

Learning styles and Technology Livelihood Education (TLE) Competency Assessment of Junior High School Students: Input for a Competency-Based Program

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Abstract

Original Research Article

The changing educational landscape and the vision of Education 4.0 have pushed curricular reforms in the Philippines. The K—12 Program was implemented to enhance the quality of education to uplift the Filipino learners' full potential, promoting equitable, culturally based skills and competency-based learning. With the recent educational developments, various modalities are essential to acquire the necessary competencies among learners. Specifically, the Technology Livelihood Education (TLE) under TechVoc is critical as it provides skilled courses to students in grades 7 to 12. Its ultimate goal is to train young individuals and help them gain the competencies and employability skills they need to qualify them to apply and work in local industries and other countries. Therefore, the researcher employed a descriptive correlational design to assess the competency of 50 Junior High School Students in Eulogio Rodriguez Vocational High School (ERVHS) with their learning styles. Results revealed that all of the respondents were competent and that no significant relationship exists between the respondents learning style and TLE competency. The post-structuralism theory implies that several factors must be considered, particularly students as learning agents. Moreover, the findings also critiqued the VARK model as an opportunity for future discourses on learning styles. Results geared at enhancing the least acquired competencies of students and input to the TLE intervention program.

Keywords: Assessment, Competency, Learning styles, High school students, Technology Livelihood Education.

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INTRODUCTION

The advent of globalization has transformed the educational landscape worldwide. It has been an impetus for the integration of knowledge and skills along with the technological developments in the teaching and learning process (Reid, 2008). This move is in line with the vision of Education 4.0, emphasizing the skill-based development of students to produce globally competitive learners. Also, it addresses the gaps in acquiring knowledge and competitive standards skills through an integrated curriculum in developing countries.

In response to the synergism of knowledge and skills expected in the curriculum of the globalizing world, the Philippines aims to promote the quality of education that would upraise the full potential of the Filipino learners with equitable, culture-based, and complete primary education. Through this, the K-12

program has been implemented to address the concerns to produce the required standards for quality education. With it, the goal is to nurture the Filipinos holistically to be globally yet locally competitive in education, entrepreneurship, and employment (Chua and Luyun, 2019; Asuncion *et al.*, 2020; DepEd, 2021).

Part of the K-12 curriculum is the specialized course given to learners in different strands. Students may choose from three strands; Academic, Technical-Vocational- Livelihood (TechVoc), and Sports and Arts. In addition, the Academic track includes three strands: Business, Accountancy, Management (BAM); Humanities, Education, Social Sciences (HESS); and Science, Technology, Engineering, Mathematics (STEM). The students will be immersed in these subjects to practice their skill-based education to provide them with relevant exposure and experience in their chosen track.

It has its legal basis under the Republic Act. No. 10533, which aims to enhance the country's basic education program. It states that: "the state shall create a functional basic education system that will develop productive and responsible citizens equipped with the essential competencies, skills, and values for both life-long learning and employment." It further suggests that the DepEd shall formulate the design and details of the enhanced primary education curriculum. Furthermore, it shall work with the Commission on Higher Education (CHED) to craft harmonized basic tertiary curricula for the global competitiveness of Filipino graduates. To ensure college readiness and to avoid remedial and duplication of basic education subjects, the DepEd shall coordinate with the CHED and the Technical Education and Skills Development Authority (TESDA).

With the impending capitalism and economic development, Technology Livelihood Education (TLE) under TechVoc is essential in this new curriculum as it provides skilled courses to students in grades seven to twelve. However, its ultimate goal is to train young based on the latest modalities' competencies, which is still questionable in implementing different learning styles.

The researcher believes that giving an intensive assessment of how these students respond to learning styles will help the researcher determine the increase in their performance. In addition, through the competency-based program, the researcher may identify the least mastered skills to propose an intervention to improve the quality of education in the Philippines.

