

# The Relationship of Technology as a Learning Tool to Student Motivation in Education among College Students in Davao Del Norte State College

Philip John L. Paja<sup>1</sup>, Melder A. Serado<sup>2</sup>, Princess D. Romanillos<sup>3</sup>, Dawn D. Aguadera<sup>4</sup>, Mark Van M. Buladaco<sup>5</sup>  
<sup>1,2,3</sup>Student, Bachelor of Science in Information Systems, Davao del Norte State College, Philippines  
<sup>4,5</sup>Faculty, Davao del Norte State College, Philippines

**Abstract** -Technology becomes more and more integrated with daily life.Educators must take a modern view on the utilization of technology to support inter-connected learning. This modern view holds that technology gives the learner flexibility and the ability to be adaptable in multiple scenarios and within different subject areas [8]. The purpose of this study is to know the relationship of technology as a learning tool that help students' motivation in education;determine the level of student motivation in education towards the use of technology as a learning tool and find out if there will be significant relationship between technology as learning tool and its impact to the students' motivation in education among college students.Data gathering was done through the use of questionnaires through an online survey. The questionnaire is divided into three parts namely: demographic proles of college students; focus on the student motivation aspects and; focuses on technology as a learning tool. The participants selected were from the two institutes of Davao del Norte State College that contain larger samples and clustered by the researchers and (54) students total is selected institutes enrolled in their different programs.The correlational research method was used in this study; which purpose is to find out the relationship between two or more variables. Results show that most of the students use technology as their learning tool to boost their student engagement or motivation. Findings indicated that in order to achieve good performance in school, they use technology to help their studies and provided own learning that makes students more equipped;moreover, by into real-world situations, students can understand complex concepts, which will then increase competence. By adding technology into the classroom, teachers can utilize this technology to differentiate instruction, motivate students, and include all skill levels.

**Keywords:**Correlational Research, Technology as Learning Tool, Student Motivation, Davao del Norte State College

## I. INTRODUCTION

### A. Background of the Study

In the modern information era, technology, today, plays a very important role in our life. It is seen as a basis of growth of an economy. An economy which is poor in technology can never grow in today's scenario. This is because technology makes our work much easier and less time consuming. The impact of technology can be felt in every possible field one such field is education [1]. The appropriate educational environment and resources coupled with meaningful learning opportunities are

critical to students' development and, therefore, their ability to succeed in the information age. As such, it is imperative that teachers assist students to develop their digital literacy while also providing a variety of learning opportunities to motivate each learner. The proper educational environment and resources coupled with meaningful learning opportunities are critical to students' development and, therefore, their ability to succeed in the information age. As such, it is imperative that teachers assist students to develop their digital literacy while also providing a variety of learning opportunities to motivate each learner [2]. The wealth of the world's information can be accessed through a variety of devices. Technology that was once expensive and limited to only the privileged few has now advanced and become far cheaper [3]. Students have grown up with technology all around them, and teachers must adapt to this new lifestyle. [4] stated "educational technology meets the needs of a diverse group of learners while assisting teaching in getting all students to achieve at high level". This research suggests that, through the proper use of technology integration, all students can have a high level of achievement.

The students nowadays are used and surrounded by technology, where most of them access information in only a fingertip away [5]. Many studies believe that the power of technology incorporates meaningful, helpful and necessary for a school to function successfully. In the other hand, many teachers are unwilling to make the change, and many students are not motivated to try. Based in the survey of a Public Schools by Ehrlich, Spote, Sebring, & the Consortium on Chicago Schools [6]. It was found that 92% of students had some form of technology and internet access in their home, but fewer than half of the students used that technology for work related to school. The use of technology and technology-supported learning environments will aid in increasing student engagement and motivation. According to

New England Charter School in their survey that a technology-rich curriculum was implemented for students from grades 7-12 in an urban location, from students at all levels of achievement (from learning disabled, to average, to gifted students) in the core disciplines (Math, Science, ELA, and Social Studies) and in some non-core classes (such as AP Courses, Astronomy, Chorus, and Guitar). In the same

