The Moderating Effect of Cognitive Engagement on Internet Usage and Learning Endeavour of Students in Technical Vocational Education

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Abstract. The study explored the moderating effect of cognitive engagement on the interaction between internet usage and the learning endeavors of students in Technological Vocational Education. In this study, the researcher selected 200 students in the Secondary School District of Digos City as the respondents of the study. A stratified random sampling technique was utilized in the selection of the respondents. A non-experimental quantitative research design using a descriptive-correlational method was employed. The data collected were subjected to the following statistical tools: Mean, Partial Correlation, and Multiple Regression Analysis. Descriptive analysis showed that internet usage, learning endeavor, and cognitive engagement of students in Technological Vocational Education were rated as extensive. Further, partial correlation analysis demonstrated that there is a significant relationship between internet usage and the learning endeavor of students in Technological Vocational Education when moderated by cognitive engagement. Multiple regression analysis proved that cognitive engagement significantly moderates the interaction between internet usage and the learning endeavor of students in Technological Vocational Education. In other words, cognitive engagement is a significant moderator of students' internet usage and learning endeavors in Technological Vocational Education in the Secondary School District, Digos City.

1. Introduction

Information and communication technology (ICT) has been a vehicle for creativity and quality academic enhancement in several fields worldwide. From both outside and within the classroom in the education sector, ICT has been an integral part of high school students' teaching and learning process. The Internet is a worldwide network system that connects a diverse set of commercial, public, business, academic, and government networks to enable global communication and access to data resources. Similarly, because of its capacity to act as a support medium for several functions, the Internet is a knowledge pool that offers an atmosphere where millions of people communicate and participate in creating and sharing information. Literature showed that the benefits of using online teaching and learning include flexibility, teaching large classes, increased interaction and engagement between lecturers and

students, and the internet helps to make that possible. As described by Wang et al. (2016), cognitive engagement is the extent to which students actively and intellectually participate in their TVE programs. According to Greene (2015), cognitive engagement is the student's level of investment in learning, which includes thoughtfulness, strategizing, and willingness to exert the necessary effort in the comprehension of complex ideas or mastery of difficult skills. More so, Backer et al. (2018) noted that collected data on this domain of engagement through collaborative small groups and found that the data from the student survey that perceived cognitive engagement went higher of the students reporting that they performed better with a group in the beginning. The results are because the students feel more confident about their answers if others are in similar scenarios and think together when completing the tasks. As noted by Roblyer and Doering (2013), high internet usage provides students with access to a vast array of educational resources, including articles, e-books, videos, simulations, and interactive learning platforms. This broadens their learning opportunities. The Internet enables flexible learning, allowing students to access educational content and resources conveniently. Poushter et al. (2015) pointed out that high internet usage facilitates student collaboration and communication, allowing them to engage in group projects, discussions, and knowledge-sharing through various digital tools and platforms. Interactive online learning activities and multimedia content can enhance student engagement. Gamified elements and multimedia resources make learning more enjoyable. As Sandoval-Pineda (2018) mentioned, students with high levels of learning endeavor tend to excel academically, achieving top grades and academic recognition. They are highly motivated, persistent, and determined to overcome academic challenges and accomplish their educational goals. As noted by Guido and Dela Cruz

(2011), high-level learners actively engage in classroom discussions, ask questions, and contribute to a dynamic and engaging learning environment. They develop effective study habits, time management skills, and strategies for efficient learning, allowing them to make the most of their study time. Similarly, Eridemir and Bakirci (2010) affirmed that high-level learners recognize the importance of a well-rounded education, balancing academic pursuits with personal interests, hobbies, and social activities. They actively participate in extracurricular activities that enhance their learning experiences, such as academic clubs, competitions, or volunteer work. On the contrary, Ali (2018) reported that poor learning endeavor often leads to lower academic achievement, as students may not invest the necessary effort and dedication to excel in their TVE programs. TVE programs aim to equip students with practical skills and knowledge for their chosen vocations. Poor learning endeavor can result in graduates who lack the competence required in the workforce. In addition, Bango and Mahesar (2018) noted that poor learning endeavor can affect students' employability, as they may not meet the requirements of potential employers and may struggle to find suitable job opportunities. More so, Maranan (2017) pointed out that poor learning endeavor can lead to frustration and disengagement among students, creating a negative atmosphere in classrooms and vocational settings. Students with low learning endeavor may not actively engage in creative problem-solving or innovative thinking, potentially stifling advancements in their vocational fields. While there is some existing research on the individual impacts of internet usage and cognitive engagement on TVE outcomes, there is a need to investigate the combined influence of these factors, considering the unique context of TVE and the practical skills-oriented nature of the education. Such research can provide valuable insights into optimizing the use of the internet for learning in

