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Adequacy of Technological-Pedagogical Preparations of General High Schools in the K To 12 Curriculum: A Comprehensive Mapping

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Abstract: This study determined the adequacy of technological-pedagogical preparation of general high schools of Digos City Division and Davao del Sur Division in the K to 12 Curriculum. This utilized the descriptive survey to explore the perceived barriers that teachers in Grades 7 and 8 encounter on the readiness of the general high schools in implementing the K to 12 Curriculum. Comprehensive mapping was made to measure the technological and pedagogical preparedness. There were 55 teacher respondents from two school divisions of Davao del Sur and Digos City who served as participants of the study. Mean, frequency, and analysis of variance were employed in the analysis of the data gathered. It was found out that the technological-pedagogical preparations of general high schools in the K to 12 Curriculum is highly adequate. Three of the four indicators were found to be highly adequate, namely: equipment and facilities, vertical articulation of teachers and framework orientation. The other indicator, shop layout, was found to be moderately adequate. There was no significant difference on the degree of adequacy of technological-pedagogical preparations of general high schools in the K to 12 Curriculum. The findings captured the insights and experiences of the teachers, which were essential in determining exactly what general high schools lack in terms of technology and pedagogical preparedness. The study recommends that the DepEd and TESDA Officials should collaborate with school administrators in the inspections of schools in terms of building equipment and facilities.

Keywords: General High School, K to 12 Curriculum, Technological-Pedagogical Preparation

A. Introduction

The Philippine Education has evolved in many different curriculums and programs over the years. Education plays such an important role in society that everyone cannot even

imagine a life without it. It is a building block for the civilization of human society. It is the basis of a good life and continuous learning for everyone (Galang, 2021; De Leon & Culala, 2019). As a matter of fact, everything that mankind creates today is based on the knowledge that man obtains throughout his life by way of education. This is the turn out of the innovation and inventing equipment and devices, and resulting in a high technology nowadays. The more developed life becomes, the more necessary education is for everyone. The poor quality of basic education as reflected in the inadequate preparation of high school graduates for the world of work contributes to the relatively high unemployment rate among young and the educated.

Many public secondary schools are not equipped with technological facilities for the K to 12 curriculums. This is to prepare students to use new technologies, understand how new technologies are developed, and aim to have skills to analyze how new technologies affect use, our nation, and the world. According to Durban and Catalan (2012), reality tells us that even if the public-school teachers are qualified to teach, the lack of instructional materials, inadequate facilities and lack of training for professional growth hindered them to perform at their best. As reported by Noeth and Volkov (2004), it is reasonable and expected that technology should help lead the way to improve teaching and learning in schools. Further, it is reasonable to believe that the ability to incorporate the educational opportunities that technology promises will help level the playing field throughout the K to 12 curriculums. Teachers should receive adequate, tailored, and continuing education about how to best integrate technology into their schools and courses, and should be evaluated on their proficiency in doing so. Locally, one of the problems facing the general high schools is the lack of technological facilities for the Technology and Livelihood Education in preparation for the Grades 9 and 10 skills learning, and also the pedagogical needs for skill enhancement and more time for training to handle the said curriculum.

As cited in the K to 12 Toolkit Resource Guide for Teacher Educators, School Administrators and Teachers (2012), education reform will upgrade the country's education system and align it to the requirements of the 21st century. This will require a K 12 teacher to develop the essential knowledge, skills, attitudes, and values of the students to enable them to cope with these changes. It is imperative for K to 12 teachers to know the characteristics or attributes critical to 21" century education so that they may be able to integrate them in their teaching Teachers are the key to achieving the vision of the K to 12 education programs. With this high demand for teachers, the Department of Education will give due consideration and appropriate support to ensure that teachers will be able to fulfill their significant role in the K to 12 education programs. Teachers are the critical players and thus their support is necessary to bring the vision of the K to 12 Education Program closer to reality.

In the two schools' division of the 1" Congressional District of Davao del Sur, the Department of Education has given series of mass training to the teachers for the Grades 7 and 8 for the K to 12 Curriculum but the allocated time and days are not enough for a teacher training to become more equipped and competent to handle the new curriculum. However, the technological facilities of the schools find it hard to realize since every secondary school needs a standard shop layout with complete equipment and facilities patterned from the Technical Education and Skills Development Authority (TESDA) for the Grades 9 and 10 to be used as their hands-on laboratory rooms for their specialization and to continue towards Grades 11 and 12 for the senior high school.

Thus, with the above-stated situations, the researcher found it very timely to conduct a study on the adequacy of technological-pedagogical preparedness of the general high schools in the K to 12 Curriculum in preparation for the Grades 9 and 10. Furthermore, the findings of the study lead to formulate a better curriculum for the learners of tomorrow. Hypothesis: There is no significant difference on the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum on shop layout, equipment and facilities, vertical articulation of teachers, and framework orientation.