K-12 Basic Education Program articulates a set of 21st-century skills embedded in a curriculum that graduates should possess to proceed to higher education and middle-level skills development (DepEd, 2021). Department Order No.91 (1998) specifies: "changes in the Technology and Home Economics (THE) Program of the New Secondary Education Curriculum (NSEC) through continuous improvement and updating of the curricular offerings, to make the Technology and Home Economics (THE) program more relevant and responsive to the needs of secondary school students, changes and improvement are being instituted. Curricular offerings in the first and second-year levels shall include three basic Home Economics and Industrial Arts areas. In addition, specialized courses in the third and fourth-year levels shall be adopted and implemented.

Through this cause, teachers in the Technology & Livelihood Education/Technology & Home Economics subjects, indeed, play a very challenging responsibility to handle and teach the subject with its objective of teaching the students the more relevant and responsive skills needed to acquire. Not only would they execute different strategies but also determine

different learning styles that would best suit the learners.

In addition, globalization of education patterns the curriculum development of learning. It also comprises an integrated and interdisciplinary form of education as one of the many aspects of global education. This notion, adapting to constant personal and social changes to obtain lifelong learning, attributes to a 21st-century form of education. It must take part in investing in technical-vocational education, so the program makes it possible to bridge the gap of labor demand and supply gap not only locally but globally. Since the education system should produce a technically competent graduate possessing desirable work attributes and behavior, curriculum development ensures the continuity of the skills development of a learner to obtain the required level of competencies. Aside from this idea, linking the school with the industry-required skills through TechVoc education may account for tracking career pathways the high school graduate may take.

Therefore, an exhaustive and comprehensive assessment for the competency-based program is much relevant and needed to pull through with the needs of these learners to improve their skills through the learning styles that would best suit their personalities. Further, it would be beneficial to ascertain if the personal profile of the students is related to their learning styles since there are numerous factors to be considered regarding their learning styles and competencies (Asuncion *et al.*, 2022). Hence the study was conceptualized to assess junior high school students' learning styles and technology livelihood education (TLE) competencies as input for a competency-based program. The researcher hopes that the results of this study may contribute to life-long learning among learners. In addition, this study also addresses the scant literature regarding the K-12 curriculum, particularly regarding the link between learning styles and competency of Junior High School students who transitioned to Senior High School.

MATERIALS AND METHODS

A. Research Design

The study focuses on assessing the learning styles and technology livelihood education (TLE) competencies of junior high school students as an input for a competency-based program, the researcher used quantitative design, particularly descriptive correlational design.

B. Locale of the Study

The study was conducted in the Eulogio Rodriguez Vocational High School (ERVHS), located at Nagtahan, Sampaloc, Manila. The Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST) was established after the liberation of Manila

in 1945. EARIST started as a vocational high school with only one room on the second floor of the Mapa High School, nine teachers, a clerk, and 147 students under principal, Mr. Pantaleon Regals. Its former name was Eulogio Rodriguez Vocational High School (ERVHS). Starting as a vocational school made it an ideal site for study.

C. Respondents and Sampling Procedure

The researcher employed total enumeration in selecting the student respondents. There were 50 Grade 12 students in the TechVoc class taking food and Beverage subjects for the third quarter of the school year 2021-2022 in ERVHS, Manila. The researcher used this total number to produce a medium sample size for the Pearson R testing. Also, it involved three (3) teachers from the TLE Department in evaluating the student's level of competencies. The students and teachers assessed junior high school students' learning styles and technology livelihood education (TLE) competencies as input for a competency-based program. The research study used the competency-based materials provided by the DepEd and Tesda.

D. Research Instrument

A modified survey questionnaire in the form of an evaluation checklist with a series of question and other prompts for gathering information from the respondents is the main instrument the researcher used to collect data needed in this study. The researcher used Survey Questionnaire for profiling to determine the personal and academic profile of the respondents, VARK Questionnaire was utilized to determine the level of learning styles among student participants, and the Self-Check Tool and Assessment Tool to determine the respondents' level of TLE specialized competencies as assessed by the teachers and the respondents themselves. The questionnaire items were formulated by the researcher based on the table of specifications focusing on the specific skills for Food and Beverage - Quarter 3 under the supervision of the VocTech Head of ERVHS. The questions used in the gathered information from the respondents to assess the learning styles and technology livelihood education (TLE) competencies of junior high school students as input for a competency-based program. The researcher used the questionnaire in the form of the Likert Scale as a measuring channel for gathering and collecting data. The questionnaire was rated according to four degrees to be chosen by the teacher respondents, namely; 4 – Very Evident (VE), 3 – Evident (E), 2 – Moderately Evident (ME), and 1 – Less Evident (LE). The weighted

arithmetic mean is the statistical tool to be used to determine the acceptability of the data.

