

Technology Enhanced Agricultural Education Learning Environment And Student Preference As Predictors of Student Satisfaction

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Abstract

The study aimed to identify the domains of the technology enhanced agricultural education learning environment and student preferences that significantly predict student satisfaction. The study involved 300 selected via stratified random sampling Senior High School agriculture strand students of the Department of Education (DepEd), Davao de Oro Division. The researcher employed a quantitative non-experimental design using a correlation and a modified research instrument. The statistical tools used were mean, Pearson-r, and regression analysis. Results revealed that the levels of the technology enhanced agricultural education learning environment, student preference, and student satisfaction were all high. Furthermore, this study found a significant relationship between the technology enhanced agricultural education learning environment and student satisfaction. Also, there was a significant relationship between student preference and student satisfaction. Additionally, benefits and usefulness domains of the technology enhanced agricultural education learning environment significantly influence student satisfaction, while personal preference and job opportunity domains of student preference predict student satisfaction. The study contributes to understanding the critical influence of a technology enhanced agricultural education learning environment and student preference on student satisfaction. Finally, the study offered data-driven insights to educators and policymakers useful in designing more effective, satisfying, and engaging educational programs in the future.

Keywords: *maed, technology-enhanced agricultural education learning environment, senior high school strand student preference, student satisfaction, department of education, davao de oro division, Philippines, SDG Indicator: Quality Education*

1. Introduction

There were several issues in the education setting, one of which concerns student satisfaction, often reflected in the perceived lack of alignment between the curriculum content and future career demands (Smith & Jones, 2021). These issues are evident when students express dissatisfaction if they feel that the skills and knowledge they have acquired are not directly related to the changing professional landscape, leading to disinterest and doubts about the value of their chosen profession (Garcia et al., 2023). Specifically, for Senior High School students, this dissatisfaction was further worsened by teaching inefficiency, inadequate instructional materials, and a mismatch between the program's promise of job readiness and actual employment outcomes (PIDS, 2023; Tondo & Detecio, 2021). Moreover, satisfaction in technology enhanced learning (TEL) environments is challenged by a persistent digital divide, unequal internet access, and inconsistent availability of ICT tools (Briones & Prudente, 2023). Lastly, poor teaching quality, unclear course organization (Tanguihan, 2024), and teachers' lack of expertise in integrating digital platforms further

limit instructional quality and affect student satisfaction (Haleem et al., 2022).

Student satisfaction is crucial. It acts as a key indicator of educational quality and effectiveness (Bland et al., 2020; Abdul Latip et al., 2020; Bordios et al., 2022). It also directly affects engagement, motivation, and ultimately, academic success (Johnson, 2021). Additionally, student satisfaction is considered vital for ensuring educational equity and preparing students for long-term careers (Smith, 2023). Research indicates that high satisfaction levels are strongly linked to better student retention rates and overall institutional achievement (Chen & Lee, 2019). It is also positively correlated with the quality of learning outcomes (Estepp et al., 2022). According to the study by Abdul Latip et al. (2020, as cited by Bordios et al., 2022), student satisfaction has become an important component of quality assurance in online distance learning. Likewise, in the study conducted by Cheon et al. (2020, as cited by Bordios et al., 2022), measuring student satisfaction is an important aspect of the successful promotion of educational processes for institutions, teachers, and students.

Moreover, several studies confirm the relationship between student satisfaction and Technology Enhanced Learning (TEL) education. According to the study of Alqurashi (2019), as cited by Aguirre et al. (2022), student satisfaction influences learners' experiences. It was also found that student satisfaction with online learning is highly related to dropout rates, determination, motivation, and success rates (Aguirre et al., 2022). Also, in the study conducted by Alexandera et al. (2019), a high satisfaction with the TEL resources was recorded. In the same manner, the effective use of technology, the quality of lecturers, and the quality of physical facilities were also found to be the key determinants of student satisfaction (Li et al., 2023). Finally, other factors that influence student satisfaction include educational quality, technological features, curriculum and instruction, student characteristics, interaction in classes, learning styles, support services, and, on rare occasions, demographic characteristics (She et al., 2021).

Further, several studies explored the relationship between student preferences to their satisfaction. In terms of student preference for their senior high school track, researchers like Kilag et al. (2023) mentioned that perceived benefits, such as satisfaction, influenced student preference for the Senior High School track. Also, student satisfaction with their Senior High School (SHS) strand is significantly linked to their initial preference (Malaguial et al, 2023; Garcia & Reyes, 2021; Dela Cruz, 2024; Reyes & Santos, 2023; Lim, 2022). In terms of using TEL, the studies conducted by Kim and Kim (2021) and Fisher et al. (2021), as cited by Li et al. (2023), mentioned the lecturer-student relationship, interaction with fellow students, teaching ability, and flexible curriculum as factors that could influence learners' preferences in an online learning environment. Moreover, students' preferences, teaching performance, teaching engagement, and perceived quality were reported to be highly important in determining the students' satisfaction (Ho et al., 2021; Li et al., 2023). Lastly, students are more satisfied with online learning if they generally perceive an online course as quality, appropriate, and their familiarity with the course background (Biqiri et al., 2009; Li et al., 2023).

Students are required to possess the so-called 21st-century skills believed by many, including educators, to be critically important in achieving success. These skills include digital and media literacy-related skills, critically important to students and young professionals (Llego, 2023; Varthana, 2022). This could be one of the many reasons why the current trend in education nowadays is to deliver higher quality instruction with the use of Information and Communication Technologies (ICT), commonly referred to Technology Enhanced Learning (TEL), which is very helpful in increasing the global competitiveness of the students (Alyoussef and Omer, 2023).