The study on the adequacy of technological-pedagogical preparation of the general high schools in the K to 12 Curriculum in the selected secondary schools of the 1st The Congressional District of the Province of Davao del Sur is beneficial to the Department of Education because it will guide and direct them in the formulation of plans and activities that further enhance the technological facilities and the capacity of teachers in the field to handle Grades 9 and 10. Result of the study could also help the DepEd-Divisions of Digos City and Davao del Sur, the secondary school heads to assess the existing status of technological-pedagogical preparation in terms of shop layout, equipment and facilities, vertical articulation of teachers and framework orientation of the K to 12 Curriculum. With longer time in trainings and skills enhancement that they will provides teachers are ready to impart knowledge and skills to students for their life-long learning Lastly, this study will serve as benchmark to future researchers who intend to make a follow-up study on the topic under investigation to find out whether findings are similar when the study is conducted in another location. To establish a common frame of reference, the terms pertinent to the study are defined:

Adequacy of Technological-Pedagogical Preparation. This refers to the complete equipment and facilities and following the standard workshop layout design and the qualified teachers with National Certification (NC) in any technical course as mandated by the Technical Education and Skills Development Authority (TESDA). It refers also to the availability of the Technology and Livelihood Education laboratory rooms with a

complete set of equipment and facilities. **General High Schools** refers to a group of educational programs without a special focus on particular study subjects. **K to 12 Curriculum** means kindergarten and the 12 years of elementary and secondary education. Kindergarten points to the 5-year-old child who undertakes the standardized curriculum for preschoolers; while elementary education refers to 6 years of primary school (Grades 1-6); and secondary education means four years of junior high school (Grades 7-10 or HS Year 1-4). In addition to this, two years are now allotted for senior high school (Grades 11-12 or HS Year 5-6). **Comprehensive Mapping** means a survey on the technological-pedagogical preparation of general high schools under the K to 12 Curriculum in the 1st Congressional district of the Province of Davao del Sur.

B. Methods

This study employed the descriptive survey to determine the adequacy of technological-pedagogical preparation of general high schools of the K to 12 Curriculum (Taek et al., 2024; Alegre, & Galado, 2023). Descriptive method of research, determines and reports the way things are. It describes and interprets what are the prevailing conditions or relationships that exist or do not exist; some practices that are prevailing or do not prevail at all. Descriptive research presents the current facts pertaining to nature. The respondents of this study were the Technology and Livelihood Education teachers from the two schools' division under the to 12 Curriculum, the Digos City National High School of Digos City Division, four schools of Davao del Sur Division, namely: Hagonoy National High School, Matanao National High School, Barayong National High School and Sta. Cruz National High School. The map of Davao del Sur is attached for easy identification of the research locale.

Table 1. Distribution of Research Respondents

School	Actual Number of Teachers	No. of Respondents	Percentage
Digos City National High School	48	23	41.82%
Hagonoy National High School	10	8	14.55%
Matanao National High School	8	5	9.09%
Barayong National High School	8	5	9.09%
Sta. Cruz National High School	14	14	25.45%
Total	88	55	100.00%

Random sampling was utilized to determine the sample size. The number of respondents is reflected on Table 1. The study was conducted to all technology and Livelihood Education teachers of grade seven and grade eight. Table 1 shows the respondents of the study. In gathering the data on the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum a checklist was employed. The teacher respondent determined the adequacy of technological facilities in terms of shop layout, equipment and facilities vertical articulation of teachers and framework orientation using the following scale:

Range of Means	Scale	Descriptive Equivalent	Interpretation
4.50-5.00	5	Very Highly Adequate	This indicates that the provision relating to the adequacy of technological- pedagogical preparation of general high schools in the K to 12 Curriculum is very much evident or always observed.
3.50-4.49	4	Highly Adequate	This indicates that the provision to the adequacy of technological-pedagogical preparation- of general high schools the K to 12 Curriculum is relatively evident or oftentimes observed.
2.50-3.49	3	Moderately Adequate	This indicates that the provision relating to the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum is sometimes evident.
1.50-2.49	2	Slightly Adequate	This indicates that the provision to the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum is evident or observed.
1.00-1.49	1	Not Adequate	This indicates that the provision relating to the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum is not evident.