TVE, enhancing vocational competencies, and better-preparing students for their future careers. Thus, it is in this context that the researcher felt the necessity to fill in the gap by conducting a study on the moderating effect of cognitive engagement on internet usage and learning endeavors of students in Technological Vocational Education in the Philippine setting. The researcher made use of a quantitative approach, particularly descriptive correlational design. The study utilized multiple regression analysis to examine the impact of the moderating effect.

2. Methodology

This section contains the research design, research respondents, research instrument, data gathering procedure, and data analysis.

2.1. Research Design—The study employed a non-experimental design utilizing the descriptive correlation technique of research, which is designed to gather data, ideas, facts, and information related to the study. Quantitative research deals with numbers, logic, and objective stances. It focuses on numeric and unchanging data, detailed, convergent reasoning, and the generation of a variety of ideas about a research problem (Babbie et al. 2010). According to Myers and Well (2013), correlated design examines how the independent variable influences the dependent variable and establishes cause-and-effect relationships between variables. It enabled the researcher to observe two variables at a point in time and was useful in describing the relationship of the factors of both variables. Moreover, the study also looked into the relationship among three variables– internet usage, learning endeavor, and cognitive engagement of the students. The interest of the study was to investigate whether cognitive engagement significantly moderated the interaction between internet usage and learning endeavor of students significant moderating effect on the interaction between internet usage and learning endeavor of students in Technological Vocational Education.

2.2. Research Respondents—The respondents of the study were the students in the Secondary School District, Digos City, Philippines. In this study, the 200 respondents were selected through a stratified random sampling technique. Stratified random sampling was a method of sampling that involved the division of a population into smaller sub-groups known as strata. According to Shi (2015), in stratified random sampling, or stratification, the strata were formed based on members' shared attributes or characteristics, such as income or educational attainment. Stratified random sampling is appropriate in this study because there was heterogeneity in a population that can be classified with ancillary information. In this study, certain inclusion criteria were implemented in determining the respondents of the study. The primary consideration of this study is to select respondents who can provide information to achieve the purpose of this study. The inclusion criteria: only those bonafide Grades 7 and 8 students in Secondary School District in Digos City; students must be enrolled in Technical and Vocational Education (TVE) programs at the secondary level; students should have regular access to the internet, either through personal devices, school resources, or other means; and students who voluntarily signed the ICF were given the survey questionnaire. Moreover, the study was delimited only to the nature of the problem based on the research questions and thus it did not consider the socio-economic status of the students.

2.3. Research Instrument—The study employed questionnaires adapted from different

studies and was modified to fit the context of the respondents of this study. The instrument was divided into two parts. The first part of the instrument focused on the internet usage of the students. This questionnaire was adapted from the study of Baguia and Moneva (2018). Internet usage was indicated with internet usage data skills, internet data for academic purposes, method of information data search, and quality of learning through internet mobile data. In the manner of answering the questionnaire. As a guide in determining the extent of internet usage, the researcher made use of the range of means, descriptions, and interpretations as presented below:

Range of Mean, Descriptive Level, and Interpretation of Internet Usage

Range of Mean	Descriptive Level	Interpretation
4.20 - 5.00	Very Extensive	The Internet usage of the students is always observed.
3.40 – 4.19	Extensive	The Internet usage of the students is oftentimes observed.
2.60 – 3.39	Moderately Extensive	The Internet usage of the students is sometimes observed.
1.80 – 2.59	Less Extensive	The Internet usage of the students is seldom observed.
1.00 – 1.79	Not Extensive	The internet usage of the students is never observed.