The use of TEL has provided greater opportunities both for academic institutions and students. Xu et al. (2023) highlighted the importance of agricultural education as it is a fundamental part of the competitiveness of worldwide farming systems. With this, agricultural education must also integrate educational technologies in the development and delivery of curriculum to maintain this competitiveness (Alston & Williams, 2003, as cited by Xu et al., 2023). Moreover, the TEL method has been adopted worldwide to develop globalized competitiveness among graduates (Dubey et al., 2020). Recent studies highlighted the transformative role of advanced technologies such as Virtual Reality (VR), AI-powered

platforms, and precision agriculture tools in agricultural education. Research suggests that frameworks like Virtual Reality Farm (VRFARM) are crucial for effective VR integration (Greig et al., 2024), while other studies confirm the positive impact of technology-enhanced instruction on students' academic performance and skill acquisition in agricultural science (Ma et al., 2024; Osam & Opene, 2025). This aligns education with industry demands for digital literacy and sustainable practices (McCampbell et al., 2021).

The Senior High School (SHS) Program, mandated by Republic Act 10533, was established to prepare graduates for higher education, employment, entrepreneurship, or middle-level skills, fostering core values for societal contribution (RA 10533). It is of prime importance that students choose their SHS strand as it has an influence on the goals of the program of producing graduates who are equipped for higher education, employment, or entrepreneurship. Aligning the program with student choice leads to crucial positive outcomes across academic, psychological, and career domains. Recent researches in the country consistently demonstrate that career aspirations and personal interests are the primary drivers of Senior High School (SHS) track and strand preference among Grade 10 students (Gorosin, 2021; Ayat, 2025). Students are highly motivated to choose a strand that directly aligns with their future college course (Ayat, 2025). This choice is strongly guided by their self-efficacy and perceived job opportunities in their chosen field, emphasizing a pragmatic, future-oriented decision-making process (Ayat, 2025).

Beyond personal factors, socio-environmental influences significantly shape SHS preferences. While career goals are paramount, external pressures, notably parental influence and financial considerations, remain noticeable determinants (Malaga & Oducado, 2021; Gorosin, 2021). Students from higher socio-economic backgrounds often prefer academic tracks, whereas those with lower academic performance may gravitate towards the Technical-Vocational-Livelihood (TVL) track (Malaga & Oducado, 2021).

Student satisfaction can be assessed in terms of teaching, assessment, generic skills, and learning experiences (Fieger, 2012). Recent studies confirm that teaching quality, assessment methods, and the development of skills remain the core, valid dimensions for measuring student satisfaction. In the study conducted by Alowayr (2022) it was found that instructor and lecturer characteristics (analogous to teaching) and student self-efficacy were key to satisfaction in technology-enhanced learning environments. Mathur et al (2024) emphasize that general regulatory teaching and regulatory assessment significantly impact student satisfaction. Gu & Lu (2022) found that teaching quality is the most direct influencing factor, comprising teaching process, teacher level, and teaching effect, which collectively encompass the original themes of teaching and assessment. Also, Al Masarweh & Afandi (2022) confirmed that perceived quality of the learning environment and the effectiveness of instructional delivery are critical predictors of student satisfaction in technology-mediated education.

Students' satisfaction with their academic track, such as a Senior High School strand, is clearly higher when their choice aligns with their personal preferences and core interests (Garcia & Reyes, 2021). This alignment between preference and satisfaction indicates that self-directed academic decisions promote greater engagement, motivation, and a sense of ownership over learning outcomes (De Guzman et al., 2022). Conversely, choosing a path due to external influences, like parental pressure or perceived job security, is often linked to lower satisfaction and higher dropout rates (Tan, 2020).

Despite the foundational studies and facts concerning technology enhanced education, the current literature predominantly addresses general education or agricultural programs at the Bachelor's education level (Bangkara et al., 2023). Consequently, a significant research gap exists due to the scarcity of empirical data specifically examining the combined effect of technology enhanced learning environments and student preferences on student satisfaction within the Senior High School (SHS) agricultural curriculum in the Philippines. This study is unique because it focuses on these critical SHS students, which represents a vital pre-university or pre-employment stage. Furthermore, there is a pronounced lack of local research investigating the impact of such technologically enhanced environments on student satisfaction, and even less information connecting student preference to satisfaction specifically within agricultural education. Therefore, this study uniquely addresses this deficit by exploring the local relationship between the technologically

enhanced agricultural education learning environment, SHS student preference, and student satisfaction.

2. Research Objectives

The main objective of this study was to determine which domain of technology enhanced agricultural education learning environment and student preference significantly predicts the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. Specifically, it first sought to describe the level of the technology enhanced agricultural education learning environment of selected senior high school students of the Department of Education (DepEd), Davao de Oro, in terms of benefits and usefulness. The second was to describe the level of student preference of selected senior high school students of the Department of Education (DepEd), Davao de Oro, in terms of personal interest, family influence, peer influence, job opportunities, and financial condition.

The third was to determine the level of student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro in terms of teaching, assessment, and generic skills and learning experiences. Fourth was to determine the relationship between the technology enhanced agricultural education learning environment and student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. The fifth was to determine the relationship between student preference and student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. Lastly, to determine which domain of technology enhanced agricultural education learning environment and student preference would significantly influence the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro.

3. Research Methodology

3.1. Research Design

This study employed non-experimental quantitative descriptive research that utilized correlation techniques. Descriptive research is a method used to obtain information relating to the current status of an issue or phenomenon to describe what exists within the variables or conditions of the situation. It is a study designed to depict the participants accurately. More simply put, descriptive research is all about describing people who take part in the study. Lastly, descriptive research design attempts to determine, describe, or identify characteristics within the field of investigation (Siedlecki, 2020).

3.2. Research Setting

The study was conducted in the DepEd, Davao de Oro Division. The Division is geographically located in the Province of Davao de Oro specifically situated in the middle-eastern part of Davao Region, bounded by Agusan del Sur on the North, Davao Oriental on the East and the South, Davao Gulf on the Southwest and Davao del Norte on the West. It is comprised of eleven (11) municipalities with 21 senior high schools offering the agriculture strand (NEDA, 2023; DepEd, Davao de Oro, 2023)

3.3. Selection of Criteria and Participants

The sample size considered as respondents of this study were 300 (selected grade 12 Senior High School students of the DepEd, Division of Davao de Oro which was selected from a total population of 708 learners enrolled in the 21 public schools of Davao De Oro Division.