The gathering of data followed the protocol. The researcher asked permission from the School Superintendent of Digos City Division and Davao del Sur Division A letter of request was sent to the school principals of Digos City National High School, Hagonoy National High School, Matanao National High School, Barayong National High School and Sta. Cruz National High School. Arrangement was done with school principals regarding the conduct of the research. The researcher personally administered the research instruments to the respondents to ensure the 100 percent retrieval of the

questionnaire. The statistical tools were used in treating the data of this study: **Mean** was used to determine the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum. **Analysis of Variance** was used to determine the significant difference on the adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum. **Frequency** was used to determine the ratio of the total number of individuals under survey. The statistically tested data were the basis in answering the general and sub-programs and in testing the formulated research null hypothesis The data were computed at 0.05 level of significance.

C. Results and Discussion

This study was successfully done by the help of the Technology and Livelihood Education teachers' respondents who shared their responses in conducting the research work. The results are discussed in the following manner.

Profile of Teacher Respondents of General High Schools in terms of Field of Specialization

Presented in Table 2 is the profile of the teacher respondents in terms of field of specialization. It shows that among the 55 respondents, there are 8 teachers who specialized in Foods, 7 teachers who specialized in Livelihood 6 teachers who specialized in Technology and Home Economics, 5 teachers who specialized in Agri-Fishery, 3 teachers who specializes in Automotive Electrical Technology and Home Economics, 2 teachers who specialized in Guidance and Counseling. General Science and Industrial Arts, and 1 teacher who specialized in Baking English, Plant Pathology, Woodworking, Agri-Fishery, Home Technology, Mechanical Technology, Garment Trades, Mathematics PEHM Agronomy Business Administration, Practical Arts and Welding/SMAW. This indicates that most of the respondents specialized in Foods, Livelihood and Technology and Home Economics. This also means that the majority of the teachers employed in the general high schools of the two schools' division teaching Grades 7 and 8 are taking up Foods, Livelihood and Technology and Home Economics as their baccalaureate degree. Some teacher-respondents who are non-TLE majors were allowed to teach Technology and Livelihood Education due to their additional skills and knowledge and vocational course training from Technical Education and Skills Development Authority (TESDA). In schools with a small student population, teachers are assigned to teach different subject areas even if they are not aligned with their baccalaureate degrees due to teaching underloads.

The data imply that the alignment of faculty members is observed by the school because the school sees to it that the teachers can teach well the K to 12 Program in Technology

and Livelihood Education subject. TLE teachers are also trained with different fields of specialization by Technical Education and Skills Development Authority (TESDA) which prepares them to teach Grades 9 and 10. Teacher-respondents with field of specialization in English, Guidance and Counseling, General Science, Mathematics and PEHM were non-TLE major teachers but are given teaching loads in Technology and Livelihood Education due to their skills and knowledge and have taken S vocational training courses from TESDA Furthermore most of these respondents are National Certificate (NC) holders. As a result, teachers in these schools are more often required to be generalists, teaching a variety of subjects regardless of their background. In these kinds of settings. states might consider the use of itinerant teachers where schools could share the use of teachers with preparation in a specialty.

Table 2. Profile of Teachers Respondents in terms of Field of Specialization

No.	Field of Specialization	Frequency (f)					Total
		HNHS	MNHS	BNHS	SNHS	DCNHS	
1	Automotive	1	1			1	3
2	Baking	1					1
3	Electrical Tech.	1				2	3
4	English	1					1
5	Foods	1	1			6	8
6	Home Economics	1		1	1		3
7	Plant Pathology	1					1
8	Woodworking	1					1
9	Agriculture		1		3	1	5
10	Agri-Fishery		1				1
11	Livelihood		1	1		5	7
12	Guidance & Counseling			1		1	2
13	Home Technology			1			1
14	Mechanical Techno			1			1
15	Garment Trades				1		1
16	General Science				1	1	2

17	Mathematics				1		1
18	PEHM				1		1
19	Techno & H.E				6		6
20	Agronomy					1	1
21	Business Admin					1	1
22	Industrial Arts					2	2
23	Practical Arts					1	1
24	Welding/SMAW					1	1
Total		8	5	5	14	23	55

The finding is parallel to the idea of Ingersoll (2003), who said that meeting standards for qualified teachers is more difficult in some settings. Rural school districts, for example, tend to have smaller secondary schools.

Profile of Teacher Respondents of General High Schools in terms of Length of Service

Presented in Table 3 is the profile of the teacher respondents in terms of length of service. It reveals that among the 55 respondents, 17 of them rendered services for 5 years and below, 8 for 6-10 years, 5 for 11-15 years, 12 for 16-20 years and 13 for 21 years and above. It shows that most of the respondents have teaching experience for 5 years and below.