manner, most of the online users are natives in technology which includes high school and college students who grew up with the knowledge and experience of digital technologies as a tool in entering to social media like computers, smartphones, and others. The curiosity of developing the blessings of social media according to [7] led the explosion Web 2.0 which include social networking sites like Facebook, Twitter and Myspace, wikis, blog sites, hosted services, video-sharing sites (e.g., YouTube, Vimeo, Netflix, Hulu, Yahoo, etc.), and web applications, among others. In addition, the emerging technological society, it stands to reason that the modern day classroom should reflect what is seen in society. By showing real world technological applications, intrinsic value can be brought to the learning process, increasing interest and motivation [8]. It is also important for these classrooms to address the need of all students. Technology supports the need for divergent learning approaches, helping to create a sense of community as well as a meaningful experience [9]. Appropriate use of technology can serve the regular education classroom by motivating students in all disciplines, such as math, social studies, and literacy. Students who have identified learning disabilities can [10] be served by the appropriate integration of technology through assistive technology devices, allowing students to access the information and maintain pace with a regular education classroom [11].

There are several stages that will address through this research study. This study focuses on students' motivation of technology at school and documented some examples of how teachers are currently integrating technology in classrooms. In this case, this study need to explore to know that technology in education as it relates to providing appropriate technology and its role in creating an inclusive learning environment feelings of motivation. Today's generation of students learn differently than those of the past. The Consortium on Chicago Schools [6] found that when teachers continue to teach topics and skills that students may deem outdated and not applicable in the real world, students may lose motivation and interest as the intrinsic value of what was learned is lost. By integrating technology into education as a new trend of tool right now, teachers will be able to motivate and include the entire spectrum of students (from learning disabled to gifted and talented). One of the key findings in the literature on technology implementation is the power of technology to engage students in relevant learning, in that the use of technology increases student motivation and engagement [12]. Some studies suggest students who are provided technology are more motivated learners, when learners are actors engaged in their own learning, they are more likely to make meaning and construct their own understanding of complex ideas [9]. The use of technology in the classroom has the benefit of increasing academic achievement from the perspective of both the students and the educators [13]. In a study of Center on Education (2012), real-world applications of technology along with other academic subjects helps motivate students. They found that when technology-based inquiry-learning correlates

to real-world situations, students begin to see the intrinsic value of what is being learned, which increases interest and motivation by the student. In addition, by applying abstract ideas into real-world situations, students can understand complex concepts, which will then increase competence. By adding technology into the classroom, teachers can utilize this technology to differentiate instruction, motivate students, and include all skill levels.

### *B. Theoretical Framework*

This study is anchored to the theory of constructivism put forth by Jean Piaget asserts that a child who actively experiments in activities forms more active connections and is better able to "inter-coordinate" or integrate their experiences into their daily lives [14]. As technology becomes more and more integrated with daily life, educators must take a modern view on the utilization of technology to support inter-connected learning. This modern view holds that technology gives the learner flexibility and the ability to be adaptable in multiple scenarios and within different subject areas. Technology can be used within many pedagogical approaches [8].

Though integrating technology difficult and intimidating, the modern teacher who embraces the concept of change will find that the very thing (technology) that may be intimidating will open many opportunities for learners that would not otherwise be accessible [8]. In current pedagogical practice, those who agree with Piaget's assertions believe the profound nature of learning comes more from active participation than passive participation [5]. This can come in a variety of forms, from hands-on activities to authentic and practical real world scenarios. Author [5] also states that "...real world Constructivist learning situations are more motivating to students through practical application of knowledge". It is also important to note that constructivism actively supports the notion of differentiation, or active support that allows all levels of learners to fully participate. A teacher who employs these techniques will also plan a curriculum that best suits the needs of learners, from materials to proper pacing [20].

Teachers plan learning activities that allow students to individually approach learning goals in their own way and in their own time, also known as differentiation. Through differentiation, students are then able to construct knowledge and make meaning to the information being presented. Through a technology-centered curriculum, teachers can utilize technology to differentiate and accommodate classroom environments to allow students to learn. Technology, used appropriately, supports constructivist learning and provides different avenues for students with or without documented learning disabilities to learn. In the other theory of motivation requires effort from the individual so, in large part, it is voluntary though can be reinforced. As such, motivation in self-learning is effort expended to realize learning objectives. The Expectancy-Value Theory of Motivation is a theoretical framework for conceptualizing

student motivation [17]. The model consists of three motivational components, which are the expectancy component, the value component, and the affective component. The expectancy component is about students' belief that they can accomplish the task. The value component centers on the students' interest in the task and the perceived importance.

