Intelligence Profile: Basis for Senior High School Teaching and Learning Activities

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Abstract:
     The purpose of this study was to determine the intelligence profile of grade 12 students of Taytay Senior High School. This will be the basis of identifying teaching and learning activities to improve the performance of senior high school students in a specific track. The respondents of the study are grade 12 students which are purposively selected. A descriptive research design using a survey questionnaire was used. An adapted multiple intelligence test was used to determine the intelligence profile of the respondents while the first semester grades were used to determine the proficiency level of the respondents. The results were analyzed using analysis of variance and Pearson r to determine the significant difference and significant correlation respectively.

     The results showed that there are significant differences in the intelligence profile between different tracks and strands. It was observed that logical, verbal, and interpersonal intelligence needs to be developed among senior high school students. It was noted that there is an insignificant relationship between academic performance and most students' intelligence profile. It is recommended for senior high school teachers to use different methods and approaches in teaching different strands. It is recommended that teachers help students develop their career track by stimulating the intelligence required for their chosen senior high school strands through the use of teaching and learning activities without deviating from the curriculum.

Keywords **—multiple intelligences, intelligence profile, teaching, and learning.**

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I. INTRODUCTION

No two students are alike. The teacher is like a gardener who treats different plants differently, and not like a large-scale farmer who gives standardized treatments to as near as possible standardized plants (Hopkins, 2002). Teachers should be able to determine the individual learning needs of students to be able to address learning difficulties and improve learning among students.

According to Gardner's Theory, each individual is capable of having independent forms of intelligence, with individuals differing from one another in the specific profile of intelligence that they exhibit (Gardner, 1989).

Multiple intelligences is the term used to describe Howard Gardner's redefinition of what it means to be intelligent. Rather than having one standard way to assess and demonstrate intelligence, Gardner characterized it in nine different forms namely kinesthetic, existential, interpersonal, intrapersonal, logical, musical, naturalistic, verbal, and visual intelligence. Identifying and recognizing students' MI profile leads to many possibilities and allows teachers to effectively engage students in different learning activities. This translates to better and more effective ways of providing teaching and learning activities to enhance students' success.

Republic Act No. 10533, otherwise known as Enhanced Basic Education Act of 2013 or the K to 12 Law, enhanced the Philippine basic education system by strengthening its curriculum and increasing the number of years for basic education. The new curriculum implemented a senior high school program that shall allow students to choose a track that best suits their capabilities to become successful in college education, business, and entrepreneurship or employment in a job. Every career consists of a variety of responsibilities touching on several intelligence. This points out that many different intelligence are required for a specific career track in senior high school and that it's important to develop and nurture all of these intelligence.

Armstrong (1994) suggests that teachers can help students make smart career choices by helping them understand the many ways they are intelligent. Armstrong points out that the theory of multiple intelligences emphasizes the broad range of ways in which adults pursue their work in life, so it can help students begin to develop vocational aspirations. Armstrong points out that it is important to help learners see the spectrum of occupations related to each of the intelligence areas.

Armstrong enumerates a shortlist of occupations categorized by primary intelligence as follows:

- Linguistic Intelligence: librarian, curator, speech pathologist, writer, radio or TV announcer, journalist, lawyer
- Logical-Mathematical Intelligence: auditor, accountant, mathematician, scientist, statistician, computer analyst, technician
- Spatial Intelligence: engineer, surveyor, architect, urban planner, graphic artist, interior decorator, photographer, pilot
- Bodily-Kinesthetic Intelligence: physical therapist, dancer, actor, mechanic, carpenter, forest ranger, jeweler

- Musical Intelligence: musician, piano tuner, music therapist, choral director, conductor
- Interpersonal Intelligence: administrator, manager, personnel worker, psychologist, nurse, public relations person, social director, teacher
- Intrapersonal Intelligence: psychologist, therapist, counselor, theologian, program planner, entrepreneur
- Naturalist Intelligence: botanist, astronomer, wildlife illustrator, meteorologist, chef, geologist, landscape architect

