

Delving into the Learning Styles of a Technical Higher Education Institution in the Bicol, Region, Philippines

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ABSTRACT

Learning styles is relevant in the educational set up to provide insights as to the proper and appropriate teaching strategies and assessment tasks to be given to the students in ensuring optimum learning experience. Relative to this, the study assessed the learning styles of the 260 industrial technology and technical-vocational teacher education students in a rural higher education institution (HEI_ in the Philippines using the Learning Styles Model of Honey and Mumford (1968) after the COVID-19 pandemic using a descriptive evaluative research design. The results shows that a strong preference on activist learning was noted among the respondents followed by theorists. The data also reflects that upon review of the data by sex, by program currently enrolled in, and by year level, the learning styles are consistent with the general response of the total sample. Likewise, in terms of challenges experienced by the students in their pursuit of higher learning in a technical school, it was noted that the cost of internet/mobile data as well as the sufficiency of the materials, tools and equipment are prevalent. Thus, it was recommended that the faculty of the said HEI may consider recalibrating learning plans reflected in the course syllabus and align it with the results of the study which further implies additional learning activities that will allow students to do hands-on, and also to enhance the shop facilities of the said HEI in compliance to existing statutory and regulatory requirements of relevant governing agencies to ensure optimum learning experience among the clientele.

Keywords: Learning Styles, HEI, Technical-Vocational, Industrial Technology, Education, descriptive research, research culture, Bicol, Philippines.

INTRODUCTION

“*Hindi ko naman naiintindihan si sir/ma’am*” is a common notion among students whenever they are having difficulties in understanding the lessons presented to them during classes. A notion that affects one’s learning experience and in turn, their future academic pursuit if not paid attention to.

On the other hand, facilitating the teaching and learning process, be it in a pedagogical approach or in andragogical approach, is a tedious work for educators. It requires periodic and continuous evaluation of the teaching approaches as well as instructional materials whether it still responds to the needs of the learners and the community to which they will become part of upon completion of their academic pursuit.

Relatively, teaching involves the planning of curriculum with the appropriate approaches and necessary resources that will allow learners to understand and manifest expected output, implement these approaches in a systematic way that will allow learners a step-by-step process of learning and a ladder reaching a particular outcome and finally, evaluating the plan and the implementation to provide an insight on the effectiveness of the curriculum. As such, it is a key aspect in teaching to be able to assess the needs of the learners so that an educator may craft a responsive curriculum that will address the varied needs of learners. Despite this rigorous activity, it is important to provide an inclusive education that will address the different needs of learners as it was mandated from the 1987 Philippine Constitution under Article XIV, Section 2, Paragraph (1) which mandates the state to *establish, maintain and support complete, adequate, integrated system of education relevant to the needs of the people and society.*

Since the 1990s, the challenge of ensuring that teachers and educators are going to be responsive to the diversity of learners and their needs had always been an issue. Several factors as cited by Hall et al, (1995) were notable during the late 1990s. This includes social and economic shift, the changing family compositions, socioeconomic stratification, race, ethnic relations, gender, religion, exceptionality, and global economy. Hall et al, had also mentioned that making teachers, particularly preservice teachers, aware of the problems that are faced by the minority of students in the educational system provides an equitable opportunity for all learners.

For tertiary education students, the Philippine Qualifications Framework (PQF) as embedded in the respective Policies, Standards and Guidelines of programs offered in all State Universities and Colleges in the Philippines set the minimum requirements as well as the competencies that the graduates must obtain upon completion of the degree. This is important to produce quality graduates that will be responsive to the needs of the industry and the society. Likewise, as noted by Cabual (2021), to achieve a successful learning plan which will eventually produce significant results, it is important to recognize the learner's styles and preferred learning modalities. This is in reference to the VARK Model initially proposed by Neil Fleming to which students may be classified into four different learning modes: Visual, Aural, Read/Write/ and Kinesthetic (Prithishkumar & Michael, 2014). Similarly, the works of Murphy et al. (2004) had highlighted to importance of determining the implication of a particular teaching methodology or strategy among university students for the purpose of improving teaching and learning approach in tertiary level. The same conclusion was noted from Kim et al. (Kim, Gilbert, Ristig, & Chu, 2013) as they assess the learning styles of surgical resident's assimilation of information.

With these facts, it was also noted that with the drastic changes in the country's educational system brought about by COVID-19 Pandemic in 2020, the "New Normal" as it has been quoted had set the bars higher than before. Educational reforms were imposed as to the modality and interventions to ensure that students are still able to attain the required competency and qualifications were observed. Relative to this, it is also important to know the learning styles of students whose curricular programs require extensive number of hours for the performance of technical skills in the different specializations to determine whether there is a need to update or retain the current teaching strategies for the maximum assimilation of information among tertiary students.