An important factor that influences motivation is self-efficacy, or belief in one's capabilities to do certain actions as a response to specific conditions. For example, a student with high self-efficacy will be able to accomplish more in school because they are more hardworking and are determined to learn. In other words, their increased self-efficacy allows them to persevere in the face of difficulties and to view demanding learning objectives as a challenge to be overcome. Alternatively, students with low efficacy experience the opposite where they are not performing well in school tasks due to a lack of self-efficacy affecting their motivation [21]. For this research study, self-efficacy is the primary focus of the motivation factors.

### C. Conceptual Framework

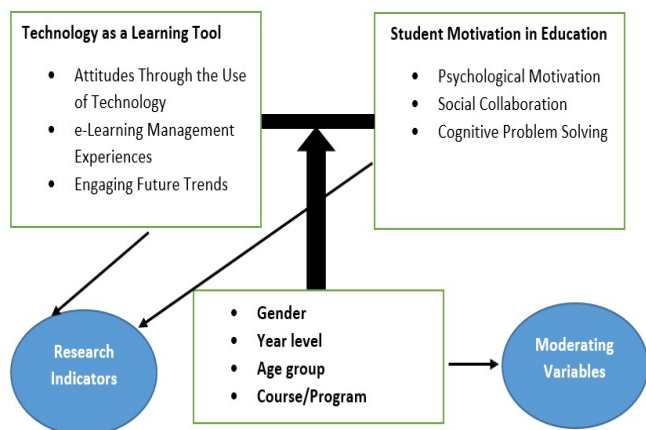


Figure 1. Conceptual Framework of the study

-Figure 1 above presents the conceptual model that will be used in this study. The diagram shows the relationship of the technology as a learning tool and student motivation towards in their education. The standard graph shows about what will be the process to answer the research problem. The first box in the left side represents the independent variable that contains its indicators to be discussed and explore meanwhile to the right side represents the dependent variable to test if the both variables have a relationship or difference. The lower box represents the moderating variables that could affect the relationship of two-variables.

### D. Research Questions

The main research questions that guided this research study is:

RQ1. What is the demographic profile of the participants of the study in terms of:

- 1.1 Gender

- 1.2 Age Group
- 1.3 Year level
- 1.4 Course/Program

RQ2. What is the level of technology as their learning tool in terms of:

- 2.1 Attitudes Through the Use of Technology
- 2.2 E-Learning Management Experiences
- 2.3 Engaging Future Trends

RQ3. What is the level of student motivation in education in terms of:

- 3.1 Psychological Motivation Aspect
- 3.2 Social Collaboration Aspect
- 3.3 Cognitive Problem Solving Aspect

RQ4. Is there a significant difference in the level of technology as their learning tool when grouped according to:

- 4.1 Gender
- 4.2 Age Group
- 4.3 Year level
- 4.4 Course/Program

RQ5. Is there a significant difference in the level of when grouped according to student's motivation in education:

- 5.1 Gender
- 5.2 Age Group
- 5.3 Year level
- 5.4 Course/Program

RQ6. Is there a significant relationship between the level of technology as their learning tool and the level of student's motivation in education?

### Null Hypothesis

Ho1: There is no significant difference in the level of technology as their learning tool when grouped according to:

- a. Gender
- b. Age Group
- c. Year Level
- d. Course/Program

Ho2: There is no significant difference in the level of student's motivation when grouped according to:

- a. Gender
- b. Age Group
- c. Year Level
- d. Course/Program

Ho3: There is no significant relationship in the level of technology as their learning tool and in the level of student's motivation in education.

Ho4: The technology as a learning tool do not significantly influence the student's motivation in education.

## II. METHODOLOGY

The methodology describes and explains about the different procedures including research design, research locale, participants of the study, data gathering procedure, sampling technique, statistical treatments as well as the ethical considerations.

### A. Research Design

Research design is the conceptual structure within which research conducted. It means the research design is the plan that a researcher arranges to find the answer to the question or the statement problem [24]. In this study, the researchers use correlational research as the design because this study aims to investigate the correlation between students' technology as a learning tool and student's motivation. Correlational research is research whose purpose is to find out the relationship between two or more variables and their cause and effect [23].

Besides, [22] a correlation is a statistical test to determine the tendency or pattern for two (or more) variables or two sets of data to vary consistently. In line with author [22] also describes that correlational research looks for the relationship or correlation between variables in positive correlation or negative correlation, and the coefficient of correlation determines the level of correlation. It can be said that the detection of correlation among variables is based on its correlation coefficient.