Table 3. Profile of Teacher Respondents in Terms of Length of Service

No.	Length of service	Frequency (f)					TOTAL
		HNHS	MNHS	BNHS	SNHS	DCNHS	
1	5 years and below		1	2	5	9	17
2	6-10 years	1			2	5	8
3	11-15 years		1	2	1	1	5
4	16-20 years	4	1		6	1	12
5	21 years and above	3	2	1		7	13
Total		8	5	5	14	23	55

This result corroborates the studies of Omer (2011) who stated that many teachers handling K to 12 Program in the United States of America during 2007-2008 have little or no experience at all. Moreover, teachers with higher number of lengths of service tend to have a career satisfaction and they are the ones being tapped to help the least number of years in service in the field of teaching.

Profile of Teacher Respondents of General High Schools In terms of Teaching Positions

Presented in Table 4 is the profile of the teacher respondents in terms of teaching positions. It shows that among the 55 respondents, 33 of them are Teacher 1, 8 are Teacher 2, 8 also are Teacher 3, 4 are Master Teacher 1 and 2 are Master Teacher 2. It reveals that most of the respondents are Teacher 1.

Table 4. Profile of Respondents in terms of Teaching Position

No.	Teaching Position	Frequency (f)					TOTAL
		HNHS	MNHS	BNHS	SNHS	DCNHS	
1	Teacher 1	4	3	3	8	15	33
2	Teacher 2	3	2	1	1	1	8
3	Teacher 3			1	3	4	8
4	Master Teacher 1	1				3	4
5	Master Teacher 2				2		2
Total		8	5	5	14	23	55

This explains that teaching positions in general high schools depends on the number of years the teacher is employed and his/her educational attainment. Most of the respondents are Teacher 1, they are newly hired teachers and have 5 years and below in teaching experience.

Adequacy of Technological-Pedagogical Preparations of General High Schools in terms of Shop Layout

Presented in Table 5 is the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of shop layout. It is shown in the table that under Shop Layout, Providing with up to date tools, equipment and accessories

obtains an average mean rating of 3.30 with the descriptive equivalent of moderately adequate; designing laboratory room into nine (9) working stations obtains an average mean of 2.60 or moderately adequate; adapting appropriate instructional materials to implement the prescribed curriculum obtains an average mean of 3.60 or highly adequate; renovating laboratory room for standard qualification mandated by TESDA DepEd obtains an average mean of 2.60 or moderately adequate; and following to use the working stations in learning obtains an average mean of 3.08 or moderately adequate. As a whole, the mean rating of 3.04 on the Adequacy of Technological-Pedagogical Preparation of General High Schools in the K to 12 Curriculum in terms of Shop Layout moderately adequate. This means that the technological-pedagogical preparation of general high schools of the K to 12 Curriculum is sometimes evident. This explains that the general high schools are already using the model design of shop layout similar to that of TESDA laboratory or workshop rooms.

Table 5. Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum in terms of Shop Layout

No	Items(s)	HNHS		MNHS		BNHS		SNHS		DCHS		Average	DE
		Mean	DE	Mean	DE	Mean	DE	Mean	DE	Mean	DE		
1	Provide w/ up to date tools, equipment and accessories	4.12	H	3.60	S	2.20	S	3.07	M	3.52	H	3.30	M
2	Design laboratory room into nine (9) working stations	2.50	M	2.00	S	2,20	S	2.85	M	3.47	M	2.60	M
3	Adapts appropriate instructional materials to implement the prescribed curriculum	4.00	H	3.00	M	3.20	M	3.57	H	4.21	H	3.60	H
4	Renovates laboratory room for standard qualification mandated by TESDA/DepEd	3.00	M	2.60	M	1.80	S	2.42	S	3,21	M	2.60	M
5	Follows to use the working stations in learning	3.87	H	3.40	M	1.60	S	2.92	M	3.65	H	3.08	M
Overall Mean		3.50	H	2,92	M	2.20	S	2.97	M	3.61	H	3.04	M

Furthermore, the table shows that only Strand 3 (adapts appropriate instructional materials to implement the prescribed curriculum) has the descriptive equivalent of

highly adequate. It shows that the TLE teachers of the five secondary school respondents already have the knowledge to implement and adapt instructional materials for the K to 12 Curriculum. The result is parallel to the statement of Umunadi (2000), who said that the main thrust of the provision of vocational and technical education equipment and facilities is to assist the teachers to teach students and utilizing the equipment and facilities in improving students with necessary knowledge, skills and experiences as tools which students can use in translating theoretical principles into practical design for problem solving and making functional use of devices for carrying capacity in tertiary institutions.

Adequacy of Technological-Pedagogical Preparations of General High Schools in terms of Equipment and Facilities

Presented in Table 6 is the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of *equipment and facilities*. Table 6 shows that of the 5 respondent-schools only Hagonoy National High School obtained mean ratings that belong to Very Highly Adequate descriptive equivalent on the 5 items under the indicator respondent-schools obtained mean computations that belong to highly adequate except Barayong National High School which obtained a mean rating of 2.60 or moderately adequate in item number 1.

