | 0.301* | .021 | Reject Ho |
| Attitude | 0.272* | .047 | Reject Ho |

* - significant at .05 probability level

The adequacy of physical resources like class rooms, hand tools classroom facilities and equipment are not a guarantee of high knowledge of Exploratory AdTech Program subject of the students. This is supported by Cokley (2000) in defining academic self-concept of a student's view of his or her academic ability when compared with other students. Academic self-concept can also be measured in specific subject areas (Byne, 1996; Hattie, 1992; & Marsh, Byrne & Shavelson, 1988) such as Mathematics, English, and Science as it involves description and evaluation of one's perceived academic abilities.

The respondents' performance along manipulative skills when correlated with the adequacy of physical resources yielded a correlation coefficient of 0.301. This is much lower than the required value which means that there is also no significant relationship between the two variables.

The respondents' performance along work attitude when correlated with the adequacy of physical resources also yielded a correlation coefficient of 0.272. This is also much lower than the required value which means that there is also no significant relationship between the two variables.

**Relationship between the Performance of the Students in the Exploratory Adtech Program and Student's Performance in Grade 7**

The correlation coefficients between the level of performance of the students in the Exploratory AdTech Program and the students' performance in Grade 7 are on knowledge 0.273 and manipulative skill 0.555, respectively. These values did not reach significance at 0.05 probability level so there is no significant relationship between the two variables. This implies that the learning theories and principles are not influenced by the performance grade when they were in Grade 7.

The correlation coefficients between the level of performance of the students in Exploratory AdTech Program and the students' performance in Grade 7 along attitude, the table clearly manifests that it has a significant relationship. This means that the students tend to be more committed and dedicated in their performance in the Exploratory AdTech Program subject without considering their grade when they were in Grade 7.

Table 2. Correlation Coefficients Showing the Relationship between the Performance of the Students in the Exploratory AdTech Program and Students' Performance in Grade 7

| Performance | r-value | r-prob | Decision |
|---|---|---|---|
| Knowledge | 0.273* | .000 | Reject Ho |
| Skills | 0.555* | .000 | Reject Ho |
| Attitude | 0.004 | .958 | Do not Reject Ho |

* - significant at .05 probability level

The finding implies that personal work attitudes are developed by the students as they are exposed to Adtech subject's work. Since this type of job demands physical strength and great deal of discipline, a technologist needs proper work attitude to persevere and complete the tasks. Work attitudes among technical education students when developed and internalized in the personality become habit patterns that shape their work value systems and consequently, affect their job performance.

This is in support to the statement of Townsend (2002) that teachers influence students' attitudes about education and provide meaningful learning environments by being prepared to effectively teach diverse students. Furthermore, Lent, Brown and Hackett (1994) explain academic self-concept as "specific attitudes, feelings, and perceptions about one's intellectual or academic skills, representing a person's

self-beliefs and self-feelings regarding the academic setting.

The study is delimited in finding the level of adequacy of physical resources of the Adtech Exploratory Program along: a) classrooms; b) equipment; c) hand tools; and, d) library. Further, in finding the level of performance of the K+12 students in their grade 7 curricular subjects along: a) Academic Subjects; b) Mathematics; c) Integrated Science; d) Computer Science; e) Social Science; f) English; g) Filipino; h) PEHM; i) Values Education; and, j) Adtech Basic Electricity.

## CONCLUSIONS

The PSHS sets harmonized policies that nurture innovative programs in support to the PSHS mission and vision towards nation building, and in support to the goal of the Enhanced K=12 Basic Education Program which enhances the basic educational system to support the basic learning needs of students. This also supports the statement of President Aquino that quality education is the long-term solution to poverty.