The number of respondents was computed by using the Raosoft Sample Size Online Calculator with a 5% margin of error and 95% confidence level. To determine the number of respondents, the researcher used stratified random sampling from grade 12 Senior High School students of the 21 public schools offering the agriculture strand of the selected schools in the DepEd, Division of Davao de Oro. is a statistical technique used to estimate population characteristics. It involves dividing a population into distinct, non-overlapping subgroups (strata) and then randomly selecting samples from each stratum (DeYoreo, 2018).

Moreover, in this study, the researcher has defined the group of respondents, which are the selected grade 12 senior high school students from the 21 selected schools in the DepEd, Davao de Oro, offering the agriculture strand. To be included as respondents, they should be a grade 12 Senior High School students enrolled in the 21 schools belonging to the DepEd, Davao de Oro Division, offering agriculture in the senior high strand. Excluded are SHS students who are enrolled in schools within the Davao De Oro Division that do not offer agriculture strands. Excluded also are those grade 12 Senior High School students outside the DepEd, Davao de Oro Division.

3.4. Data Collection

Following the approval from the panel members and adviser, and after securing the Certificate of Conformity (UMERC Certification No. 2024-427) from the University of Mindanao Ethics Review Committee (UMERC), the researcher then successfully proceeded with the data gathering, which commenced after obtaining permission and approval from the DepEd Division of Davao de Oro.

The researcher asked for the approval of the Division superintendent through a request letter stating the purpose of the research. The questionnaires that were modified in this study were administered face-to-face and distributed by the independent party hired to support the data gathering. This was also the time when the respondents were requested by the researcher to give their informed consent. They were also asked to fill up the informed consent form after the thorough orientation of the content of the form using the respondent's primary dialect. They were oriented and informed of the purpose of the study and that their answers were treated with the utmost confidentiality. Then, the respondents were requested to answer and fill up the questionnaire as honestly as possible. Their responses were collected right after their completion, consolidated, and tabulated.

3.5. Data Analysis

The researcher used the following statistical tool in the analysis of the data collected: Mean which was used to determine the level of technology enhanced agricultural education learning environment, student preferences, and student satisfaction; Pearson-r coefficient which was used to test for the significant relationship between the technology enhanced agricultural education learning environment and student preferences to student satisfaction; and regression analysis which was used to determine the domain of the technology enhanced agricultural education learning environment and student preferences that significantly influence the student satisfaction.

3.6. Ethical Considerations

The researcher implemented a comprehensive ethical framework ensuring strict adherence to principles of informed consent, voluntary participation, and data security. Before any data collection, approval was secured from the UMERC and relevant school administrators, while mandatory parental/guardian consent and student assent were obtained for minors. All participants received a thorough orientation explaining the study's objectives, procedures, and potential risks in their primary language, emphasizing their right to withdraw anytime without penalty or impact on academic standing. The researcher guaranteed strict confidentiality, anonymizing all identifiable data, and took measures, including using an independent third party, to minimize personal influence, thereby assuring genuine responses and protecting participants from coercion or exploitation. Lastly, the researcher had prior approval from the University's Ethics Committee (UMERC Certification No. 2024-427).

4. Results and Discussions

4.1. Level of Technology Enhanced Agricultural Education Learning Environment

Table 1 shows the level of the Technology Enhanced Agricultural Education Learning Environment of the selected senior high school students of the Department of Education (DepEd), Davao de Oro in terms of *benefits* and *usefulness*. Among the two indicators, *usefulness* got the highest mean of 3.91 with a descriptive equivalent of high, followed by *benefits* with a mean of 3.82 and described as high. Generally, the level of the technology enhanced agricultural education learning environment of the selected senior high school students of the Department of Education (DepEd), Davao de Oro is high, with an average mean of 3.87 and a standard deviation of 1.00. The value of standard deviation denotes that the ratings acquired in this study are very close to the mean, showing consistency in responses.

Table 1. *Level of the Technology Enhanced Agricultural Education Learning Environment of the selected senior high school students of the Department of Education (DepEd), Davao de Oro*

Indicators	SD	Mean	Description
Benefits	1.00	3.82	High
Usefulness	0.99	3.91	High
Overall	1.00	3.87	High

Furthermore, the results imply that the selected senior high schools of Davao de Oro found out that the lecture notes, study sheets, review materials, and handouts through the use of technology, as well as previous exams, are available to them online. Similarly, this also means that there are links and contact information provided to them, along with the additional information (background) about the teacher is posted online. In addition, the results also revealed that the course syllabi, presentation materials, and multimedia course materials are useful and appropriate to them. Lastly, the results imply that there are practice exams, quizzes, and class discussion questions or chat groups using the technology.

Finally, the results of the level of technology enhanced agricultural education learning environment confirmed the statements of Alston and English (2007) which found out that benefits of technology enhanced learning environment are the perceived advantages of using technology-enhanced learning such as but not limited to the ease of use, convenience, accessibility, learning interaction with fellow students, quality, and help increase personal awareness of the technology. Similarly, the results also confirmed the observations of Alston and English (2007) that usefulness of the technology enhanced learning environment are the perceived value of using the technology and its components such as but not limited to easy access to grades, printable lecture notes, materials, reviewers, syllabi, presentation materials, multimedia materials, practical examinations and quizzes, class discussions, previous examination results, and additional information from the teacher.

4.2. Level of Student Preference

Table 2 below shows the level of student preference of selected senior high school students of the Department of Education (DepEd), Davao de Oro. This is in terms of five indicators: *Personal Interest*, *Family Influence*, *Peer Influence*, *Job Opportunities*, and *Financial Condition*. Among the five indicators, *Personal interest* got the highest mean of 3.97 with a descriptive equivalent of high. The lowest indicator with a mean of 3.27 is *family influence*, which was also described as moderate level. In general, the level of student preference of selected senior high school students of the Department of Education (DepEd), Davao de Oro is

high, with an average mean of 3.59 and a standard deviation of 1.20. The low standard deviation indicates that the ratings gathered in this study are tightly clustered around the mean, demonstrating high consistency in the responses.