Taytay Senior High School offers Academic and TVL Track which includes ABM, HUMSS, ICT, Bread and Pastry (BP), and Shielded Metal Arc Welding (SMAW) strands. These strands will lead to different careers after graduating from secondary education. In relation to multiple intelligence, principles are the thought that students will perform better in their chosen track if they exhibit proclivities or inclinations with multiple intelligences that are required by their chosen track. Thus, senior high school students must recognize their intelligence profile. Diamond discovered that the human brain can change and improve with use. Diamond's theory of the "Plasticity of the Brain" implies that environmental conditions, interpersonal stimulation, and how individuals think and behave change the body, brain, and intelligence (Diamond, 1988). This implies that lapses with the intelligence required by the specific track may be addressed by providing teaching and learning activities that will stimulate the enhancement of the intelligence required by the students' selected track. Thus, intelligence profile could be used to determine learners' weaknesses as well as teaching and learning activities that will align students' intelligence profile with the required intelligence of their track.

By providing teaching and learning activities and opportunities which utilize every intelligence, and by making these opportunities available to every student in the classroom educators can change the intelligence profile of students over time. By broadening the view of intelligence, and

valuing and nurturing abilities in all aspects, teachers can open doors by using the strengths of students as a way of complementing students less developed areas. Goodnough (2001) confirmed that the theory of multiple intelligences opens the door to a variety of teaching strategies that can be implemented within the classroom and suggests that there is no one set of teaching strategies suit all students at all times because they have different intelligences; therefore, any particular strategy may succeed with a group of students and not succeed with another group (Goodnough, 2001).

The study will help increase students' performance and could help in ensuring students' success. Intelligence profiling is a useful tool that shall help the school increase performance by providing relevant student information to prevent failing grades and dropped outs. With the results of the study teachers and administrators of Taytay, Senior High School will be able to plan and develop appropriate activities that shall enhance intelligence profiles suited for a track/ strand.

II. REVIEW OF RELATED LITERATURE

Gardner's theory of multiple intelligences suggests that each individual has a unique combination of eight types of intelligence (profile intelligence) all interfere with daily life that is amenable to development to achieve justice among people in giving them different ways to learn (1993).

Abdulsamee and Lachin (2006) tried to identify the effectiveness of the use of multiple intelligences in developing academic achievement, mathematical thinking, and tendency towards mathematics in the first grade preparatory pupils. The study found improvement in academic achievement, mathematical thinking, and tendency towards mathematics among the sample pupils.

The Cooperative learning based on the theory of multiple intelligences has a statistically significant effect on the academic achievement of fourth-grade students in Turkey compared to the traditional way, as the study found the lack of impact of cooperative learning based on the theory of multiple intelligences on the survival of the impact of learning (Isik&Tarim, 2009).

Saidi (2013) tried to determine the multiple intelligences patterns of twelfth grade in Oman and its relationship to chemistry achievement for students. The study found a positive correlation between intelligence prevailing among students and their achievement in chemistry, it also indicated that the order of intelligence prevailing among students as follows: verbal, logical, bodily, and visual.

The integration between the theory of multiple intelligences and curriculum does not require changing the content and linking the types of intelligence with specific approaches such as linking verbal intelligence with the curriculum of languages or linking logical intelligence with a curriculum of mathematics, but the curriculums should allow opportunities for learners to benefit from their multiple intelligences when dealing with the various issues to understanding, learning and the acquisition of the information (Campbell et al., 1999).

The multiple intelligences theory provides a description of how the person uses his multiple intelligences to solve a problem, a framework that enables each teacher to deal with educational content and present it in several ways, and a model of learning that does not have specific rules except the requirements imposed by the cognitive components for each intelligence, it enables teachers to use a large number of teaching strategies and fair tools of assessment that suit every individual, design new approaches of teaching to reach the largest number of students, and helps them to understand the capabilities, potential and interests of students, it provides freedom for learners to choose a teaching method that suits them and enable every person to learn what she/he wants because every human being has all kinds of intelligences in varying proportions, it stresses that each person has the ability to develop all types of intelligences when she/he gets encouragement and appropriate education, and it confirms that the teacher is a guide and a mentor (Elbaz, 2006).