E. Data Gathering Procedure

Before conducting the study, the researcher secured a request letter to submit to the office of the Schools Division Superintendent to access the school. Upon approval, the researcher retrieved the request letter, and the permit was attached to the letter given to the school principal of Eulogio Amang Rodriguez Vocational High School. The researcher asked the respondents to sign a free prior informed consent among the respondents and administered the questionnaire to them and the teacher respondents with the help of the department coordinator. Finally, the researcher tallied and tabulated the data and applied descriptive and inferential statistical analysis to present the study results.

F. Data Analysis

Descriptive and inferential statistics were used to analyze the data. For the descriptive statistics, Frequency count and weighted mean were used. The scaling Technique was also employed. The responses to questions in the given variables were scaled using 4 – point Likert scale system. It measured the data before treating it with a weighted mean. For the inferential statistics, the researcher used Pearson's correlation coefficient (Pearson R) to determine the statistical relationship, or association, between continuous variables in the study. On the one hand, Chi-Square was employed to measure the association of categorical variables.

RESULTS AND DISCUSSION

Table 1 shows the personal and academic profiles of the respondents. The individual profiles gathered were their age and gender, while the academic profiles were limited to their educational background and academic strand. The data revealed that 25 males and 25 females participated in the study with the age bracket of 16-19 years old. From the gathered personal profile, there are three (3) students from age 16, six (6) students from age 17, twenty-two (22) students from age 18, and seventeen (17) students from age 19, for a total of fifty (50) student respondents from VocTech – Food Technology Strand. These are all from the same grade level – Grade 12 Senior High School students. In terms of their academic performance elicited by their final grades, the respondents have a mean score of 93.96 and a standard deviation of 3.51.

Table 1: Frequency and Percent Distribution of Respondents' Profile

Age	Frequency	Percent
16	4	8.0
17	6	12.0
18	22	44.0
19	18	36.0

	Mean= 18.08 SD=0.900	
Gender		
Female	25	50.0
Male	25	50.0
Academic Performance		
87-89	6	12.00
90-91	10	20.00
92-93	8	16.00
94-95	5	10.00
96-97	10	20.00
98-99	11	22.00
	Mean= 93.96 SD=3.51	

Table 2 shows the learning styles of the respondents as revealed by the learning styles inventory. Regarding the criteria from Student's learning Styles Inventory, the students must be characterized by three learning styles: Visual, Tactile, and Auditory. Based on the data, some 28 students gained results from visual - they are described as visual learners. Twelve of the student respondents were tactile learners, and 10 of them were auditory learners. According to various studies, visual formats account for 75 percent of the information processed by the brain. Visual information is also better mapped in pupils' minds (Williams, 2009). The integration of knowledge from visual media is known as visual learning. When students see the material in the classroom, they understand it better. Images, flowcharts, diagrams, videos, simulations, graphs, cartoons, coloring books,

slide shows/PowerPoint decks, posters, movies, games, and flashcards are all examples of visual information (Rodger *et al.*, 2019). About 56% (28 individuals) of the population learns best from visuals; therefore, most learners prefer visual learning styles. Students with a kinesthetic-tactile learning style must handle or touch things to learn. Multi-sensory learning combines kinesthetic-tactile approaches with visual and/or auditory study strategies. In the study, only 24 % (12 individuals) of the population prefer this type of learning, while 20% (10 individuals) are auditory learners. They comprehend and recall what they have heard. They remember information based on how it sounds and grasp spoken instructions better than written ones. They frequently learn by reading aloud since they must listen to or tell it to understand it.