Development in the Philippine educational system stresses the need for quality Technology and Livelihood Education. To achieve this worthwhile project, the PSHS is giving more attention in molding the youth who are commonly dubbed as the "hope of the nation" especially at this point that the country stands at the threshold of a new era that is expected to bring to the world wonders of technology. At present, there is a shortage of skilled workers in the various occupational fields. What seems to be part of the problem is not scarcity of the job opportunities, but the lack of skilled workers to man these jobs efficiently. The shortage of manpower with specialized knowledge and skills is apparent among many industries that content themselves in employing men with mediocre or average technical skills to man the wheel of the industry. With these issues, the PSHS undergo curriculum enrichment like the K-12 to give appropriate trainings that could take them highly efficient and become high-skilled industrial workers.

## TRANSLATIONAL RESEARCH

The Philippines Sciences High School's K to 12 Basic Education Curriculum in the AdTech program is in line with the College Readiness Standards of CHED, which enhance the skills and capabilities of K to 12 graduates in preparation

to the challenges that await them in higher education. Based on the result of the study, a matching of competency requirements and standards of the 12-year basic education are necessary to acquire skills and match the College Readiness Standards for further education and future employment of students.

## LITERATURE CITED

Bacon, L. S. C. (2011). Academic self-concept and academic achievement of African American students transitioning from urban to rural schools.

Bajet, M. A. Jr. (2000). Employment Opportunities and Productivity of Electrical Technical and Technology Graduates in Region I Doctoral Dissertation, University of Northern Philippines. Retrieved from http://nlpdl.nlp.gov.ph:9000/rpc/cat/finders/NL02/BG08s/300/300/331.htm

Beder, S. (1989). Towards a more representative engineering education. *International Journal of Applied Engineering Education*, *5*(2), 173-182.

Buelva, E. (2002) What is K to 12? http://www.academia.edu/4206472/65752154_Advantages_and_Disadvantages_of_k_12_1A

Cardon, P. L. (2000). At-risk students and technology education: A qualitative study.

Cokley, K. (2000). An investigation of academic self-concept and its relationship to academic achievement in African American college students.*Journal of Black Psychology*, *26*(2), 148-164.

Dewey, J. (1916). Education and democracy. *New York*.

Gokhale, A. A. (1996). Effectiveness of computer simulation for enhancing higher order thinking.

Gwang-Jo Kim. (2014) Asian Education in a Changing World: Emerging Trends and Policy. Retrieved on October 10, 2015 from http://www.ciep.fr/sites/default/files/atoms/files/education-asie-2014-gwang-jo-kim.pdf

Hattie, J. (1992). Self-concept. Hillsdale, NJ: Lawrence Erlbaum.

Herschbach, D. R. (1998). Reconstructing technical instruction.

Johnston, T. D. (1979), Behavior and evolution. Jean Piaget. Random House, New York, 1978, xxvi + 165 pp. English translation by D. Nicholson-Smith. (Originally published as *Le Comportement Moteur de l'Evolution*. Editions Gallimard, Paris, 1976.). Dev. Psychobiol., 12: 633–637. doi: 10.1002/dev.420120613

Korwin, A. R., & Jones, R. E. (1990). Do Hands-On, Technology-Based Activities Enhance Learning by Reinforcing Cognitive Knowledge and Retention?. *Journal of Technology Education*, *1*(2), 26-33.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of vocational behavior*, *45*(1), 79-122.

Marsh, H. W., Byrne, B. M., & Shavelson, R. J. (1988). A multifaceted academic self-concept: Its hierarchical structure and its relation to academic achievement. *Journal of educational psychology*, *80*(3), 366.

President Benigno S. Aquino, III (2010). Paper on the Enhanced K+ Discussion 12 Basic Education Program DepEd discussion. Retrieved from paperceap.org.ph/upload/download/201210/17115829500_1.pdf

The Six Year PSHS Curriculum. (2013). Retrieved from www.pshs.edu.ph/the-curriculum/the-6-year-pshs-curriculum

United Nations Educational, Scientific and Cultural Organization (UNESCO) 2010Retrieved from www.dbm.gov.ph/wp-content/OPCCB/OPIF2012/DFA/unesco.pdf

UNESCO National Commission of the Philippines (UNACOM) 2010. Retrieved from www.coa.gov.ph/.../userupload/.../2010/...of.../UNACOM_ES2010.pdf-