The second part of the instrument was about the learning endeavor of the students. This questionnaire was adapted from the study of Waugh (2001) and indicated striving for excellence, desire to learn, and personal incentives. The modified questionnaire obtained a Cronbach alpha value of 0.978 interpreted as excellent. In the manner of answering the questionnaire. As a guide in determining the extent of the learning endeavor, the researcher made use of the range of means, descriptions, and interpretations as presented below:

Range of Mean, Descriptive Level, and Interpretation of Learning Endeavor

Range of Mean	Descriptive Level	Interpretation
4.20 - 5.00	Very Extensive	The learning endeavor of students is always manifested.
3.40 – 4.19	Extensive	The learning endeavor of students is oftentimes manifested.
2.60 – 3.39	Moderately Extensive	The learning endeavor of students is sometimes manifested.
1.80 – 2.59	Less Extensive	The learning endeavor of students is seldom manifested.
1.00 – 1.79	Not Extensive	The learning endeavor of students is never manifested.

The third part of the instrument was about the cognitive engagement of the students. This questionnaire was adapted from the study of Wang et al. (2016). The modified questionnaire obtained a Cronbach alpha value of 0.944 interpreted as excellent. In the manner of answering

the questionnaire, the respondents made use of the 5-Likert scale. As a guide in determining the extent of cognitive engagement, the researcher made use of the range of means, descriptions and interpretations as presented below:

Range of Mean, Descriptive Level, and Interpretation of Cognitive Engagement

Range of Mean	Descriptive Level	Interpretation
4.20 - 5.00	Very Extensive	The cognitive engagement of the students is always evident.
3.40 – 4.19	Extensive	The cognitive engagement of the students is oftentimes evident.
2.60 – 3.39	Moderately Extensive	The cognitive engagement of the students is sometimes evident.
1.80 – 2.59	Less Extensive	The cognitive engagement of the students is seldom evident.
1.00 – 1.79	Not Extensive	The cognitive engagement of the students is never evident.

The questionnaire was pilot-tested in a nearby school and expected to obtain a Cronbach's alpha value greater than 0.700 to ensure that the questionnaires have a high level of internal consistency (Koonce Kelly, 2014). The scaling was done by having one-half of the value of 5 as the average cut-off point or the fair level, with a uniform interval of 0.80. Before the administration of the instrument, it was subjected to validation by three experts and was revised according to their expert comments.

2.4. Data Gathering Procedure—Steps were undergone by the researcher in conducting the study after the validation of the research questionnaire. Permission to Conduct the Study. The researcher secured the permission to conduct the study. The researcher secured the endorsement from the Dean of the Graduate School in the college where the researcher is studying. The endorsement letter from the Dean of the Graduate School in the college where the researcher is studying , was attached to the permission letters to be endorsed to the Schools Division Superintendent and then to the school principals of the selected public secondary schools in Secondary School District, Digos City. Distribution and Retrieval of the Questionnaire. The researcher proceeded to distribute the research instrument to the respondents after the approval to conduct the study. The study was conducted last October 10-12, 2023. Upon the distribution of the questionnaires, the benefits of the survey were briefly discussed and explained to the identified respondents of the study. For the administration of the questionnaire, the researcher complied with the health protocol in relation to the current crisis. The questionnaire was distributed following health protocols such as wearing face masks and face shields and following social distancing. The respondents of the study were given enough testing time for the questionnaires to be finished. After this, the data collected were subjected to

quantitative analysis. Collation and Statistical Treatment of Data. After the questionnaire was retrieved, the scores of each respondent were tallied to organize the data per indicator. Then, each score was subjected to descriptive and inferential analysis using SPSS.

2.5. Data Analysis—The following were the statistical tools utilized by the researcher in processing the gathered data: Mean. This was useful in characterizing the internet usage, learning endeavor, and cognitive engagement of the students in Technical Vocational Education in the Secondary School District, Digos City. This was used to supply the answer for objectives 1, 2 and 3. Pearson Product Moment Correlation. It was used in this study to assess the significant relationship among independent (internet usage), dependent (learning endeavor), and moderating (cognitive engagement) variables. It is a statistical measure of the strength of a linear relationship between paired data. In a sample, it is usually denoted by r. Multiple Regression Analysis. It was applied to evaluate the moderating effect of cognitive engagement on the interaction between internet usage and the learning endeavor of students in Technical Vocational Education in the Secondary School District, Digos City.

3. Results and Discussion

This chapter presents the results generated from the data gathered. It is sequenced based on the objectives of the study, as presented in the first chapter. Thus, it presents the extent of internet usage, learning endeavor, and cognitive engagement of students in Technical Vocational Education; the significant relationship among these variables; and the moderating effect of cognitive engagement on the relationship between internet usage and students' learning endeavor in Technical Vocational Education in the Secondary School District of Digos City.