For this study, the variables involved were technology as a learning tool and student motivation in education. Quantitative research aims to investigate, count or classify, and construct statistical models and figures to explain the observation. A correlational research study not only describes what exists between variables but systematically investigates relationships between two or more variables of interest. From the description above, it can be concluded that this study constitutes correlational research, which is included in non-experimental quantitative research because it consists of numerical data, no variable manipulation. It purposes to identify the correlation between two variables, namely the relationship of technology as a learning tool to student motivation in the education of college students of Davao del Norte State College. The researchers thought that this is the appropriate method to use, for it involved some comparison and analysis of data gathered. The researchers desired that the findings of this study imply knowledge of how does technology serves as a significant impact on student motivation in studying.

The study was conducted in Davao del Norte State College at New Visayas, Panabo City, Davao del Norte. The researchers clustered two institutes in the aforementioned college. The respondents are regular college students and enrolled in a specific program; they surveyed the college or any comfortable place and ample vacant time that the respondent chooses to. The researchers also gathered respondents from the selected institutes. These

respondents were surveyed thru questionnaires that was given by the researchers. The study conducted in the second semester of the academic year 2019-2020.

### B. Participants of the Study and Sampling

Population refers to all the members of a particular group. It is the group of interest to the researchers, the group to whom the researchers would like to generalize the result of a study [23]. It can be said that a population is a group that researchers want to apply the result of the study, which conducted. The population of the study was randomly selected 1<sup>st</sup> year and 2<sup>nd</sup> year college students of Davao del Norte State College. The study makes use of all the students who regular and officially enrolled in the different programs in regards to individual characteristics such as age, sex, and year level/program enrolled. The study is selected four (4) institutes of the college, namely Institute of Education (IED), Institute of Management, Governance and Continuing Studies (IMAGOCS), Institute of Aquatic and Applied Sciences (IAAS), and Institute of Information Technology (IIT). The participants selected between the two institutes that contain larger samples have clustered by the researchers and at least (54) students total in selected institutes enrolled in their different programs

The small group that observed is called a sample, and the larger group about which the generalization made is called a population [21]. In other words, a sample is a part of the population. Cluster random sampling chosen for some reasons. One of the reasons is difficult to select a random sample of individuals because each student has a different schedule because of the difference in the class [23] explain random cluster sampling can be used in selecting a random sample of an individual that is challenging to be done. Besides, random cluster sampling is more comfortable to apply in school and less time-consuming. As [22] the author also claim that just as simple random sampling is more effective with a larger number of individuals, random cluster sampling is more effective with a larger number of clusters.

For those reasons, the researchers decided to choose random cluster sampling in conducting this research study. In this study, the institute which was chosen as the sample constituted of more than fifty (50) students. It is already fulfilling the standard minimum acceptable sample size for the correlational study. The minimum acceptable sample size for the correlational study is not less than 30. They also add that if the data which is obtained from a sample which is smaller than thirty (30), may give an inaccurate result of the degree of correlation. Therefore, a sample larger than 30 will give meaningful results [23]. To determine the sample size, the researchers has used the formula: In which:

$n$  = the size of the sample

$N$  = the size of the population

$e$  = the margin of error

$$n = \frac{N}{1 + Ne^2}$$

### C. Statistical Treatments

The data gathered from the questionnaire were collected and presented in tables and subjected to certain statistical treatments. The data were coded, tallied, and tabulated for better presentation and interpretation of the results. Appropriate statistical treatment using Statistical Package for Social Sciences (SPSS). The statistical methods that users are the following:

*Percentage and frequency distribution* used to organize and describe the personal profile of the students-respondent. The percentage and frequency distributions used to classify the respondents according to their age, sex, year-level, program enrolled. The frequency has accustomed to present the actual response of the respondents to a specific question or item in the questionnaire. The percentage of each item computed by dividing it with the total sample number of respondents who answered the survey. The formula that uses in the application of this technique is:

$$P = (f/n) \times 100 \text{ where:}$$

P = percentage

f = frequency

n = number of cases or total sample

In addition, the ranking be employed to describe numerical data in addition to percentage. They have used in the study for comparative purposes and for sharing the importance of items analyzed. Another statistical technique that is used by the researchers makes the weighted mean. It is needed to determine the average responses of the different options provided in the part of the survey questionnaire that used. It solves by the formula:

*Weighted Mean and Descriptive Rating* used to describe the technology's relationship towards student motivation in education. Below are the interpretations for the scores, mean, and weighted means gathered. Meanwhile, the content validity of the test material is interpreted using the 5 Point Likert Scale. Each category assign to a numerical value for Technology the independent variable is Strongly Agree is equal to 5 and Strongly Disagree, which is equal to 1; meanwhile, the assigned numerical value for Student Motivation the dependent variable is the same to the independent variable. The total assigned value is determined by using the weighted mean. The scoring system for each item must be such a high score consistently reflects favorable response, and a low score reflects an unfavorable response.