Table 2. *Level of the Student Preference of selected senior high school students of the Department of Education (DepEd), Davao de Oro*

Indicators	SD	Mean	Description
Personal interest	1.01	3.97	High
Family influence	1.28	3.27	Moderate
Peer influence	1.29	3.28	Moderate
Job opportunities	1.08	3.66	High
Financial condition	1.15	3.73	High
Overall	1.20	3.59	High

Moreover, the results of the level of student preference of selected senior high school students of the Department of Education (DepEd), Davao de Oro imply that the students choose their senior high school strand based on their desire and of their own choice. Also, the results denote that the students choose the track that fits their skills and interest with their personality and habits are in line with the track they choose. Lastly, the result implies that they consider their aptitudes and capabilities in choosing their strand.

The results on the level of student preferences are in agreement with the statements of Rio et al (2022) who mentioned that student preferences include but not limited to personal interest, family influence, peer influence, job opportunities, and financial conditions. Similarly, the results are in agreement with the statements of Kilag et al. (2023) who made mentioned that students preferred to choose a particular senior high school track based on the perceived benefit, academic performance, career prospects, personal interests, and parental influence.

4.3. Level of Student Satisfaction

Table 3 shows the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. This is in terms of teaching, assessment, and generic skills and learning experience. Results show a high level of student satisfaction with an overall mean of 4.18 and a standard deviation of 1.05. The small standard deviation confirms that the respondents provided uniform ratings, with scores showing minimal deviation from the mean. Among the three indicators of student satisfaction, *teaching* ranked highest with a mean of 4.27, indicating a very high level. The indicator that got the lowest mean and is described as high is the assessment with a mean of 3.96.

The results on the level of student satisfaction imply that the subject teachers of selected senior high school students of Davao de Oro had a thorough knowledge of the content of the subject, provided them opportunities to ask questions, and treated them with respect. In the same manner, the results also denote that their subject teachers understood their learning needs and communicated the content of the subject effectively to them. Lastly, the results also mean that their subject teachers made the subject as interesting as possible.

Table 3. *Level of the Student Satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro*

Indicators	SD	Mean	Description
Teaching	0.89	4.27	Very High
Assessment	1.38	3.96	High
Generic Skills and Learning Experience	0.89	4.24	Very High
Overall	1.05	4.18	High

. The results confirmed the observations of Alowayr (2022), Mathur et al. (2024), Gu & Lu (2022), and Al Masarweh & Afandi (2022), who mentioned of student satisfaction can be assessed in terms of teaching, assessment, generic skills, and learning experiences. The results of this research align with established studies, affirming the continued relevance and validity of instructional quality, evaluation strategies, and skill cultivation as foundational metrics for gauging student contentment, including in modalities like online and blended instruction.

4.4. Correlation Between Measures

One of the study's aims is to determine the connection between student satisfaction and the technology enhanced agricultural education learning environment of a particular selected senior high school students of the Department of Education (DepEd), Davao de Oro. Table 4 shows the significance of the relationship between technology enhanced agricultural education learning environment and student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. The relationship between the two variables was tested using the Pearson-r coefficient. The probability level (p) is 0.000. The R-values of the technology enhanced agricultural education learning environment, when correlated with student satisfaction, were 0.545 for *Benefits*, and 0.615 for *Usefulness*. With $p < 0.05$, the null hypothesis of no significant relationship between technology enhanced learning environment and student satisfaction was rejected.

Table 4. *Significance of Relationship of the domains of Technology-Enhanced Agricultural Education Learning Environment and Student Satisfaction of Selected Senior High School Students of the Department of Education (DepEd), Davao de Oro*

Indicators	Dependent Variable	r-value	r ²	p-value	Decision
Benefits	Student	0.545*	0.297	0.000	Reject H ₀
Usefulness	Satisfaction	0.615*	0.378	0.000	Reject H ₀

* $p < 0.05$

The results entail a significant relationship between technology enhanced learning environment and student satisfaction. This implies further that the respondents' level of technology enhanced learning environment and their satisfaction are related. This also signifies a connection between the technology enhanced agricultural education learning environment of the respondents and their satisfaction. This could probably mean that a high level of technology enhanced agricultural learning environment to either a low or high level of satisfaction of the respondents.

Similarly, the results are in agreement with the study of Alexandera et al (2019) which found that satisfaction with the TEL resources was high and had a positive impact on knowledge acquisition. The results on the significant relationship between technology enhanced learning environment and student satisfaction confirmed also the findings of Alqurashi (2019) as cited by Aguirre et al (2022), where student satisfaction

has a relationship to online learning (a form of TEL) experiences. In addition, the results confirmed the findings of Li et al (2023) and She et al (2021), with both studies mentioning a relationship between the TEL and student satisfaction.

Another objective of the study is to determine the relationship of student preferences to the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. As shown in Table 5 below, the relationship was determined using the Pearson r coefficient. The results disclosed that the probability level (p) is 0.000. The R -values of student preferences, when correlated with student satisfaction, were 0.558 for *Personal Interest*, 0.167 for *Family Influence*, 0.181 for *Peer Influence*, 0.400 for *Job Opportunities*, 0.296 for *Financial Condition*. With $p < 0.05$, the null hypothesis of no significant relationship between student preference and student satisfaction was rejected.

The findings indicate a correlation between student preference and student satisfaction. Similarly, a relationship between student preference and student satisfaction is found and documented. Furthermore, the findings demonstrate a clear connection—at least for the respondents—between student preference and student satisfaction.

Table 5. *Significance of Relationship of the domains of Student Preferences and Student Satisfaction of the of Selected Senior High School Students of the Department of Education (DepEd), Davao de Oro*

Indicators	Dependent Variables	r-value	r^2	p-value	Decision
Personal Interest	Student Satisfaction	0.558*	0.311	0.000	Reject H_0
Family Influence		0.167*	0.028	0.004	Reject H_0
Peer Influence		0.181*	0.069	0.002	Reject H_0
Job Opportunities		0.400*	0.033	0.000	Reject H_0
Financial Condition		0.296*	0.0.088	0.000	Reject H_0

* $p < 0.05$

The results agree with the findings of Kilag et al. (2023), which mentioned that student satisfaction has a relationship with their preference for their senior high school track. The same results also corroborate the findings of the studies conducted by Kim and Kim (2021) and Fisher et al. (2021), both cited by Li et al. (2023), which mentioned that the relationship between student preference and student satisfaction is present. The results also confirm the findings of the studies of Malaguial et al (2023) and Garcia & Reyes (2021), who mentioned that student satisfaction with their Senior High School (SHS) strand is significantly linked to their initial preference.