III. RESEARCH QUESTIONS

The study sought to determine the students' intelligence profile. Specifically, it solved the following problems:

1. What is the intelligence profile of SHS students with respect to the following tracks/strand:
    1.1 ABM;
    1.2 Bread and Pastry;
    1.3 HUMSS;
    1.4 ICT;
    1.5 SMAW?
2. Is there a significant difference between the intelligence profile of SHS students with respect to the aforementioned track/strand?
3. What is the intelligence profile of Outstanding and Very Satisfactory SHS students with respect to the following tracks/strand:
    1.1 ABM;
    1.2 Bread and Pastry;
    1.3 HUMSS;
    1.4 ICT;
    1.5 SMAW?
4. Is there a significant difference on the intelligence profile of Outstanding and Very Satisfactory SHS students with respect to the mentioned tracks/strand?
5. Is there a significant correlation between the intelligence profile and the academic performance of SHS student with respect to the aforementioned track/strand?

IV. SCOPEAND LIMITATIONS

The study aimed to determine the intelligence profile of senior high school students as the basis for teaching and learning activities. The study was conducted at Taytay Senior High School during the 1st Semester of the school year 2017- 2018.

A descriptive type of research was conducted through the use of an adapted multiple intelligence test survey. An adapted multiple intelligence survey from McKenzie (1999), was utilized to determine the intelligence profile of the respondents in terms of naturalistic, musical, logical, existential, intrapersonal, kinesthetic, verbal, intrapersonal, and visual intelligence.

All grade 12 students are used as respondents of the study and their grades at the end of the semester were used as the basis of their academic performance.

V. RESEARCH METHODOLOGY

The research model of the study in figure 1 illustrates the framework of the study and the importance of intelligence profiling in determining the appropriate teaching and learning activities.
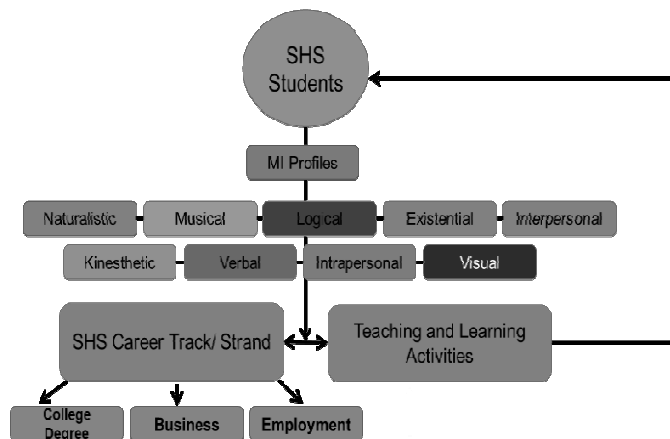

Figure 1

The framework suggests that multiple intelligence of students work together to perform tasks in a career track/ strand. Unmatched intelligence profiles with skills needed by a specific career lead to difficulty in performing the task. To help students perform well in their chosen careers, teachers must provide teaching and learning activities that will strengthen the intelligences required by the track/ strand. When students developed the appropriate intelligence for their track it shall empower them to be successful in attaining a college degree, business, or employment.

The researcher utilized the descriptive method of research. The term descriptive research refers to the type of research question, design, and data analysis that will be applied to a given topic. The descriptive function of research is heavily dependent on instrumentation for measurement and observation (Borg & Gall, 1989). Some descriptive research intends to produce statistical

information about aspects of education that interests policymakers and educators.

Sampling

A purposive sampling method was used by the researcher were two hundred five students from different tracks which includes ninety-two (92) ABM, eighteen (18) Bread and Pastry, thirty-three (33) HUMSS, forty-five (45) ICT, and seventeen (17) SMAW students were grouped according to their academic performance during the end of the semester to determine the intelligence profile of very satisfactory and outstanding students. All grade 12 students were used as respondents to ensure the quality of results.

Data Collection

The data were collected through the use of a survey of multiple intelligence. The survey involved personal information, preferences, and the usual activities carried out by the respondents in their daily living. The students were asked to answer the simple survey at the end of the semester to identify their current intelligence profile. The final grades during the first semester were requested to the registrar's office for further analysis of the respondents' level of proficiency at the end of the semester.

VI.   DISCUSSION OF RESULTS AND RECOMMENDATIONS

This presents the presentation, analysis and interpretation of data based on the sub-problems of the study.