Table 2: Frequency and Percent Distribution of the Respondents' Learning Styles as Revealed by the Learning Styles Inventory

Learning Styles	Frequency	Percent
Auditory	10	20.0
Tactile	12	24.0
Visual	28	56.0
Total	50	100.0

Table 3 summarizes the results for the six (6) competencies. The summary reflects a weighted average of 3.55 assessed by the students and 4 for the teachers' assessment, which implies that each competency gained a highly commendable result. This means that all the competencies were VE observed by the students during the program's implementation. This means that the respondents have sufficient knowledge of the educational courses they studied as a precondition for the internship. Using the competency-based curriculum and the TechVoc Program, they could apply what their instructor had taught them. The Food and Beverage Services program is meant to improve students' knowledge, abilities, and attitude in compliance with TESDA Training Regulations and industry standards. Cleaning bar areas, operating a bar,

preparing and mixing cocktails, providing a link between kitchen and service areas, providing room service, providing food and beverage service, developing and updating food and beverage knowledge, and providing wine services are among the core competencies covered. (www.tesda.gov.ph). Students receive significant experience in the workplace by using their classroom learning, developing their abilities in communicating with coworkers, clients, and management, and determining which direction they want to take in their careers (McGlothlin Jr, 2015). Work-integrated learning has been shown in various studies to help students by enhancing technical and competency skills (Fleming & Eames, 2015) and that work-integrated learning have aided the development of competencies (www.waceinc.org).

Table 3: Summary of Mean Results for the Six Competencies

Summary of Results for Competency Assessment	Students respondent		Teachers	
	Mean	Verbal Interpretation	Mean	Verbal Interpretation
Prepare Dining Room / Restaurant Area for Service	3.48	VE	4.0	VE
Welcome and Take Food and Beverage Orders	3.60	VE	4.0	VE
Promote Food and Beverage Product	3.53	VE	4.0	VE
Provide Food and Beverage Service to Guests	3.52	VE	4.0	VE
Provide Room Service	3.55	VE	4.0	VE
Receive and Handle Guest Concerns	3.59	VE	4.0	VE
Mean	3.55	VE	4.0	VE

VE=very evident

Table 4 shows the summary of results for the significant relationship between each learning style and age. The p-value is greater than 0.05. This means no significant relationship exists between the learning styles and age. This is contrary to the common belief that adolescents' learning styles were also more firmly established. Children's learning styles tended to cluster at the origin. In contrast, adults' learning styles extended further, implying that children's replies were more flexible and less consistent, while adults' responses were more constant and set.

Gender also has no significant relationship to learning styles since the computed p-value is greater than 0.05. This finding negates that females were more likely to develop more social learning styles as individuals (Borun *et al.*, 2020). Moreover, respondents preferred each of the four learning styles: creative learners preferred discussion, intellectual learners preferred interactive reference, practical learners liked

word search, and social learners favored role-play. Individuals' learning styles are better established, according to the study. These findings contend that only two learning styles were identified among the children: social learners chose discussion, and intellectual learners preferred interactive reference. Students were classified by Ibrahim (2016) into two categories: multimodal and single model. Within each of the multimodal and single learning styles categories, there are significant disparities in the number of male and female students. Female students and male students chose multimodal learning styles. However, the current study's findings contradict those of Isman *et al.*, (2019), who found that female students favored multimodal learning styles while male students favored single learning styles. This study also negates that female students were much more likely to choose a multimodal learning style. In contrast, male students were significantly more likely to prefer a unimodal learning style, according to Isman and Gundogan (2019).

Table 4: Relationship of learning style and profile variables

Learning style and profile variables	Value	df	p-value
Age	4.033	6	0.672
Gender	0.543	2	0.762
Final Gade	23.969	24	0.463

There is also no relationship between learning style and respondents' final grade since the computed value is greater than 0.05. This result contradicts the notion that learning styles influence academic performance among students. This negates Dayon (2018) that learning styles significantly affect academic

performance. The degree of TLE competencies and their link to respondents' learning styles are shown in Table 5. According to the data, the p-value is greater than 0.05, suggesting no relationship exists between learning style and TLE competencies among the respondents.