The Summary of the Internet Usage of Students in Technical Vocational Education in the Secondary School District in Digos City

Lastly, Table 1 shows the summary of the internet usage of students in Technical Vocational Education in the Secondary School District in Digos City. The overall mean of the students' internet usage is 3.44, described as extensive and interpreted as students' internet usage is oftentimes observed. The table further indicated that students' internet usage in terms of method of information data search acquired the highest mean score of 3.50 described as extensive and interpreted as oftentimes observed, while, students' internet usage in terms of usage of internet data for academic purposes got the lowest mean score of 3.35 described as moderately extensive and interpreted as sometimes observed among students in Technical Vocational Education in Secondary School District in Digos City.

This implies that the extent and manner in which students utilize the internet and online resources for educational purposes is oftentimes observed. The result agrees with the view of Roblyer and Doering (2013) that high levels of internet usage provide students with access to a vast array of educational resources, including articles, e-books, videos, simulations, and interactive learning platforms. This broadens their learning opportunities. This also supports the assertion of Poushter et al. (2015) that high internet usage facilitates collaboration and communi-

Table 1. Summary on Internet Usage of Students in Technical Vocational Education in Secondary School District in Digos City

Indicators	Mean	Descriptive Equivalent
Internet Usage Data Skills	3.41	Extensive
Usage of Internet Data for Academic Purposes	3.35	Moderately Extensive
Method of Information Data Search	3.50	Extensive
Quality of Learning Through Internet Mobile Data	3.49	Extensive
Overall	3.44	Extensive

cation among students, allowing them to engage in group projects, discussions, and knowledge-sharing through various digital tools and platforms. Interactive online learning activities and multimedia content can enhance student engagement.

Summary of Learning Endeavour of Students in Technical Vocational Education in Secondary School District in Digos City

Lastly, Table 2 shows that the academic endeavor reflects an overall mean of 3.43, described as extensive and interpreted as oftentimes manifested by students in Technical Vocational Education in the Secondary School District in Digos City. Adding more, results on the table show that students' academic endeavor in terms of personal incentives acquired the highest mean score of 3.45, described as extensive and interpreted as oftentimes manifested, interpreted as domain oftentimes manifested by the respondents, while students' academic endeavor in terms of desire to learn acquired the lowest mean score of 3.37 described as moderately extensive and interpreted as domain oftentimes manifested among students in Technical Vocational Education in Secondary School District in Digos City.

Table 2. Summary of Learning Endeavour of Students in Technical Vocational Education in Secondary School District in Digos City

Indicators	Mean	Descriptive Equivalent
Striving for Excellence	3.41	Extensive
Desire to Learn	3.37	Moderately Extensive
Personal Incentives	3.45	Extensive
Overall mean	3.41	Extensive

This means that the comprehensive and persistent efforts, commitment, and dedication that students invest in their educational pursuits is oftentimes manifested. The result supports the idea of Sandoval-Pineda (2018) that students with high levels of learning endeavor tend to excel academically, achieving top grades and academic recognition. They are highly motivated, persistent, and determined to overcome academic challenges and accomplish their educational goals. This also supports the findings of Guido and Dela Cruz (2011) that high-level learners actively engage in classroom discussions, ask questions, and contribute to a dynamic and engaging learning environment. They develop effective study habits, time man-

agement skills, and strategies for efficient learning, allowing them to make the most of their study time.

Cognitive Engagement of Students in Technical Vocational Education in Secondary School District in Digos City

Table 3 shows the extent of cognitive engagement of students in the Secondary School District in Digos City, reflecting an overall mean of 3.69, described as extensive and interpreted as oftentimes evident. The mean ratings of the items range from 3.43 to 4.04. The item, Going through the work for class and making sure that it's right, reflects a mean rating of 3.43, described as extensive, interpreted as an item is oftentimes evident. Meanwhile, the item Studying everything in my lessons, even the hardest part, shows a mean rating of 4.04, described as extensive and interpreted as an item on this domain is oftentimes evident.