*Standard Deviation* is the essential measure of dispersion since it enables us to determine with a great deal of accuracy where the values of the distribution located concerning the mean. This has used in describing the dispersion of the students' scores test.

A *one-way analysis of variance (ANOVA)* is typically performed when an analyst would like to test for mean differences between three or more treatments or conditions. A one-way ANOVA is appropriate when each experimental unit, (study subject) is only assigned one of the available treatment conditions. Thus, the treatment groups do not have overlapping membership and are considered independent. A one-way ANOVA is considered a "between-subjects" analysis.

*Pearson product-moment correlation* is a very useful statistic showing the correlation between two variables. Therefore, the researchers used this formula because it is one of the most positive measurements of correlation [21]. Analyzing data is the process to evaluate the hypothesis, which has been determined by the researchers. In analyzing the data, the researchers used Pearson's Product Moment formula to find the correlation coefficient between two variables and how significant the correlation between them. Also, [21] state that if the Pearson r approaches +1.00, it means that there is a strong positive relationship between both variables.

Meanwhile, if the Pearson r approaches -1.00, it indicates the strong negative relationship between both variables. However, if the Pearson r approaches 0, it shows a weak relationship between both variables. It can be concluded that:  $r = +1.00$  indicates the strong positive correlation between X and Y,  $r = -1.00$  indicates the strong negative correlation between X and Y,  $r = 0$  indicates the weak correlation between X and Y.

### D. Data Collection Procedure and Ethics

Data gathering was done through the use of questionnaires in a form of online survey and test material. The aforementioned materials served as the significant sources of information to answer the research problems. Data are the critical thing that the researchers should get in conducting research. Data refers to the kinds of information researchers obtain on the subjects of their research [23]. Hence, data is considered as the essential thing that should collect before being analyzed. Following the type of research, which is quantitative research, the data used are numerical.

The researchers began this study by first securing permission to research the different institutes that serve as the selected participants. A letter of permission to conduct research that signed by the officiating dean of the different institutes of the college. The purpose of this study explores student's motivation in terms of different technologies to serve bridge survive education. After a letter of permission is sought, the researchers met with the respondents on the dates scheduled for conducting the research. Research questionnaire forms were distributed through online to the respondents to assess the level of their motivation in terms of technology that they use while studying and coping with learning environments. The significance of the study and the directions answering the questionnaire and explained to the respondents before the administration of questionnaires.

### Ethical Considerations

The core concerns of this study are college students who had motivated in their education with the use of technology that serves as their learning tool. Additionally, the researchers have to ensure their safety, give full protection so that they did not lose their trust and also the researchers followed ethical standards in conducting this study as pointed by [27], these are the following: respect for persons, beneficence, justice, consent and confidentiality. An obligation of the researcher's *respect for persons* needs not to exploit the weakness of the research participants. Self-sufficiency avoided maintaining the friendship, trust, and confidence among the participants and the researchers. Beforehand, the researchers ask permission from the selected institutes in the college a letter of permission to the dean where data collection belongs. Next, the researchers also require permission and approval from the selected college students who had been officially enrolled and belonged to the program. This is done to pay respect for the individuals concerned in the study.

Another most important way of showing respect is *consent* to persons during the research [29]. This is to let all participants became aware of the purpose and objectives of the research that they are going to involve. Written consent be provided for them to get their approval. After getting their nod, they have actively participated in the given questionnaires. Of course, they were informed about the results and findings of the study. Additionally, commitment of maximizing risks to the research requires *beneficence* participants instead maximizing the profits that are due to them. The anonymity of the participants keeps in order not to put each participant into risks. At all times, participants were protected, so every file of information was not left unattended or unprotected [25].