Table 6. Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum in terms Equipment and Facilities

No	Items(s)	HNHS		MNHS		BNHS		SNHS		DCHS		Average	DE
		Mean	DE	Mean	DE	Mean	DE	Mean	DE	Mean	DE		
1	Knows the nature and operations of equipment/s as they apply to teaching and learning	5.00	VH	4.20	H	2.60	M	3.64	H	4.13	H	3.19	M
2	Facilities the use of technology to enhance teachings and learning.	5.00	VH	4.20	H	3.60	H	3.92	H	4.13	H	4.17	H
3	Commits to use accurate and updated equipment/s in teachings	4.62	VH	4.00	H	3.80	H.	3.71	H	3.73	H	4.04	H
4	Values and practice social responsibility,	4.62	VH	3.80	H	3.80	H	3.78	H	4.00	H	4.00	H

	ethical and ICT tools and resources												
5	Shows positive attitude towards the use of the equipment/s and ICT in keeping records of learners.	4.50	VH	4.00	H	4.40	H	4.14	H	4.21	H	4.25	H
Overall Mean		4.50	VH	4.04	H	3.64	H	3.83	H	4.04	H	4.07	H

Range of Means:
4.50-5.00 Very Highly Adequate (VH)
3.50-4.49 Highly Adequate (H)
2.50-3.49 Moderately Adequate (M)
1.50-2.49 Low (L)
1.00-1.49 Very Low (VL)

Legend:
DE - Descriptive Equivalent
VH - Very Highly Adequate
H - Highly Adequate
M - Moderately Adequate
S - Slightly Adequate

The detailed discussion of The average mean ratings of the five respondent-schools on the 5 items on equipment and facilities follows: item number 2 knows the nature and operations of equipment as they apply to teaching and learning has an average mean of 3.19 with a descriptive equivalent of moderately adequate; item 2, facilitates the use of technology to enhance teaching and learning has an average mean of 4.17 or highly adequate; item 3, commits to use accurate and updated equipment in teaching has an average mean of 4.04 or highly adequate; item 4, values and practices social responsibility, ethical and legal use of ICT tools and resources has an average mean of 4.00 or highly adequate; and item 5, shows positive attitude towards the use of equipment and ICT in keeping records of learners has an average mean of 4.25 or highly adequate. As a whole, the responses of the respondents have an overall mean of 4.07 or highly adequate. This means that the technological-pedagogical preparation of general high schools in the K to 12 Curriculum is relatively evident. It shows that the teacher respondents know how to use the equipment and facilities to facilitate learning and skills of students. Teachers are computer literate in keeping and tracking the records of learners, and they used computer aided instructions (CAI) in delivering the lessons.

The result is in consonance to the report of UNESCO (2012), which stated that good facility (foremost building equipment and learning materials) are expected to lead better results partly because having access to good facilities can motivate and empower students and partly because being able to use the equipment furthers the internal learning process of the student. It is therefore of interest to measure the extent to which students

have access to good equipment and new technology. The report stated further that equipment must be updated regularly and maintained on a continuous basis.

Adequacy of Technological-Pedagogical Preparations of General High Schools in terms of Vertical Articulation of Teachers

Presented in Table 7 is the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of vertical articulation of teachers. The table reveals that under vertical articulation of teachers; attending skills enhancement or in-service training on teaching and learning has an average mean of 4.27 with a participating in teacher study groups, descriptive equivalent of highly adequate; networks or collaboration has an average mean of 3.72 or highly adequate; working on a committee or task force focused on curriculum and instruction has an average mean of 3.69 or highly adequate; applies the updated content and appropriate strategies in teaching technology operations and concepts has an average mean of 3.92 or highly adequate; shows reflective attitude in translating learning competencies and standard to actual classroom situation has an average mean of 3.91 or highly adequate. As a whole the vertical articulation of teachers obtained an average mean of 3.90 or highly adequate. Furthermore, it is noteworthy that Hagonoy National High School and Sta. Cruz National High School obtained a Very Highly Adequate description equivalent in item 1, attends skills enhancement or in-service training on teaching and learning. While only Matanao National High School obtained a moderately adequate descriptive equivalent in items 4 and 5.