Table 3. Cognitive Engagement of Students in Technical Vocational Education in Secondary School District in Digos City (Moderator)

Statement	Mean	Descriptive Rating
Going through the work for class and make sure that it's right.	3.43	Extensive
Trying to connect what I am learning to things I have learned before.	3.71	Extensive
Trying to understand my mistakes	3.78	Extensive
Studying everything in my lessons, even the hardest part.	4.04	Extensive
Doing more than required in my class.	3.50	Extensive
Mean	3.69	Extensive

The result suggests that the extent to which students actively and intellectually participate in their TVE programs is oftentimes evident in Secondary District, Digos City. The finding is in consonance to the view of Marpa (2016) that high cognitive engagement results in improved learning outcomes, as students are actively processing information and gaining a deep understanding of technical and vocational subjects. Students develop strong problem-solving skills, enabling them to tackle real-world technical challenges and make informed decisions in vocational contexts. Also, the result agrees with Hlalele's (2018) assertion that extensive cognitive engagement leads to active participation in class discussions, hands-on activities, and practical applications of TVE knowledge. Students become more innovative and creative in their approach to technical problems and vocational tasks, contributing to improved practices in their chosen fields.

Relationship Between Internet Usage and Academic Endeavour of Students in Technological Vocational Education in Secondary District in Digos City when Moderated by Cognitive Engagement

The results of the analysis of the relationship between internet usage and academic endeavor of students in Technological Vocational Education in the Secondary District in Digos City, when moderated by cognitive engagement, are presented. Bivariate correlation analysis using Pearson product-moment correlation was utilized to determine the relationship between the variables mentioned. Table 4 shows that internet usage has a significant positive relationship with the academic endeavor of students in Technological Vocational Education in the Secondary District in Digos City when moderated by cognitive engagement with a p-value of .000 that is less than .05 level of significance (two-tailed) (r = 0.811, p < 0.05). It means that as the extent of internet usage changes, the academic endeavor of students in Technological Vocational Education also changes significantly when moderated by cognitive engagement. Adding more, the result in the table also shows that internet usage in terms of internet usage data skills; usage of internet data for academic purposes; method of information data search; and quality of learning through internet mobile data have significant positive relationships with the academic endeavor of students in Technological Vocational Education when moderated by cognitive engagement with a p-value of .000 that is less than .05 level of significance (two-tailed) (r = 0.406, p < 0.05), (r = 0.554, p < 0.05), (r = 0.821, p < 0.05), and (r = 0.645, p < 0.05), respectively.

Table 4. Relationship Between Internet Usage and Learning Endeavour of Students in Technological Vocational Education in Secondary District in Digos City when Moderated by Cognitive Engagement

| Variables | Learning Endeavour of Students in TVE | | |
Cognitive Engagement (Moderator)	r-value	p-value	Decision
Internet Usage Data Skills	0.406*	0.000	Reject H0
Usage of Internet Data for Academic Purposes	0.554*	0.000	Reject H0
Method of Information Data Search	0.821*	0.000	Reject H0
Quality of Learning Through Internet Mobile Data	0.645*	0.000	Reject H0
Overall Internet Usage	0.811*	0.000	Reject H0

*Significant @ p<0.05

The result implies that the combination of improved internet usage skills and cognitive engagement creates a synergy that empowers students to make the most of the internet for their learning endeavors. It allows them to effectively access and evaluate online resources, engage in self-directed learning, collaborate with peers, and personalize their educational experiences. The result agrees with the idea of Tasgin and Tunc (2018), who emphasize that students with these skills are capable of independent, self-directed learning by effectively utilizing online platforms, courses, and educational websites. This also supports Parr's (2011) findings that when students are cognitively engaged, they are more likely to take the initiative to explore online learning opportunities and leverage their internet skills for self-improvement.

Moderating Effect of Cognitive Engagement on the Interaction Between Internet Usage and Academic Endeavour of Students in Technological Vocational Education in Secondary District in Digos City

The moderating effect of cognitive engagement (CE) on the interaction between internet usage (IU) and learning endeavor (LE) of students in Technological Vocational Education in the Secondary District in Digos City was

tested using multiple regression analysis. Results in Table 5 show that the Beta coefficients for the Step 1 analysis of internet usage (IU) and learning endeavor (LE) of students in Technological Vocational Education were = 0.111, S.E. = 0.054, p<0.05; and cognitive engagement (CE) and learning endeavor (LE) of students in Technological Vocational Education were =0.226, S.E.=0.050, p<0.05. When internet usage (IU) and cognitive engagement (CE) were included as the only independent variables (without including an interaction term), the regression model explained 60.50 of the variance in learning endeavor (LE) of students in Technological Vocational Education (R2 = 0.605, p< .05). Moreover, Beta coefficients for the Step 2 analysis of internet usage (IU) and academic endeavor (AE) of students in Technological Vocational Education were = 0.324, S.E. = .036, p<0.05; cognitive engagement (CE) and learning endeavor (LE) of students in Technological Vocational Education were =0.189, S.E. = 0.047,