Table 5: Significant Relationship between the Respondents' Learning Styles and Level of T Competencies

Level of TLE competencies	r(x,y)	P-value
Prepare Dining Room / Restaurant Area for Service	0.011	0.939
Welcome and Take Food and Beverage Orders	0.085	0.559
Promote Food and Beverage Product	0.053	0.715
Provide Food and Beverage Service to Guests	0.031	0.828
Provide Room Service	0.072	0.617
Receive and Handle Guest Concerns	0.085	0.556

The result suggests that competency does not depend on learning style. It should be noted that learning style is the composite of various factors written

by Keefe (Ariola, 2015). Learning is also influenced by factors like educational conditions under which a student learns, cognitive, affective, and psychological

factors that are relatively stable indicators of how a learner perceives interacts with, and responds to the learning environment (Stewart and Felicetti (2017)). The study's findings underscore that other factors have influenced the respondents' competencies beyond their learning styles. Moreover, it should be mentioned that learners are responsible for their learning (Nzesei, 2015; Sighn, 2017). The findings of the study also suggest that there may be overlap among the learning style of the respondents that were not elicited by the VARK questionnaire. Another, the researcher would like to highlight that individuals forge their competencies independent of learning styles or other structures (Vecaldo *et al.*, 2019). This is per post-structuralism, which emphasizes individual discourses, multiple perspectives of truth, and agency.

Regarding discourses, a critique of the VARK paradigm's relevance in developing competencies along Education 4.0 is posited. A weakness of the VARK learning style is its specificity to particular learning styles that may not account for the overlapping of the four domains. Also, its lack of appropriation to the fourth Industrial revolution within the cultural context of the respondents could be attributed to it as a Western testing instrument. (Leite *et al.*, 2010). Moreover, based on the lack of correlation of the study findings, it tends to deconstruct the impending categories of VARK being limited to certain learning styles that mainstream education has posed. The mainstream idea that learning style and competency are mutually linked should be debunked.

In line with multiple perspectives of truth and agency, it is to say that putting learners into certain categories in the VARK paradigm limits them to a certain degree. Further, the result of the study allows a more perspectival or multimodal approach to learning not just being confined to the VARK model. Essentially, the study's result indicates to learners' agency that their competencies are not dependent on certain learning styles or limited by such. Fundamentally, learners have their will and motivation, making them responsible for their learning and developing competencies (Williams, 2014). This aligns with various criticisms of VARK and affirms that learning styles and competencies are not correlated (Hawk and Shah, 2007; Husmann and Dean, 2018).

CONCLUSION

Based on the study's findings, the researcher concluded that some preferred audio and tactile learning styles, although most students were assessed as visual learners. Moreover, all the competencies from Food and Beverage based on the Student Assessment Guide provided by TESDA were evident in all the Grade 12 participants based on the study results. There is no significant relationship between the respondents' learning styles and TLE competencies. The lack of

correlation between learning style and competency among respondents debunks the notion that learning style is linked with competencies. This result is indicative of the individual agency of the respondents. It is to say that learners are responsible for their education, and the respondents were not limited to pre-confined learning styles measured in the VARK model. Other factors must be considered, not just their learning styles influencing their TLE competencies. The study findings are geared to develop the student's least-mastered skills. Further, a competency-based intervention program must be initiated.

RECOMMENDATIONS

Based on the conclusion drawn from the study, the researcher recommended the following:

1. The Department of Education must initiate a pre-assessment of the student's learning styles to determine the learning strategies suitable for each individual using a more culturally contextualized tool.
2. The school administration must implement different modalities or multimodal approaches to tap different learning styles among students.
3. The curriculum developer must align the activities given in the TESDA manuals in food and beverages to the skills that need mastery
4. The findings provide opportunities to reevaluate and provide future discourses on the VARK paradigm and its implications. This is to give a more multimodal approach in line with Education 4.0.
5. A competency-based intervention program must be implemented to address the student's least mastered skills and provide appropriate activities based on their learning preferences.

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