Figure 2 presents the intelligence profile of ABM, BP, HUMSS, ICT and SMAW students of Taytay Senior High School.
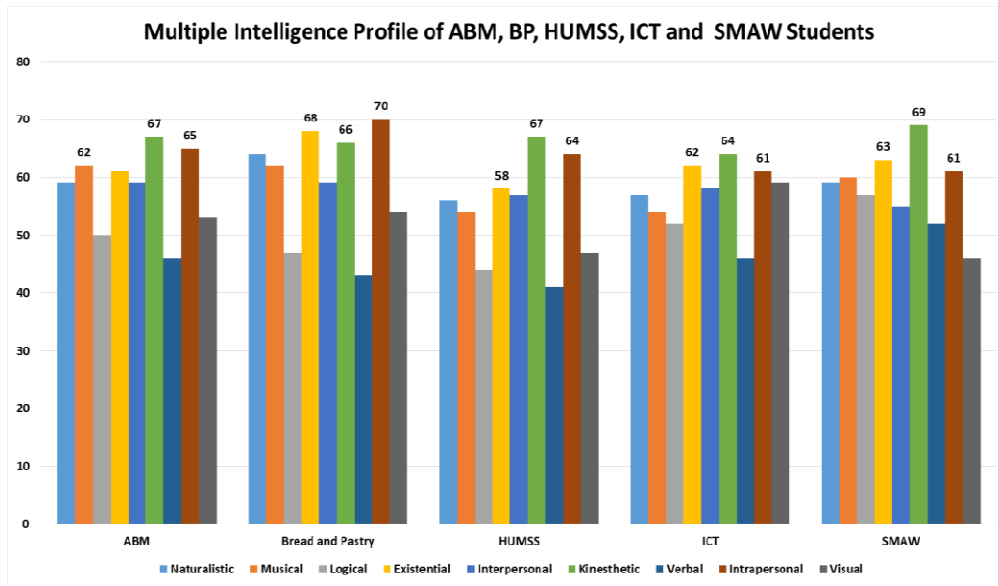

Figure 2

The data shows that the kinesthetic, intrapersonal, and musical intelligence are dominant among ABM while kinesthetic, intrapersonal, and existential for HUMSS are both on the academic track. Technical vocational track which includes B and P, ICT, and SMAW students show a high degree of intrapersonal, existential, and kinesthetic intelligence.

This implies that students from different tracks have different multiple intelligence profiles thus

teachers need to use different strategies to develop intelligence that will improve their performance.

Table 1 presents the significant difference between the intelligence profile of SHS students in all tracks/ strand.

The table reveals that there is a significant difference between the intelligence profile of SHS students in all tracks/ strand at a 0.05 level of significance. Ghazi (2001) investigated the relationship between multiple intelligences and academic achievement for the Pakistani government college students, the results revealed the existence of a significant relationship between multiple intelligences. This implies that every student has a unique set of intelligence which could be developed through training.

Table 1

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1923.644	8	240.456	16.660	.000
Within Groups	519.600	36	14.433		
Total	2443.244	44			

Figure 3 presents the intelligence profile of outstanding and very satisfactory ABM, BP, HUMSS, ICT, and SMAW students of Taytay Senior High School.

The figure represents that ABM, B, and P, HUMSS has dominant levels of existential, kinesthetic, intrapersonal intelligence, ICT has dominant kinesthetic, intrapersonal, and visual intelligence. Lastly, SMAW students possess a high degree of musical, kinesthetic, and intrapersonal intelligence.