p <0.05; and moderator (ADT*TCK) and learning endeavor (LE) of students in Technological Vocational Education were =0.224, S.E.= 0.052, p<0.05. Also, it was indicated that when an interaction between internet usage (IU) and cognitive engagement (CE) was added, the percentage of variance in learning endeavor (LE) of students in Technological Vocational Education was 88.50 (R2 = 0.885; p<0.05) indicated the independent contribution of each variable while controlling for the influence of others to create the regression equation for each analysis, after assuring significance by examining accompanying p-values. Hence, the interaction term accounted for an additional 28.00 of the variance in the dependent variable (R2 = 0.280). Based on the result, the null hypothesis was rejected as cognitive engagement (CE) had significantly moderated the relationship between internet usage (IU) and learning endeavor (LE) of students in Technological Vocational Education in the Secondary District in Digos City.

Table 5. Moderating Effect of Cognitive Engagement on the Interaction Between Internet Usage and Learning Endeavour of Students in Technological Vocational Education in Secondary District in Digos City

Step	Learning Endeavour of Students in TVE (LE)					
	B	Beta	S.E	p-value	Decision	
1	Internet Usage (IU)	0.111	0.126	0.054	0.000	Reject H0
	Cognitive Engagement (CE)	0.226	0.077	0.050	0.000	Reject H0
	R2	0.605	F-value = 126.117**		p-value = 0.000	
2	Internet Usage (IU)	0.324**	0.097	0.036	0.000	Reject H0
	Cognitive Engagement (CE)	0.189**	0.122	0.047	0.000	Reject H0
	Moderator (IU*CE)	0.224**	0.110	0.048	0.000	Reject H0
	R2	0.885	F-value = 111.087**		p-value = 0.000	

*Significant @ p<0.05

This affirmed that cognitive engagement is an undeniable factor that increases the interaction between internet usage and learning endeavour of students in Technological Vocational Education. The findings corroborate with the

proposition of Albalate et al. (2018) that when students are cognitively engaged, they actively seek out and use online resources that are relevant to their learning goals. They are more likely to explore and utilize internet resources

to enhance their understanding of the subject matter. They can efficiently navigate online resources, search for educational content, and access a wide range of information and materials. According to Haughery (2017), cognitively engaged students make the most of online collaboration and communication tools to actively participate in group projects, online discussions, and knowledge sharing. Proficiency in internet communication tools and platforms enables students to collaborate with peers and instructors. Likewise, the result is congruent to Arbabisarjou's et al. (2016) assertion that cognitively engaged students actively personalize their learning journey, utilizing internet resources to align their learning with their individual goals and preferences. They customize their learning experiences through online platforms and adaptive learning tools.

4. Conclusions and Recommendations

This part of the paper presents the researcher's conclusion and recommendation. The discussions were supported by the literature presented in the first chapters, and the conclusions were in accordance with the statements of the problem presented in this study.

4.1. Findings—The study primarily aimed to determine the role of cognitive engagement as a moderator on internet usage and learning endeavors of students in Technological Vocational Education utilizing non-experimental quantitative design using structural equation modeling through mediation analysis. The researcher selected 200 students in Technological Vocational Education in the Secondary School District in Digos City as the respondents through a stratified random sampling method. The researcher made use of modified and enhanced adapted survey questionnaires, which were pilot-tested in a nearby school to ensure high reliability and internal consistency of the items in the instrument. Based on the results, the summary of the findings was the following: The internet usage of students in Technological Vocational Education in the Secondary School District in Digos City has an overall mean of 3.44 and a descriptive rating of extensive. Also, students' internet usage in terms of internet usage data skills, usage of internet data for academic purposes, method of information data search, and quality of learning through internet mobile data obtained mean scores of 3.41, 3.35, 3.50, and 3.49, respectively. The learning endeavor of students in Technological Vocational Education in the Secondary School District in Digos City has an overall mean of 3.43 with a descriptive rating of extensive. Also, students' learning endeavors in terms of striving for excellence, desire to learn, and personal incentives obtained mean scores of 3.41, 3.37, and 3.45, respectively. More so, the extent of students' cognitive engagement of students in Technological Vocational Education in the Secondary School District in Digos City has an overall mean of 3.69 with a descriptive rating of extensive. Internet usage has a significant positive relationship with the learning endeavor in students in Technological Vocational Education in the Secondary School District in Digos City when moderated by cognitive engagement with a p-value of .000 that is less than .05 level of significance (two-tailed) (r = .788, p<0.05). This means that as the extent of internet usage changes, learning endeavor in students in Technological Vocational Education also changes significantly when moderated by cognitive engagement. In addition, findings reflected that cognitive engagement is a significant moderator on the interaction between internet usage and learning endeavor in students in Technological Vocational Education in Secondary School