*Confidentiality* towards the results and findings including the safeguard of the participants, coding system is use. Meaning, the participants' identities were hidden [28] all materials answered questionnaires, encoded transcript, notes, and others should be destroyed after the data were being analyzed. Some of the participants were hesitant to be part on a survey at first because they were afraid what to say but because of the researchers' reassurance to them in regards to the confidentiality of the responses. The researchers will have an extra careful with questions that written in the questionnaires and due respect will give importance of this study.

*Justice* requires a reasonable allocation of the risks and benefits as results of the research. It is very important to acknowledge the contributions of all the participants as they are generally part of the success of the research. They must be given due credits in all their endeavors [26]. They were not able to spend any amount during the survey.

### III. RESULTS AND DISCUSSIONS

#### Profile of the Respondents

As shown in Table 1, there is a number of 54 participants in this study. Most of the respondents were aged 20 to 21 years

old. The youngest was 18, and the oldest respondent was 23. Moreover, 29.6% of the respondents were male and 70.4% were female. In year levels, 18.5% of the sample were first-year students, and 81.5% of the sample were second-year students, mostly belongs to the program offered by the Institute of Management, Governance and Continuing Studies and followed by the Institute of Education as clustered and sample by the researchers.

TABLE I.

Frequency And Percentage Distribution Of The Respondents Profile

Characteristic	Frequency (N=54)	Percentage
<b>Gender</b>		
Male	16	29.6
Female	38	70.4
<b>Age Group</b>		
18	1	1.9
19	10	18.5
20	29	53.7
21	11	20.4
22	2	3.7
23	1	1.9
<b>Year Level</b>		
1 <sup>st</sup> year	10	18.5
2 <sup>nd</sup>	44	81.5
<b>Course/Program</b>		
<b>IED</b>		
BSEd English	2	3.7
BSEd Math	1	1.9
BSEd Sciences	1	1.9
BTLed	10	18.5
BaComm	4	7.4
<b>IMAGOCS</b>		
BPA	1	1.9
BSDRM	15	27.8
BSE	10	18.5
BSSW	3	5.6

#### Level of Technology as A Learning Tool

Table 2 shows the level of respondents in technology as a learning tool and divided into three indicators. In Attitudes, the mean of level in attitudes of respondents through the use of technology is 3.3704 with a standard deviation of 0.36167. It shows that the attitudes of the respondents through the use of technology are moderate. It is because technology makes work much more comfortable and less time-consuming. The impact of technology can be felt in every possible field. One such field is education [1]. The appropriate educational environment and resources, coupled with meaningful learning opportunities, are critical to students' development and, therefore, their ability to succeed in the information age.

Table II

Mean and Standard Deviation Distribution of Respondents' Level of Technology as A Learning Tool

Descriptive Statistics

Indicators	N	Mean	Std. Deviation
ATUT Mean	54	3.3704	.36167
EME Mean	54	3.6204	.59921
EFT Mean	54	3.4398	.57243
Tech Learn Mean	54	3.4769	.42249

Diversity of attitudes to technology accumulation that occur to help all students become academically effective. In a three-step model presented by authors [27], there are allowances for a change in roles of the faculty, mentors, and allows for a dynamically updated curriculum (which allows teachers to make changes quickly to support the needs of their students). First, information (which is easily accessed by the internet) helps learners find information. Next, a collaboration must occur. Finally, the participants will pass on learned experiences. Other research supports this approach to technology integration to create more inclusive learning environments. The statement proves student's development of their attitudes for being valuable to use technology in terms for getting information and social connection to others and through this they can create a meaningful experience that they can use on how to utilize technology.

The second indicator tells about the E-Learning Management Experiences, the mean of the level of E-learning Management Experiences of the respondents is 3.6204 with a standard deviation of 0.59921. This depicts that the e-learning management experiences of the respondents are high. On the questionnaire, it was stated that their experiences using the internet and technology either home or campus, and most of them are using this media platform. It was supported based in the survey of Public Schools by Ehrlich, Sports, Sebring, & the Consortium [6]. It found that 92% of students had some form of technology and internet access in their homes. However, fewer than half of the students used that technology for work related to school—the use of technology and technology-supported learning environments aid in increasing student engagement. In addition of his study, [28] observed the perspective of students on the use of who uses e-learning management technology in the classroom. After the student participants were introduced and given their own to complete, the students were given a questionnaire. It was found that the students enjoyed the use of that learning management technology, and experienced increased motivation to learn. Meaning if a student has an internet or technology access say for instance gadgets in home or classroom it proves that it could result to class engagement as well as enjoyment.