Another study objective is to determine which domain of technology enhanced agricultural education learning environment would significantly influence the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. This is with the aid of regression analysis. The test of significance was done further using the correlation approach with regression analysis, which clearly shows which domains of technology enhanced agricultural education learning environment significantly influence student satisfaction.

Table 6.1 below indicates that the adjusted R^2 value is 0.412, as shown in the regression model. These two technology enhanced learning environment domains explain 41.2% of the total variability of student satisfaction. The F -value is 103.874 with $p < 0.000$, so there is a significant influence on technology enhanced learning environment and student satisfaction. This further illustrates that the independent variable (technology enhanced learning environment) significantly contributes to student satisfaction. The *benefits* and *usefulness* have the p -values $p < 0.05$, and then the null hypothesis that there is no domain of technology enhanced learning environment that significantly influences student satisfaction was rejected. This shows that all indicators of technology enhanced learning environment influences student satisfaction.

The results indicated that the benefits of the technology enhanced learning environment are a predictor of student satisfaction. This implies that the benefits of technology enhanced learning environment

such as a more efficient and effective communication between the teacher and the student when using the technology, enhancement of student-to-student communication and interaction with the use of the technology, and enhancement of the teacher's face-to-face lecture with the use of technology, and convenience for students when using the technology can significantly predict student satisfaction. The results also denote that the enhancement of problem-solving skills of students, promotion of student awareness using the technology, and the overall use of technology in the classroom are of higher quality than traditional lecture-based classrooms, significantly predicting student satisfaction. Lastly, the results also entail that having more access to learning materials, as compared to a traditional classroom setting, and that technology can save time, also predict student satisfaction.

Table 6.1. *Regression Analysis on the Influence of the Domains of the Level of the Technology-Enhanced Agricultural Education Learning Environment on the Student Satisfaction of Selected Senior High School Students of the Department of Education (DepEd), Davao de Oro*

Indicators	Unstandardized Coefficients		Standardized Coefficients	t-value	p-value	Decision
	B	SE	Beta			
(constant)	1.503	0.197		5.882		
Benefits	0.236	0.058	0.176*	2.924	0.004	Reject H_0
Usefulness	0.454	0.064	0.315*	4.911	0.000	Reject H_0

Dependent Variable: Student Satisfaction

* p -value = 0.05

R-value = 0.652

R^2 = 0.412

F-value = 103.874

p -value = 0.000

Similarly, the results also entail that the usefulness of technology enhanced learning environment can also significantly predict student satisfaction. This further means that the usefulness of presentation materials used in class presentations/demonstrations, such as PowerPoint slides, can predict student satisfaction. In the same manner, the presence of contact information/links for the students online, class discussion questions or chat groups about the use of technology, and the availability of study sheets, review materials, and handouts through technology can predict student satisfaction. Moreover, the provisions of links to students to other online information sources, the usefulness and appropriateness of the multimedia course materials (e.g. audio, video, graphics, and or animations) are also predictors of student satisfaction. Meanwhile, the existence of practice exams and quizzes using the technology, the availability of lecture notes through technology, and the accessibility and availability of old tests online are also significant predictors of student satisfaction. Lastly, the presence of additional information (background) about the teacher posted online, and the usefulness and appropriateness of course syllabi using the technology are also predictors of student satisfaction.

The result agrees with the study of Estep et al. (2022) which found out that improving student satisfaction can be predicted by having quality learning outcomes as part of the benefits in using TEL, as well as providing accurate support to students, an indicator of TEL usefulness. The results also confirmed the findings of the study conducted by Abdul Latip et al. (2020, as cited by Bordios et al., 2022), where the quality of online distance learning, a form of TEL, influenced student satisfaction. In the same manner, the results are also in agreement with the findings of Li et al. (2023), where usefulness and benefits of the use of technology are key predictors of student satisfaction.

The last objective of the study is to determine which domain of student preference would significantly influence the student satisfaction of selected senior high school students of the Department of Education (DepEd), Davao de Oro. This is done with the help of regression analysis. The test of significance was done further using the correlation approach with regression analysis, which clearly shows which domains of student preferences significantly influence student satisfaction.

Table 6.2 below indicates that the adjusted R^2 value is 0.359, as the regression model reflects. These two student preference domains explain 35.9% of the total variability of student satisfaction. The F-value is 32.957 with $p < 0.000$, so there is a significant influence on student preference and student satisfaction. This further illustrates that the independent variable (student preference) significantly contributes to student satisfaction. The *Personal Interest*, and *Job Opportunities* have the p -values $p < 0.05$; the null hypothesis (no domain of student preference significantly influences student satisfaction) was rejected. On the other hand, *Family Influence*, *Peer Influence*, and *Financial Condition* have a p -value of 0.120, 0.210, and 0.243, respectively, with $p > 0.05$, then the null hypothesis was accepted. This illustrates that personal interests, and job opportunities predict student satisfaction.

Table 6.2. *Regression Analysis on the Influence of the Domains of the Level of Student Preference on the Student Satisfaction of Selected Senior High School Students of the Department of Education (DepEd), Davao de Oro*

Indicators	Unstandardized Coefficients		Standardized Coefficients	t-value	p-value	Decision
	B	SE	Beta			
(constant)	1.836	0.192		9.542		
Personal Interest	0.413	0.045	0.473*	0.241	0.000	Reject H_0
Family Influence	-0.059	0.038	-0.089	-1.157	0.120	Do not Reject H_0
Peer Influence	0.041	0.032	0.068	1.256	0.210	Do not Reject H_0
Job Opportunities	0.157	0.048	0.192*	3.267	0.001	Reject H_0
Financial Condition	0.047	0.040	0.070	1.169	0.243	Do not Reject H_0

Dependent Variable: Student Satisfaction

* p -value = 0.05

R-value = 0.599

R^2 = 0.359

F-value = 32.957

p -value = 0.000

The results personal interest can predict student satisfaction. This also means choosing the track that fits their skills and interests and in consideration of their aptitudes and capabilities, in choosing their strand can predict student satisfaction. Further, the results also entail that choosing based on their desire and out of their freedom can also predict student satisfaction.