METHODOLOGIES

Research Design

The study utilized a descriptive-evaluative research design that is anchored to Learning Styles Model proposed by Peter Honey and Alan Mumford in 1986. The Honey and Mumford's Learning Styles Model allows the determination of attitudes and behaviors to which an individual learns as represented in figure 1. Although it is not a psychometric instrument to measure one's intellectual ability, it acts as a checklist to

know how people learn (Rinekso, 2021). Furthermore, the model allows an interpretation as to the strengths and weaknesses of a particular learning style to which could be a basis for improvement (Dennis, 2020).

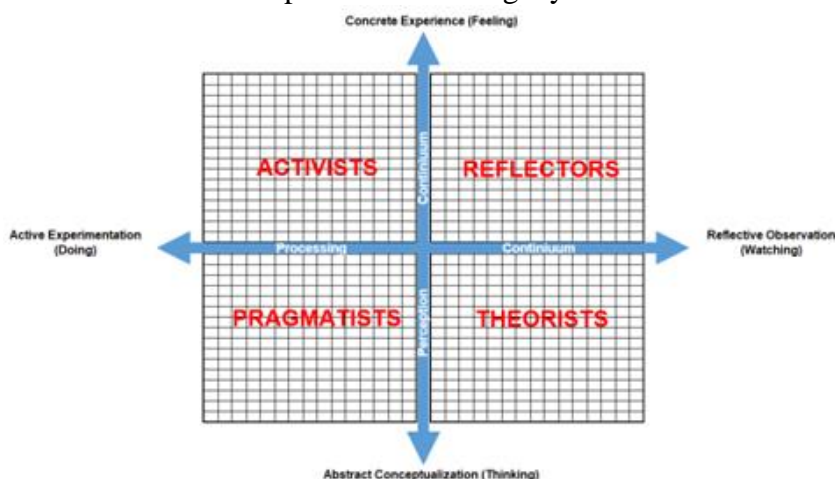


Figure 1: Honey and Mumford Learning Style Model

As the aim of the study is to generally provide an analysis of the learning mechanism to which students employ despite the changes in the education modalities brought about by COVID-19 Pandemic, the use of descriptive-evaluative discusses the implications of the pandemic in the learning styles of the students to which instructors may use an avenue for crafting a learning modality that will address diversity of learners.

Population and Sampling Procedure

Population of the study includes 1st year to 4th year of Camarines Norte State College – College of Trades and Technology taking Bachelor of Science in Industrial Technology and Bachelor of Technical Vocational Teacher Education programs. As reflected in CMO No. 79, series of 2017, graduates of the technical education programs are expected to be skilled both in the theoretical and technical aspect of a particular specialization (Medalla, Dipad, & Bongalosa, 2021). This includes Automotive Technology, Electrical Technology, Computer Technology, Foods and Services Management, Electronics Technology, and Garments Trade. Students Enrolled during the 1st Semester of A.Y. 2022-2023 were considered as they were the ones who had transitioned from the flexible learning modality to full implementation of face-to-face learning.

Using random sampling method at a level of confidence of 5%, a total of 260 were identified samples out of 819 student population during the semester. Table 1 reflects the sample size along each specializations:

Table 1. Population and Sample Size

Group	Total Number	%	Sample Size
BSIT-AT	87	10%	28
BSIT-CT	115	13%	37
BSIT-ETT	74	9%	24
BSIT-ELT	92	11%	29
BTVTE-AT	69	8%	22
BTVTE-ET	102	12%	32
BTVTE-FSM	167	19%	53
BTVTE-FGT	113	13%	36
TOTAL	819	100%	260

Data Collection

A survey questionnaire developed through online survey tools was utilized to collect the following information from the respondents:

1. Demographic profile of the respondents.
 1. Sex
 2. Civil Status
 3. Permanent Residence
 4. Monthly Family Income
 5. Degree Program Currently Enrolled In
 6. Year Level
2. Learning Styles of the Respondents
 1. Activists
 2. Reflectors
 3. Theorist
 4. Pragmatist
3. Perceived Challenges in Learning

Eighty questions that comprises the Learning Styles based on the adopted model was utilized to determine the individual categories of the respondents.

Data gathering run from August 2022 up to December 2022 by which the college has already shifted to full implementation of face-to-face modality as suggested by the Commission on Higher Education (Magsambol, 2022).