Table 7. Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum in terms of Vertical Articulations of Teachers

No	Items(s)	HNHS		MNHS		BNHS		SNHS		DCHS		Average	DE
		Mean	DE	Mean	DE	Mean	DE	Mean	DE	Mean	DE		
1	Attends skills enhancements or in service training on teaching	4.88	VH	3.60	H	3.60	H	4.57	VH	4.73	VH	4.27	H
2	Participates in teachers study groups, network or collaboration.	3.87	H	3.60	H	3.40	H	3.52	H	4.21	H	3.72	H

3	Works on a committee or task force focused on curriculum and instruction.	3.75	H	4.00	H	3.40	H	3.35	H	3.95	H	3.69	H
4	Applies the updated content and appropriate strategies in teaching technology operations and concepts	4.25	H	3.20	M	3.60	H	4.14	H	4.43	H	3.92	H
5	Shows a reflective attitude in translating learning competencies and standards to actual classroom situations.	4.13	H	3.20	M	3.58	H	4.14	H	4.52	H	3.91	H
Overall Mean		4.17	H	3.52	H	3.52	H	3.92	H	4.37	H	3.90	H

Range of Means:
4.50-5.00 Very Highly Adequate (VH)
3.50-4.49 Highly Adequate (H)
2.50-3.49 Moderately Adequate (M)
1.50-2.49 Low (L)
1.00-1.49 Very Low (VL)

Legend:
DE - Descriptive Equivalent
VH - Very Highly Adequate
H - Highly Adequate
M - Moderately Adequate
S - Slightly Adequate

This means that the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of the vertical articulation of teachers is highly adequate. Teacher-respondents are already trained with the K to 12 Curriculum for the last two years for the Grade 7 and 8 wherein they are skilled and are willing to be trained for additional learning on the new curriculum. Teacher respondents improved their knowledge and skills since training and workshops are given to them by the Department of Education Professional development activities for teachers motivated them mostly in changing pedagogical practices and also to move outside their comfort zone and try new instructional strategies.

Furthermore, the result shows that the technological-pedagogical preparation of general high schools in the K to 12 Curriculum is relatively evident. The finding corroborated the idea of Nahal (2009) who said that collaboration and support from veteran colleagues enable first-year teachers to endure a sense of acceptance as a member of the learning community. Mentorship programs will help new teachers receive the survival tools and

mechanisms which professional development and preparation programs may have; mentorship and induction programs are useful techniques in assisting new teachers in the classroom because they provide better preparation and knowledge of the instructional curriculum and feel less isolated in the classroom. Furthermore, the result is parallel, that teacher development has to be aligned with and support the instructional goals, school improvement efforts and curriculum changes in teachers' schools. Thus, effective teacher development is done by people who know what those school teachers have or do not have with regards to teaching and learning resources.

Adequacy of Technological-Pedagogical Preparations of General High Schools in terms of Framework Orientation

Reflected in Table 8 is the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of framework orientation. The table reveals that under framework orientation; knowing the principles and philosophy of the curriculum has an average mean of 4.46 with a descriptive equivalent of highly adequate? integrating relevant scholarly works and Ideas to enrich the curriculum has an average mean of 4.13 or highly adequate; understanding the proper utilization of various assessment results to provide feedback for curriculum enhancement has an average mean of 4.37 or highly adequate possesses in-depth understanding of the learning goals, instructional procedures, standards and content of the curriculum has an average mean of 3.89 or highly adequate; integrating school-industry partnership and collaboration for general high schools that offer immediate employment of graduate has an average mean of 3.60 or high adequate. Collectively, the framework orientation obtained a mean rating of 4.09 or highly adequate. Furthermore, it is evident that all strands obtained a descriptive equivalent of highly adequate. This means that the technological-pedagogical preparation of general high schools in the K to 12 Curriculum in terms of framework allocation is relatively evident or oftentimes manifested. This, further, means that the general high schools of the two schools divisions are all set in implementing the K to 12 Curriculum. The new education curriculum follows the spiral progression approach or from simple to complex with previous knowledge as the starting point. With this regard, schools are equipped in terms of technological and pedagogical aspects of the new curriculum. This setup will give students more time to master competencies and time for extracurricular activities. Teachers will also be able to ensure that every competencies are taught and mastered and all the necessary skills are transferred and developed.

Table 8. Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum in terms of Frameworks Orientations

No	Items(s)	HNHS		MNHS		BNHS		SNHS		DCHS		Average	DE
		Mean	DE	Mean	DE	Mean	DE	Mean	DE	Mean	DE		
1	Knows the principles and philosophy of the curriculum.	5.00	VH	4.40	H	4.40	H	4.14	H	4.39	H	4.46	H
2	Integrates relevant scholarly works and ideas to enrich the curriculum	4.50	VH	3.80	H	4.60	VH	3.64	H	4.13	H	4.13	H
3	Understands the proper utilization of various assessment results to provide feedback for curriculum enhancement.	5.00	VH	4.20	H	4.60	VH	3.92	H	4.17	H	4.37	H
4	Possesses in depth understanding of the learning goals, instructional procedures standards, & content of the curriculum.	4.37	H	4.00	H	3.40	H	3.57	H	4.13	H	3.89	H
5	Integrates school-industry partnership and collaboration for general high schools that offer immediate employment of graduates.	4.12	H	4.20	H	2.40	M	3.50	H	3.82	H	3.60	H
Overall Mean		4.59	VH	4.12	H	3.88	H	3.75	H	4.12	H	4.09	H