Table 2 presents the significant difference between the intelligence profile of outstanding and very satisfactory SHS students in all tracks/ strand.
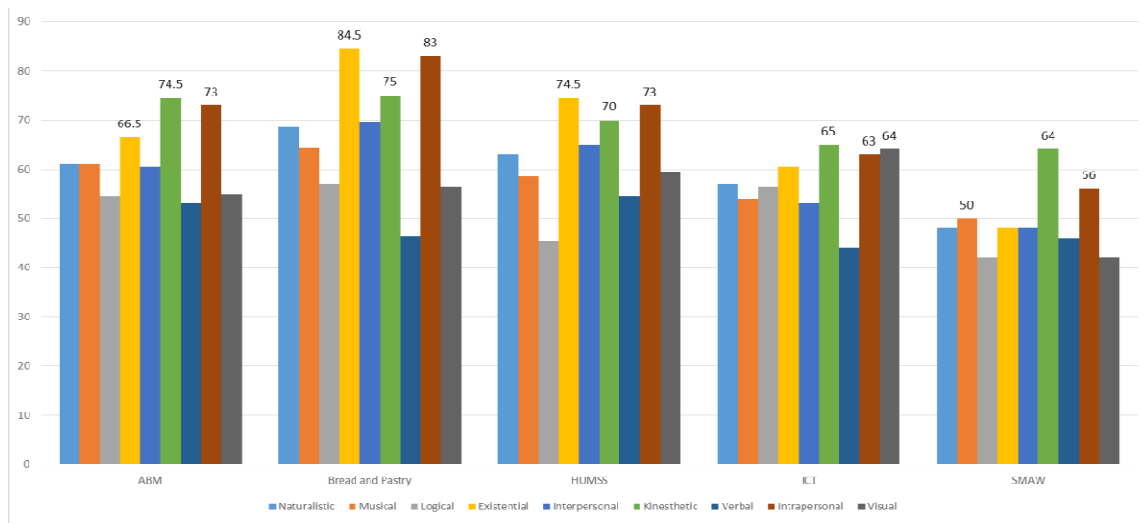

Figure 3

Table 2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2321.811	8	290.226	4.145	.001
Within Groups	2520.500	36	70.014		
Total	4842.311	44			

The table reveals that there is a significant difference between the intelligence profile of SHS

students in all tracks/ strand at a 0.05 level of significance. The significant difference in intelligence profile of good performing students implicate that multiple intelligences work together in order to perform a specific skill in a track/ strand. Table 3 presents the significant correlation between the intelligence profile and academic performance of SHS students in all tracks/ strand.

There is no significant relationship existing in most tracks/strand in terms of MI and academic performance at a 0.05 level of significance. This implies that the multiple intelligence profile of

students is not consistent and may change over time as students are exposed to different experiences and activities in school. In contrast with the study of Alsalameh (2012) who found a strong relationship between multiple intelligences and academic achievement, the result implies that the academic performance of students from Taytay Senior High School is not directly affected by their intelligence profile and somehow students need to improve some aspects of their intelligence to raise the performance of students.

Table 3

Track/ Strand		Naturalistic	Musical	Logical	Existential	Interpersonal	Kinesthetic	Verbal	Intrapersonal	Visual
HUMSS	Sig. (2-tailed)	.181	.279	.515	.136	.132	.088	.069	.050	.105
	VI	NS	NS	NS	NS	NS	NS	NS	S	NS
ICT	Sig. (2-tailed)	.901	.660	.193	.704	.490	.330	.686	.278	.317
	VI	NS	NS	NS	NS	NS	NS	NS	NS	NS
SMAW	Sig. (2-tailed)	.154	.096	.088	.186	.173	.244	.386	.501	.386
	VI	NS	NS	NS	NS	NS	NS	NS	NS	NS
ABM	Sig. (2-tailed)	.309	.446	.433	.015	.402	.027	.045	.020	.090
	VI	NS	NS	NS	S	NS	NS	S	S	NS
Bread and Pastry	Sig. (2-tailed)	.124	.188	.106	.007	.144	.100	.566	.039	.251
	VI	NS	NS	NS	S	NS	NS	NS	S	NS

Based on the findings of the study the researcher recommends teachers utilize teaching and learning activities to students that will connect to multiple intelligence such as logical, verbal, interpersonal for ABM students, visual, kinesthetic for Band P, existential, intrapersonal, interpersonal, verbal, and logical for HUMSS, logical, visual for ICT and kinesthetic, visual for SMAW. Teachers should apply different teaching strategies for each track/

VII. DISSEMINATION AND ADVOCACY PLANS

The implementation of senior high schools in the Philippines needs support educators to achieve its goal of intensifying the quality of education to

strand to develop suitable multiple intelligence. Provide activities to develop logical, verbal, and interpersonal intelligence among all students. Senior high school teachers should develop student tasks that utilize different intelligence combinations in a track/ strand. It is also recommended that future researchers conduct further studies involving multiple intelligence and how can it improve student learning and career development.

meet global standards. The results of the study shall be disseminated through research conferences and teachers' seminars to communicate the importance of developing multiple intelligence among senior high school students. This shall give way for the researcher to develop teaching

strategies that integrate specific intelligence for a career track. A plan of action shall be useful in disseminating the information through in-service training and LAC sessions.

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