Similarly, the result also implies that job opportunities are one of the predictors of student satisfaction. This further means that choosing their strand based on their future work environment and based on its potential availability in the news and job market can predict student satisfaction. Also, their preferred strand based on its potential employability and stability, and based on its demand, can also predict student satisfaction. Lastly, choosing their strand based on their salary expectation can also be a predictor of student satisfaction.

The results confirm the statement of She et al. (2021), where they found that student characteristics such as personality and habits, along with student-preferred learning styles, are determinants of student satisfaction. Similarly, Kilag et al. (2023) found that perceived benefits, including potential job opportunities, influence student satisfaction, and this is confirmed in this study. Additionally, the findings align with the studies of Reyes & Santos (2023) and Lim (2022), which noted that students' personal choices lead to increased satisfaction.

5. Recommendations

The study's conclusions have led to the following proposed recommendations:

In the context of the senior high school strand of the Department of Education in Davao de Oro Province, the usefulness of a technology enhanced agricultural education learning environment is critically dependent on addressing the existing digital divide and resource constraints. To maximize the utilization and reduce student dissatisfaction, the Department of Education (DepEd), Davao de Oro must implement a strategic, dual strategy: first, invest in strong local infrastructure—including reliable internet—and provide students with digital tools and practical, simulated technology, such as but not limited to farm tours, and AI-powered monitoring. This approach will link academic knowledge with real-world farming applications, and second, mandate and maintain ongoing, practical professional development for SHS TVL-Agriculture teachers to boost their confidence and proficiency in integrating technology, reduce their perceived unease, and make sure that technology use is focused on improving skills rather than just adding to administrative time demands. This commitment will immediately increase student satisfaction and learning results by changing the notion of agriculture from manual labor to a high-tech, feasible career option.

Furthermore, schools and educators in DepEd Davao de Oro should prioritize fostering open communication between students, parents, and teachers regarding career options and educational choices. Rather than having parents push students toward a particular strand, schools can organize informational sessions or workshops where both parents and students can explore the different strands, understand their potential career opportunities, and identify the students' personal interests and strengths. By empowering students to make well-informed and independent decisions about their education, this approach can help lessen the pressure from parental influence and enable students to choose a strand that aligns with their passions and goals. Additionally, DepEd Davao de Oro are encouraged to continue the implementation of career counseling programs, this time to involve both students and parents in the decision-making process, which can help ensure that the choice of strand is a collaborative and supportive one. This strategy would help enhance student preference by making them feel more in control of their educational journey.

Moreover, to enhance student satisfaction with assessments in the senior high school strand, schools in DepEd Davao de Oro should ensure that assessments are administered at regular and appropriate intervals. This can be accomplished by creating a well-organized assessment timetable that is shared with students at the beginning of each term, giving them ample time to prepare. Teachers could also incorporate ongoing formative assessments throughout the course, offering timely feedback to help students monitor their progress and pinpoint areas for improvement. By ensuring assessments are spaced out effectively, students will feel more supported and less stressed, boosting their overall satisfaction with the learning process. Additionally, using a variety of assessment methods, such as quizzes, projects, and discussions, would accommodate diverse learning styles and make the evaluation process more comprehensive and equitable.

Similarly, the findings on the strong link between technology-enhanced agricultural education learning environments and student satisfaction highlight the need for ongoing investment in and enhancement of technological resources. As technology in education becomes more advanced, the DepEd Davao de Oro Province needs to make sure that the tools available to students remain relevant, up-to-date, and accessible. DepEd Davao de Oro Province is encouraged to focus on providing useful and accessible technology to maintain high levels of student satisfaction.

Furthermore, schools in DepEd Davao de Oro must recognize and prioritize the relationship between student preference and their overall satisfaction with their chosen senior high school strand. Schools can offer more opportunities for students to explore their interests through career assessments, workshops, and hands-on experiences before making a final decision. This would allow students to choose a strand that truly aligns with their passions and strengths, rather than feeling limited by external pressures. By fostering an environment where students feel empowered to make informed and personally meaningful choices, schools can significantly improve student satisfaction. When students feel confident and excited about their educational path, they are more likely to engage actively in their learning and experience a greater sense of

fulfillment throughout their academic journey.

Finally, to improve student satisfaction, schools in DepEd Davao de Oro should place greater emphasis on aligning the senior high school strands with students' personal preferences and future job opportunities. Schools are encouraged to continue to offer personalized guidance through career counseling programs. Additionally, it would be beneficial for schools to provide information on the potential job prospects associated with each strand, showcasing how different academic paths lead to specific careers.