Range of Means:
4.50-5.00 Very Highly Adequate (VH)
3.50-4.49 Highly Adequate (H)
2.50-3.49 Moderately Adequate (M)
1.50-2.49 Low (L)
1.00-1.49 Very Low (VL)

Legend:
DE - Descriptive Equivalent
VH - Very Highly Adequate
H - Highly Adequate
M - Moderately Adequate
S - Slightly Adequate

The result of supports the strand of Stedman (2002) who cited that most recent federal and state teacher policies and initiatives have focused on two general approaches in trying to ensure that all classrooms are staffed with qualified teachers; in upgrading the qualifications of teachers; and in increasing the quantity of teachers supplied. Though the responsibility of teacher preparation, credentialing, hiring and other teacher functions related to K-12 education lies with states and school districts, the federal government has increasingly been involved in efforts to increase the quality and quantity of teachers over the past decades.

Summary on the Level of Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum

Presented in Table 9 is the summary on the level of adequacy of technological-pedagogical preparation of general high schools in the K to 12 Curriculum. The table reveals that shop layout has an average mean of 3.04 with the descriptive equivalent of moderately adequate; equipment and facilities have 4.07 or highly adequate; vertical articulation of teachers has 3.90 or highly adequate and framework orientation has 4.09 or highly adequate. As a whole, the average mean is 3.77 or a descriptive equivalent of highly adequate. This implies that the general high schools are ready for the K to 12 Curriculum when the adequacy of technological-pedagogical preparation of these high schools are concerned.

Table 9. Summary on the Level of Adequacy of Technological-Pedagogical Preparations of the General High School in the K to 12 Curriculum

No	Items(s)	HNHS		MNHS		BNHS		SNHS		DCHS		Average	DE
		Mean	DE	Mean	DE	Mean	DE	Mean	DE	Mean	DE		
1	Shop Layout	3.50	H	2.92	M	2.20	L	2.97	M	3.61	H	3.04	M
2	Equipment and Facilities	4.82	VH	4.04	H	3.64	H	3.83	H	4.04	H	4.07	H
3	Vertical Orientation of Teachers	4.17	H	3.52	H	3.56	H	3.92	H	4.37	H	3.90	H
4	Frameworks Orientation	4.59	VH	4.12	H	3.88	H	3.75	H	4.12	H	4.09	H
Overall Mean		4.27	H	3.65	H	3.32	H	3.61	H	4.03	H	3.77	H

Range of Means:	**Legend:**
4.50-5.00 Very Highly Adequate (VH)	DE - Descriptive Equivalent
3.50-4.49 Highly Adequate (H)	VH - Very Highly Adequate
2.50-3.49 Moderately Adequate (M)	H - Highly Adequate
1.50-2.49 Low (L)	M - Moderately Adequate
1.00-1.49 Very Low (VL)	S - Slightly Adequate

Significance of the Difference on the Level of Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum

Presented in Table 10 are the data on the significance of the difference on the level of adequacy of technological-pedagogical preparations of general high schools in the K to 12 curriculums. The analysis is based on the mean ratings obtained by the schools on the four (4) domains namely, shop lay-out, vertical articulation of teachers, and framework equipment and facilities orientation. As seen on Table 10, the sources of variance for between means obtained a sum of squares of 2.879 (ss=2.879) while within means generated a sum of squares of 10.552 (ss= 10.552) which resulted to an F-value of 3.410 with probability value of 0.210 which is lower than 0.05 level of significance. This computed f value of 3.410 denotes no significant difference. This quantitative finding leads to the acceptance of the null hypothesis which states that there is no significant difference on the adequacy of technological- pedagogical preparation of general high schools in the K to 12 curriculums.

Table 10. Significance of the Difference on the Level of Adequacy of Technological-Pedagogical Preparations of General High Schools in the K to 12 Curriculum

Sources of Variance	SS	DF	MS	F-Value	P-Value	Decision on Ho
Between	2.879	4	0,720			
Within	10.552	50	0.211	3.410_{ns}	0.210	Accept
Total	13.431	54				

This implies that general high schools in Davao del Sur Division and Digos City Division are equally ready for the K to 12 Curriculum when the technological-pedagogical preparation of these high schools is concerned, The finding is corroborated by the statement of Ertmer (2004) which cited that these skills are unlikely to be used unless they fit with teachers' existing pedagogical beliefs, it is imperative that an increase of understanding of and ability to address, teachers ' beliefs are part of the efforts to increase teachers' technology skills and uses. In the best of all worlds, then, this will not only enable teachers to use computers to their full potential but will enable students to reach

theirs as well. Furthermore, the result is affirmed by Sahin (2011) who averred that there is the intertwined relationship among the three knowledge bases: Technological, Pedagogical, and Content Knowledge (TPACK). In fact, if teachers see the value of integration of appropriate educational technologies and pedagogies into their content area, they will more likely use these technologies and pedagogies to support student learning when they become real teachers.