Data Analysis

Using the online survey tool, each participants are given around 10-15 minutes to answer the given questionnaire. Each of the questions represents a part of the learning styles determined by Honey and Mumford (Activist, Reflector, Theorist, Pragmatists). For each of the criteria to which they agree on, a point is allocated. Using summation formula, the points earned for each of the categories are summed up and plotted.

The data collected from the respondents were sorted and tabulated to denote the necessary information out of the respective data collected. On the other hand, the data consolidation and analysis for the learning styles of the respondents followed the procedures stipulated in the works of Honey and Mumford to which the respondents are asked to reflect whether they agree to a particular criteria or not.

Furthermore, to better understand the results of the respondents, the general norms for professional/managerial people in industry shall be used to provide a significant understanding as to the preference in learning among the respondents (Honey & Mumford, 1986). The general normal are as follows:

1. The highest scoring 10% of people
2. The next 20% of people
3. The middle 40% of people
4. The next 20% of people
5. The lowest scoring 10% of people

Table 2 represents the scale to which the different learning styles are perceived among the responses in

relation to the scoring for the general norms:

Table 2. Score Interpretation

	Very Strong Preference	Strong Preference	Moderate Preference	Low Preference	Very Low Preference
Activist	13-20	11-12	7-10	4-6	0-3
Reflector	18-20	15-17	12-14	9-11	0-8
Theorist	16-20	14-15	11-13	8-10	0-7
Pragmatist	17-20	15-16	12-14	9-11	0-8

Data Privacy

All respondents shall sign an agreement with the institution. All data collected shall be treated with strict confidentiality based on the Data Privacy Act of 2012 and the Research Manual of the CNSC.

RESULTS AND DISCUSSION

The data collected in among the 260 selected respondents reflects the following information:

Table 3. Demographic Profile of the Respondents (N = 260)

Sample Characteristics	Frequency	Percentage
<i>Sex</i>		
Male	124	48%
Female	136	52%
<i>Civil Status</i>		
Single	252	97%
Married	8	3%
Widowed	0	0%
<i>Permanent Residence</i>		
Basud	3	1%
Capalonga	5	2%
Daet	16	6%
Jose Panganiban	174	68%
Labo	11	4%
Mercedes	12	5%
Paracale	19	7%
San Lorenzo Ruiz	2	1%
San Vicente	1	0%
Sta. Elena	0	0%
Talisay	5	2%
Vinzons	8	3%
<i>Monthly Family Income</i>		
5, 000 and below	170	65%

	5, 001 to 10, 000	53	20%
	10, 000 to 15, 001	14	5%
	15, 001 to 20, 000	14	5%
	20, 001 to 30, 000	8	3%
	30, 001 and above	1	2%

The demographics of the respondents reflect that in terms of sex, 52% of the respondents are female, while the remaining 48% are male students. This is consonance with the study of Otufowora et al. (2021) which reflects females are more participated in research-based activities than male. Likewise in terms of civil status, it was noted that majority of the respondents are single at around 97% or equivalent to 252 out of 260. However, a portion of around 3% was noted to be married.

Ensuring that all are given equal opportunity to enroll in any courses in the Higher Education Institutions, the enrollees of both Bachelor of Science in Industrial Technology and Bachelor of Technical Vocational Teacher Education reflects diversity in permanent residency. The data shows that respondents came from twelve (12) municipalities of Camarines Norte. However, Table 3 still reflects that the concentration of enrollees came from Jose Panganiban, Camarines Norte where the College of Trades and Technology is situated. It can also be noted that the respondents reside from Paracale (the adjacent municipality of Jose Panganiban) to as far as Capalonga, Mercedes, Daet, San Vicente, Vinzons and Talisay.

Relatively, monthly family income is one of factors that influences and motivates students to pursue higher learning in TEIs and HEIs. This was supported by the studies from Pagulayan et al. (2021), Lin & Lv (2017), and Machebe et al. (2017) which all connotes a positive correlation between the performance and motivation of students against the their household income. As such, since majority of the respondents are from the municipality of Jose Panganiban, Camarines Norte (a second-class municipality), it is also expected that majority of the respondents are from the low-income families with a monthly household income of Php 5, 000.00 and below. Data reflects that 65% of the respondents are at this range, while 20% are at Php 5, 001.00 to Php 10, 000.00 and the remaining 15% are around the range of Php 10, 000.00 and above.

Likewise, the distribution of the respondents reflects that BTVTEd students are more responsive to the deployed questionnaire compared to BSIT Students. This is equivalent to 172 students out of 260 respondents which is 66%. This shows that the participation of education students as to the learning styles shows interest in research-based activities. As such, Figure 1 and reflects the distribution of the respondents in term of degree programs currently enrolled in.