References

- Abdul Latip, M. S., Newaz, F. T., & Ramasamy, R. (2020). Students Perception of Lecturers Competency and the Effect on Institution Loyalty: The Mediating Role of Students Satisfaction. *Asian Journal of University Education*, 16(2), 183. <https://doi.org/10.24191/ajue.v16i2.9155>
- Aguirre, R., Cerbito, A., Gayod, D. (2022). Online Learning Experiences and Satisfaction of Students On the Transition to Remote Learning. *IOER International Multidisciplinary Research Journal*, Vol. 4, No. 1, March 2022. P – ISSN 2651 - 7701 | E – ISSN 2651 – 771X | www.ioer-imrj.com
- Alexandera, J., Barcellonaa, M., McLachlana, S. and Sackleya, C. (2019). Technology-enhanced learning in physiotherapy education: Student satisfaction and knowledge acquisition of entry-level students in the United Kingdom *Research in Learning Technology* 2019, 27: 2073 - <http://dx.doi.org/10.25304/rlt.v27.2073>
- Al Masarweh, M., & Afandi, W. (2022). Investigating Factors M-Learning Acceptance and Use for Distance Learning Students in Higher Education. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 10(3), 117–128. <https://doi.org/10.23947/2334-8496-2022-10-3-117-128>
- Alowayr, A. (2021). Determinants of mobile learning adoption: extending the unified theory of acceptance acceptance and use of technology (UTAUT). *The International Journal of Information and Learning Technology*. ahead-of-print. 10.1108/IJILT-05-2021-0070.
- Alqurashi, E. (2019). Predicting student satisfaction and perceived learning within online learning environments. *Distance Education*, 40(1), 133–148. <https://doi.org/10.1080/01587919.2018.1553562>
- Alston, A. and English, C. (2007). Technology Enhanced Agricultural Education Learning Environments: An Assessment of Student Perceptions. *Journal of Agricultural Education*, Volume 48, Number 4, 2007
- Alston, A., Miller, W.W., Williams, D.L. (2003). Use of Instructional Technology in Agricultural Education in North Carolina and Virginia. *J. Career Tech. Educ.* 2003, 20, 23–36.
- Alyoussef, I.Y., & Omer, O.M.A. (2023). Investigating Student Satisfaction and Adoption of Technology-Enhanced Learning to Improve Educational Outcomes in Saudi Higher Education. *Sustainability* 2023, 15, 14617. <https://doi.org/10.3390/su151914617>
- Ayat, S.O. (2025). Senior high school strand preferences of Grade 10 students: Basis for enhanced career guidance program. *Pantao (The International Journal of the Humanities and Social Sciences)* 4 (3), 3512-3521. <http://doi.org/10.69651/PIJHSS0403320>
- Bangkara, A., Maulana, R., & Suharti, I. (2023). Engagement of rural students through mobile learning. *Journal of Technology and Science Education*, 13(1), 28–40
- Bland, C., Stoller, R., & Stoller, S. (2020). *The Relationship Between Student Satisfaction and University Success*. *Journal of Academic Excellence*, 12(4), 15-30.
- Bordios, R., Astroquillo, N., Cadangin, M., Dubpaleg, B., Elardo, BJ., Gellado, IJ. (2022). Perceived Challenges and Satisfaction of Education Students in Online Distance Learning. *European Journal of Education Studies* ISSN: 2501 - 1111 ISSN-L: 2501 – 1111, Volume 9, Issue 8, 2022. Available on-line at:www.oapub.org/edu. DOI: 10.46827/ejes.v9i8.4400
- Briones, R. A., & Prudente, M. L. (2023). Challenges Affecting Student Engagement in Online Learning among Senior High School Students. *International Journal of Social Science Studies*, 11(2), 1–10.

- Chen, S., & Lee, W. (2019). Retention, Engagement, and the Satisfied Learner. *Journal of Educational Psychology*, 85(2), 115-130.
- Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, 90, 103004. <https://doi.org/10.1016/j.tate.2019.103004>
- De Guzman, M. J., Capili, V. C., & Bauto, A. (2022). *Factors influencing students' choice of senior high school track: Implications for career guidance*. *Philippine Journal of Guidance and Counseling*, 4(1), 12-25.
- Dela Cruz, A. (2024). *The role of student choice in senior high school success*. *Journal of Educational Psychology*, 10(1), 1-15.
- DepEd, Davao de Oro (2023). Organizational Chart. Retrieved from: https://www.deped-ddo.com/?page_id=59
- DeYoreo, M. (2018). Stratified random sampling. In *The SAGE encyclopedia of educational research, measurement, and evaluation* (Vol. 4, pp. 1624-1624). SAGE Publications, Inc., <https://doi.org/10.4135/9781506326139.n671>
- Dubey, P., Sahu, K. Pradhan, R. (2020). Factors Affecting Student's Satisfaction On Technology- Enhanced Learning In Higher Education. *Journal of Xi'an University of Architecture & Technology* ISSN No : 1006-7930
- Estepp, M., Dickson, R. W., and D. M. Johnson, D.M., (2022). Rapport, Course Technology, and Self-Regulated Learning as Predictors of Student Satisfaction in an Online Horticulture Program Satisfaction Program NACTA Journal, Volume 66, 2022
- Fieger, P. (2012). Measuring Student Satisfaction from the Students Outcomes Survey. Technical Paper. National Centre for Vocational Education Research. Commonwealth of Australia
- Fisher, R., Perényi, Á., and Birdthistle, N. (2021). The Positive Relationship Between Flipped And Blended Learning And Student Engagement, Performance And Satisfaction. *Act. Learn. High. Educ.* 22, 97–113. doi: 10.1177/1469787418801702
- Garcia, L., Chen, Y., & Singh, A. (2023). *Evaluating the impact of curriculum relevance on student engagement and satisfaction*. *Journal of Higher Education Studies*, 15(3), 45-60.
- Garcia, R. L., & Reyes, A. B. (2021). *Student preference and academic satisfaction in a Philippine senior high school setting*. *Asian Education Development Studies*, 10(2), 245-259.
- Gorosin, R. (2025). Senior High School Readiness: Analyzing Subject Performance, Cognitive Ability, and Strand Preference among Grade 10 Students. *Psychology and Education: A Multidisciplinary Journal*, 43(6), 801-809. <https://doi.org/10.70838/pemj.430609>
- Greig, J. T., Lamm, A. J., & Ricketts, J. C. (2024). Enhancing agricultural education through virtual reality: Facilitation, application, reflection, and measurement in the classroom. *Advancements in Agricultural Development*, 5(2), 65–84.
- Gu, Q., Lu, G. (2023). Factors influencing the satisfaction level of college students in China: Literature analysis based on grounded theory. *Frontiers in Psychology*, Volume 13 - 2022 <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2022.1023420>
- Haleem, A., Javaid, M., Asim Qadri, MA., Suman, R. (2022). Understanding the Role of Digital Technologies in Education: A Review, *Sustainable Operations and Computers*, Volume 3, 2022, Pages 275-285, ISSN 2666-4127, <https://doi.org/10.1016/j.susoc.2022.05.004>.
- Ho, I. M. K., Cheong, K. Y., and Weldon, A. (2021). Predicting student satisfaction of emergency remote learning in higher education during COVID-19 using machine learning techniques. *PLoS One* 16:e0249423. doi: 10.1371/journal.pone.0249423
- Johnson, R. A. (2021). *The critical role of student morale in academic persistence*. University Press.
- Kilag, O., Dejino, J., Arcillo, M., Borong, M., Manligoy, R., Combista, L. (2023). Exploring the