D. Conclusions

Based from the findings of the study, the following conclusions are drawn: The teacher-respondents are mostly Technology and Livelihood Education graduates which shows that there is an alignment of field of specialization of faculty members. Those non-majors' teachers are being considered for their knowledge and skills to handle the subject area. Most teachers assigned in Grades 7 and 8 have the least number of years in teaching the new curriculum and were the first batch trained for the K to 12 Program. The teaching position mostly are Teacher 1 because it depends on the number of years in service and educational attainment. The level of adequacy of technological-pedagogical preparations of general high schools in terms of shop layout is moderately adequate; and equipment and facilities, vertical articulation of teachers, and framework orientation are highly adequate. The adequacy of technological-pedagogical preparations of general high schools in the K to 12 Curriculum obtain an overall descriptive rating of highly adequate. There was no significant difference on the degree of adequacy of technological-pedagogical preparations of general high schools in the K to 12 Curriculum.

The Department of Education, in coordination with the school administrators, should conduct frequent inspections of schools, especially those small schools that are not ready for the K to 12 Curriculum. This is to check and balance the needs of every school in terms of building facilities for the shop designs, to replace the old resources into state-of-the-art equipment and facilities, conduct more trainings, workshops and seminars for teachers. The schools should improve the shop layout and design standard TLE laboratory rooms where workstations are visible and equipped with complete facilities for skill enhancement of the learners.

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References

Alegre, E. M., & Galado, J. (2023). Technological Competence and Pedagogical Content Knowledge Practices of Junior High School Science Teachers. International Journal of Membrane Science and Technology, 10(2), 566-579. https://doi.org/10.15379/ijmst.v10i2.1266

Durban, J and Catalan, R. (2012). Issues and concerns of Philippines education through the years. Iloilo City, Philippine Educational Facilities Manual Philippines. Department of Education. *Asian Journal of Social Sciences and Humanities.*

De Leon, J. A. V., & Culala, H. J. D. (2019). Issues on sustainability in education: the Philippine basic education curriculum conundrum. *Jurnal Kemanusiaan*. https://jurnalkemanusiaan.utm.my/index.php/kemanusiaan/article/view/338

Ertmer, P. (2004). *Teacher pedagogical beliefs and classroom technology Use: A Critical Link.* Pardue University, West Lafayette, IN.

Galang, A. D. (2021). Teachers' Critical Reflections on the New Normal Philippine Education Issues: Inputs on Curriculum and Instruction Development. International Journal of Social Learning (IJSL), 1(3), 236–249. https://doi.org/10.47134/ijsl.v1i3.43

Ingersoll, R. (2003). *Out of Field Teaching and Limits of Teacher Policy*. University of Pennsylvania, USA

K to 12 Toolkit Resource Guide for Teacher Educators, School Administrators and Teachers. (2012). *Southeast Asian Ministers of Education Organization (SEAMEO), Regional Center for Educational Innovation and Technology (INNOTECH).* http://www.seameo-innotech.org

Nahal, S (2009). *Voices from the field: Perspective of first year teachers on the disconnect between teacher preparation programs and the realities of the classroom*. University of Phoenix, USA

Noeth, R. Jand Volkov, B. B (2004). *Evaluating the effectiveness of technology schools in our act policy report*. http://www.act.org/research/policymakers/pdf/

Omer, S. (2011) Many teachers have little no experience. http://www.msubc.msn.com

Sahin. (2011). Development of survey of technological pedagogical and content knowledge (TPACK). *TOJEK: The Turkish Online Journal of Educational Technology.* Vol. 10 Issue l.

Stedman, J. (2002). *K-12 teacher quality: Issues and legislative action*. Washington, D.C. The Congressional Research Service the Library of Congress.

Taek, P., Madu, A., & Liunima, I. (2024). Analysis of the ability of technological, pedagogical, content, knowledge of senior high school teachers in developing learning tools. Journal of Survey in Fisheries Sciences, 11(3), 10-21. https://doi.org/10.53555/sfs.v11i3.2232

Umunadi, E. (2000). *Provision of equipment and facilities in vocational and technical education for improving carrying capacity of Niferias Tertiary Institution*. Abraka, Nigeria.

UNESCO (2012). *Proposed indicators for assessing technical and vocational education and training*. http://www.uis.unesco.org