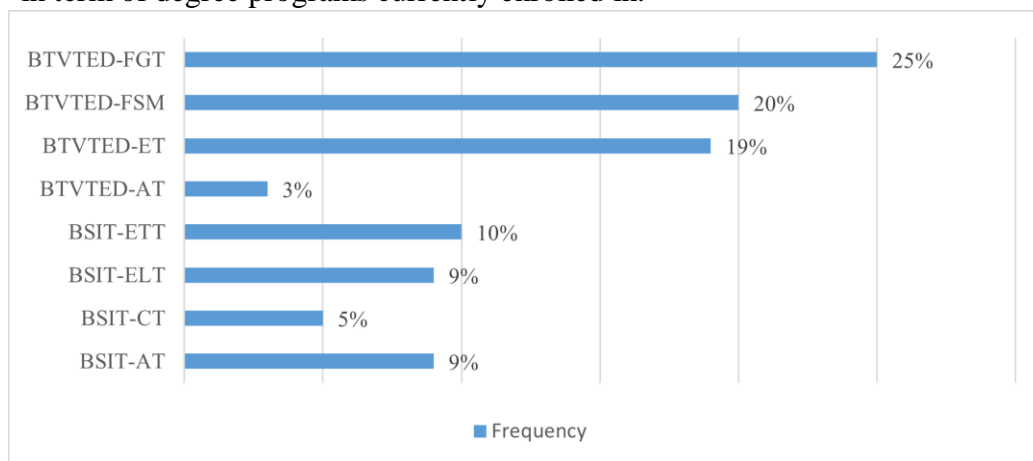


Figure 1. Distribution of Respondents by Degree Program

On the other hand, in terms of distribution of respondents per year level, it was noted that first years are

more active. Data collections reflects a total of 55% which is over half the total responses needed. Figure 2 summarizes this notion.

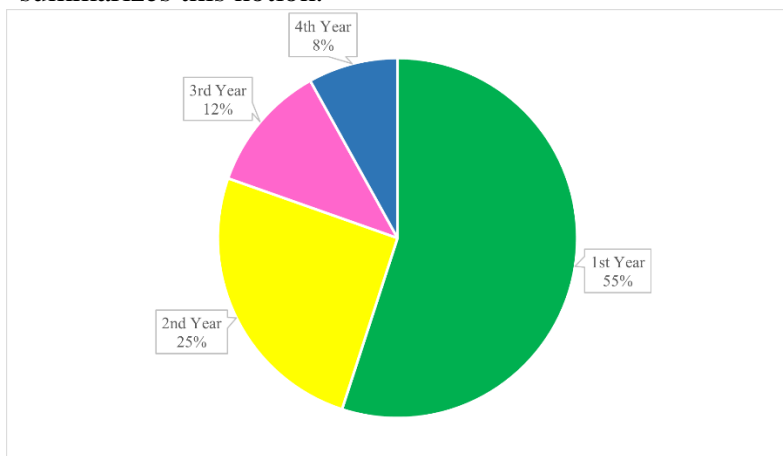


Figure 2. Distribution of Respondents per Year Level

Honey & Mumford (1986) had categorize the preferences of individuals to learn through a model developed in 1986. The model describes the learning styles that generally changes and moves through time. The said model categorizes individuals into: (1) Activists where individuals require experiences and direct involvement to learn, (2) Reflectors where individuals observe and analyze information to think things through before coming up to a conclusion, (3) Theorist where individuals analyze and synthesize facts and observations to construct theories, and (4) Pragmatists where individuals try out ideas, theories, and techniques as a basis for construct of conclusions. As such, Table 4 Summarizes the preference among the 260 respondents of the study to determine the predominant learning styles of both BSIT and BTVTEd students:

Table 4. Summary of Learning Styles

Learning Style	Very Strong Preference	Strong Preference	Moderate Preference	Low Preference	Very Low Preference
Activist	95	44	56	24	41
Reflector	47	22	36	58	97
Theorist	69	21	54	43	73
Pragmatist	50	20	40	51	99

Table 4 generally reflects that the predominant learning styles among the students is activists. This means that the students require hands on experiential teaching approach for them to understand and learn from the given instructions. It further reflects that they are flexible and open-minded and are eager to do things. These individuals also like to gain new experiences and are always optimistic and eager enough to embrace changes. However, these individuals tend to be negligent and are very risky. They often seek more attention than others and easily gets impatient on normal discussion.