- Determinants of Senior High School Track Preference among Grade 10 Students: A Comprehensive Study. Volume 2 Issue 6, Year 2023. ISSN: 2835-3048 <https://univerpubl.com/index.php/semantic>. Web of Semantic: Universal Journal on Innovative Education ISSN: 2835-3048
- Kim, S., and Kim, D.J. (2021). Structural relationship of key factors for student satisfaction and achievement in asynchronous online learning. *Sustainability* 13:6734. doi: 10.3390/su13126734
- Li, X., Odhiambo, F.A., and Ocansey, D.K.W. (2023). The Effect Of Students' Online Learning Experience On Their Satisfaction During The COVID-19 Pandemic: The Mediating Role Of Preference. *Front. Psychol.* 14:1095073. doi: 10.3389/fpsyg.2023.1095073
- Lim, C. M. (2022). *External pressures and their impact on student educational satisfaction*. Academic Research Quarterly, 7(4), 112-125.
- Llego, M. A. (2024, January 9). 21st-Century Learning: What It Is and Why It's Important. TeacherPH. Retrieved January 9, 2024 from, <https://www.teacherph.com/21st-century-learning/>
- Ma, J., Adeyemi, A. O., Xu, W., & Wang, H. (2024). Effects of educational technology on students' academic achievement in agricultural education: A meta-analysis. *Journal of Agricultural Education*, 65(4), 42–66.
- Malaguial, P.A., Gacoscas, G., Martinez, E., Abusama, H., & Valdez, A. (2023). Senior High School Strands: Factors Affecting the Students' Preference. *ASEAN Journal of Educational Research and Technology* 2(1) (2023) 57-66
- Malaga, X. & Oducado, R.M. (2021). Does Senior High School Strand Matter in Nursing Students' Academic Self- Regulated Learning and Academic Performance?. *South East Asia Nursing Research*. 3. 1-7. 10.26714/seanr.3.1.2021.1-7.
- Mathur, G., Nathani, N., Chauhan, A. S., Kushwah, S. V., & Quttainah, M. A. (2024). Students' Satisfaction and Learning: Assessment of Teaching-Learning Process in Knowledge Organization. *Indian Journal of Information Sources and Services*, 14(1), 1–8. <https://doi.org/10.51983/ijiss-2024.14.1.3798>
- McCampbell, C. A., Paul, M. L., & Strong, R. (2021). Technology-enhanced learning in agricultural education: A systematic review. *Journal of Agricultural Education*, 62(1), 1–19.
- NEDA (2023). Davao De Oro. Retrieved from: <https://nro11.neda.gov.ph/davao-region/davao-de-oro>
- Osam, C., & Opene, T. T. (2025). Effects of technology-enhanced instruction on agricultural science students' learning outcome in senior secondary schools. *International Journal of Research and Scientific Innovation (IJRSI)*, 12(1), 178–193
- Philippines. (2013). Republic Act No. 10533. <https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/>
- Philippine Institute for Development Studies (PIDS). (2023, September 12). Unhappy with Senior High School Program. From <https://www.pids.gov.ph/details/news/in-the-news/unhappy-with-senior-high-school-program>
- Reyes, P. E., & Santos, F. B. (2023). *Preference-congruence and its effect on student outcomes in the K-12 program*. *Philippine Journal of Education*, 25(2), 50-65.
- Rio, K., Quilario, S., Torno, M., Adlawan, L., Pando, J.B., Cabalan, J. & Sasan, J.M. (2022). Factors Influencing the Preference of Grade 10 Students in Choosing their Preferred Senior High School Track published in the *International Journal Research of Publication and Reviews* Vol 3, no 1, pp 1376-1382 January 2022
- Siedlecki, S. (2020). Understanding descriptive research designs and methods clinical nurse specialist 34(1):p 8-12, 1/2 2020. Retrieved November 14, 2022, from DOI: 10.1097/NUR.0000000000000493
- She, L., Ma, L., Jan, A., Sharif Nia, H., and Rahmatpour, P. (2021). Online Learning Satisfaction During Covid-19 Pandemic Among Chinese University Students: The Serial Mediation Model. *Front. Psychol.* 12:743936. doi: 10.3389/fpsyg.2021.743936

- Smith, J. B. (2023). Digital divide and student satisfaction in blended learning. *International Review of Educational Technology*, 10(1), 45-60.
- Smith, P., & Jones, A. (2021). *Career preparedness and student satisfaction in post-secondary education*. International Journal of Educational Research, 107, 101755.
- Tan, E. S. (2020). *The role of parental influence on student track choice and academic adjustment*. Journal of Career Development, 47(5), 501-515.
- Tanguihan, L. (2024). Evaluating Student Satisfaction and Preferences in Higher Education Online Learning: A Post-pandemic Exploration. *Journal of Interdisciplinary Perspectives*, 2(9), 304-311. <https://doi.org/10.69569/jip.2024.0368>
- Tondo, J., & Detecio, M. (2021). Satisfaction of Senior High School Graduates on Senior High School Tracks: Opportunities and Challenges. *Asia Pacific Higher Education Research Journal (APHERJ)*. 8. 10.56278/apherj.v8i1.1694.
- Varthana (2022). Is It Important for Students to Develop 21st-Century Skills?. Retrieved from: <https://varthana.com/school/is-it-important-for-students-to-develop-21st-century-skills/> Date Retrieved: January 9, 2024
- Xu, Z., Adeyemi, A.E., Landaverde, R., Kogut, A., Baker, M. (2023). A Scoping Review on the Impact of Educational Technology in Agricultural Education. *Educ. Sci.* 2023, 13, 910. <https://doi.org/10.3390/educsci13090910>