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District in Digos City. The analysis showed that when an interaction between internet usage (IU) and cognitive engagement (CE) was added, the percentage of variance in learning endeavor (LE) of students in Technological Vocational Education was 88.50 ($R^2 = 0.885$; $p<0.05$) indicated the independent contribution of each variable while controlling for the influence of others to create the regression equation for each analysis, after assuring significance by examining accompanying p-values. Hence, the interaction term accounted for an additional 28.00 percent of the variance in the dependent variable ($R^2 = 0.28$).

4.2. Conclusions—Based on the findings of this study, several conclusions were generated: Internet usage of students in Technological Vocational Education in the Secondary School District in Digos City was extensive. Internet usage of students in terms of internet usage data skills, method of information data search, and quality of learning through internet mobile data were rated as extensive and interpreted as oftentimes observed, while, internet usage of students in terms of usage of internet data for academic purposes was rated as moderately extensive. This implies that the extent and manner in which students utilize the internet and online resources for educational purposes is oftentimes observed The learning endeavor of students in Technological Vocational Education in the Secondary School District in Digos City was extensive. Learning endeavors of students in terms of striving for excellence, desire to learn, and personal incentives are described as extensive and interpreted as oftentimes manifested, while learning endeavors of students in terms of striving for excellence, desire to learn, and personal incentives are described as extensive. This means that the comprehensive and persistent efforts, commitment, and dedication that students invested in their educational pursuits were oftentimes manifested The cognitive engagement of students in Technological

Vocational Education in the Secondary School District in Digos City was extensive. The result suggests that the extent to which students actively and intellectually participate in their TVE programs was often evident. On the one hand, the result showed that internet usage has a significant positive relationship with the learning endeavor of students in Technological Vocational Education in the Secondary School District in Digos City when moderated by cognitive engagement. This means that as the extent of internet usage changes, the learning endeavor of students in Technological Vocational Education changes when moderated by cognitive engagement. The result implies that the combination of improved internet usage skills and cognitive engagement creates a synergy that empowers students to make the most of the internet for their learning endeavors. It allows them to effectively access and evaluate online resources, engage in self-directed learning, collaborate with peers, and personalize their educational experiences. On the other hand, cognitive engagement had a significant moderating effect on the interaction between internet usage and the learning endeavor of students in Technological Vocational Education in the Secondary School District in Digos City. This study emphasized that cognitive engagement is an undeniable factor that intervened in this interaction.

4.3. Recommendations—Based on the conclusion generated in this study, the researcher recommends the following: The Department of Education (DepEd) may develop policies that emphasize the importance of digital literacy and internet skills as fundamental components of TVE programs. DepEd may also ensure that students receive training in using the internet for learning and allocate resources for the acquisition of up-to-date technology and internet access in TVE institutions, ensuring that students have the tools necessary for effective internet usage. School heads may offer professional development opportunities for

TVE teachers to enhance their internet skills and teaching methods, promoting effective integration of technology into the curriculum. They may also ensure that the institution has the necessary technology infrastructure, including high-speed internet, to support students' internet usage for learning. Teachers may stay updated on the latest educational technology and internet tools. They may attend workshops and training sessions to enhance their proficiency in using the Internet for teaching and learning. They should provide personalized guidance to students on how to effectively use the Internet for TVE and offer assistance in finding and evaluating online resources. Students may develop effective time management skills to balance internet usage for learning with other responsibilities and interests. Moreover, they should collaborate with peers and instructors online. Use internet tools for group projects and discussions to enhance your learning experience. Future researchers may conduct in-depth research that explores the moderating effect of cognitive engagement in the context of TVE, considering factors such as the type of vocational programs, students' cognitive styles, and varying levels of internet skills.

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