On the contrary, Activist are followed by theorists in the preferred learning styles. This portion of the sample reflects that a portion of students favors logical approach in learning which are often rational and objective. These individuals prefer discipline in the learning process. However, most of the time, these individuals are very intolerant to uncertainty and are aggressive when it comes to subjective analysis and intuition. They tend to have a “by the book” attitude and justifies most of their action.

Relatively, the when reviewed whether Sex and Degree program is a determinant to the change in learning style, this notion was rejected due to the fact that despite filtering the data collected from the respondents in

terms of Sex and Degree Programs currently enrolled in, the data reflects the same and that the predominant learning style among male and female as well as to both BTVTED and BSIT is Activist and Theorist. Table 4.1 and 4.2 supports this notion.

Table 4.1 Learning Styles by Sex

Learning Style	Male	Female
Activist	45	33
Reflector	29	13
Theorist	40	20
Pragmatist	31	13

Table 4.2 Learning Styles by Degree Program

Learning Style	BTVTED	BSIT
Activist	29	39
Reflector	16	20
Theorist	24	26
Pragmatist	17	21

Furthermore, upon review of the learning styles per year level, same findings were noted that across the year level of the respondents, students are categorized as activists and theorists. Table 4.3 reflects this notion.

Table 4.3 Learning Styles by Year Level

Learning Style	1st Year	2nd Year	3rd Year	4th Year
Activist	53	25	9	8
Reflector	22	15	5	5
Theorist	34	19	8	8
Pragmatist	23	15	7	5

Finally, respondents were measured in terms of perceived challenges in the pursuit of higher learning along industrial technology and technical vocational teacher education to give insights as to the areas that needs improvement for the development of teaching materials and strategies by faculty members.

Challenges as identified by the study of Mananay et al (2022) was modified to fit the current scenario of the teaching and learning process in the College of Trades and Technology after the pandemic where the strict health protocols shifted the educational modality from the face-to-face classroom based learning to online learning and back to face-to-face classroom based learning again. Table 5 summarizes the results of the survey conducted.

Table 5. Challenges

Particulars	Yes	No	Rank
Inadequate educational devices and materials	196	64	5th
Frequent power service interruptions	153	107	8th
Difficulty in finding appropriate online and offline resources	213	47	3rd
Lack of access to resource persons with adequate technical skills	183	77	7th

Less support from the family members	131	129	11th
Environment is not conducive for learning	134	126	10th
Budget is not enough to sustain needs	196	64	5th
Cost of internet/mobile data is too much	225	35	1st
Limited to no interaction with teachers	183	77	7th
Limited to no interactions with peers	145	115	9th
Class has insufficient equipment and tools	221	39	2nd
Less guidance from teachers	186	74	6th
Lessons are not thoroughly discussed	201	59	4th

The results in Table 5 shows that the most prevailing challenges identified among the respondents is the cost of internet/mobile data is too much. As the cases of COVID-19 in the Philippines had decreased from the last few months, the use of internet in the educational set had been retained. Even before the pandemic, the importance of the World Wide Web has been highlighted. The study of Alda et al. (2020) had highlighted the implications of the technology advancement and connectivity in the streamlining of educational system. Furthermore, the cost of data had already been acknowledged to directly proportional to the inflation.

In addition, the challenge in the cost of internet/mobile data is too much was followed by the class has insufficient equipment and tools. As most of the students are activist, it would require enough tools and equipment that will supplement the theoretical learning provided by the faculty. Thus, the lack of sufficient tools and equipment will somehow affect the learning of the students.

CONCLUSION

Determining the learning styles of the students in higher education is one aspect of ensuring continual improvement of the instruction mandates of higher education institutions. It allows the HEI to determine appropriate teaching strategy and assessment tasks that must be implemented in each course to reach the highest level of learning among students.

As such, in the case of the College of Trades and Technology, a HEI in the municipality of Jose Panganiban, Camarines Norte, students taking Industrial Technology and Technical-Teacher Education proved to be activist learners which shows that they require hands-on experience to be able to fully understand the lesson provided to them. In relation to this, the need for sufficient resources and equipment would supplement the optimal learning of the students and likewise, produce positive results since.

With these facts presented, faculty of the College of Trades and Technology may recalibrate their learning plan for the succeeding semesters to capture more learning activities that will require demonstration and return demonstration to pique the interests of the students, and likewise, produce valid and outputs in line with the Outcomes-Based Education (OBE) framework in higher education. Furthermore, enhancement of the existing shop in compliance to regulatory and statutory bodies should be considered to ensure the optimal learning of the students.

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