Meanwhile, the third indicator, the Engaging Future Trends, the mean of the level of engagement for future trends of the respondents, is 3.4398, with a standard deviation of 0.57243.

It shows that the engagement for future trends of the respondents is high. Researchers found out that they are more engaging in the future trend right now and exploring things and discover more about technology and its uses to their study. Besides, it based on the curiosity of developing the blessings of social media, according to [7] led the explosion of Web 2.0, which includes social networking sites, among others. Also, the emerging technological society, it stands to reason that the modern-day classroom should reflect what is saw in society. Over-all, the mean of level in technology for respondents as their learning tool is 3.4769, with a standard deviation of 0.42249. It shows that the level of technology for the respondents as their learning tool is high. It is proven that the students nowadays are used and surrounded by technology, where most of them access information in only a fingertip away [5]. Many studies believe that the power of technology incorporates meaningful, helpful and necessary for a school to function successfully. Technology supports the need for divergent learning approaches, helping to create a sense of community as well as a meaningful experience [9].

#### *Level of Student Motivation in Education*

Table 3 shows the result of the level of student's motivation in education. It was categorized into three indicators. The mean of the level of psychological motivation aspect of the respondents is 2.7148, with a standard deviation of 0.63911. The result shows that the level of psychological motivation aspect of the respondents is moderate. It means that if the students are more exposed through the use of technology in the classroom, there will be benefits of increasing academic achievement from the perspective of both the students and the educators [13]. Psychologically, they have the eagerness to learn more and gain knowledge.

TABLE III

Mean And Standard Distribution Of Respondents' Level Of Student Motivation In Education

Descriptive Statistics

Indicators	N	Mean	Std. Deviation
PMA Mean	54	2.7148	.63911
SCA Mean	54	3.1893	.49438
CPSA Mean	54	3.2058	.56878
SMotiv Mean	54	3.0366	.47254

In the same manner, the second indicator, which is Social Collaboration Aspect, the mean of the level of the respondents is 3.1893, with a standard deviation of 0.49438. This shows that the level of social collaboration aspect of the respondents is moderate. For the social aspects of the students through engaging to teachers and classmate's collaboration, the Consortium on Chicago Schools [6] found that teachers continue to teach topics and skills that students may deem outdated and not applicable in the real world, students may lose motivation and interest as the intrinsic value of what

learned is lost. By integrating technology into education as a new trend of the tool right now, teachers are able to motivate and include the entire spectrum of students (from learning disabled to gifted and talented). Meaning if they are more connected to friends, teachers and peers, they feel motivated and easily to communicate. [1] asserted that Information Communication and Technology has a great impact on education in terms of achievement and absorption of knowledge to both teachers and students through the promotion of active learning in ICT tools help for the calculation and analysis of information obtained for examination and also students' performance report is all being computerized and made easily available for inquiry.

Collaborative and cooperative learning in ICT encourages interaction and cooperation among students, teachers regardless of distance which is between them creative, integrative, evaluative learning. Also, for the last indicator, the mean of the level of a cognitive problem-solving aspect of the respondents is 3.2058, with a standard deviation of 0.56878. Results show that the level of a cognitive problem-solving aspect of the respondents is moderate. Some studies suggest that students who provide technology with more motivated learners when learners are actors engaged in their learning. They are more likely to make meaning and construct their understanding of complex ideas.

Over-all, the mean level of student motivation in the education of the respondents is 3.0366, with a standard deviation of 0.47254. It shows that the level of student motivation in the education of the respondents is moderate. The use of technology in the classroom has the benefit of increasing academic achievement from the perspective of both the students and the educators [13]. In a study of the Center on Education [15], real-world applications of technology, along with other academic subjects, helps motivate students. They found that when technology-based inquiry-learning correlates to real-world situations, students begin to see the intrinsic value of what is being learned, which increases interest and motivation by the student.

#### *Significant Difference in the Level of Technologies in Intervening Variables*

##### Technology as their Learning Tool

Table 4 shows the significant difference of technology as learning tool when grouped according to gender, age range, year level and program. ANOVA was used in analyzing the significant difference.

Null Hypothesis: There is no significant difference in the technology as the respondents' learning tool when grouped according to gender, age range, year level and course/program.

TABLE IV

Anova Distribution Of Respondents' Significant Difference In Level Of Technology As Learning Tool To Gender, Age Range, Year Level And Course/Program

ANOVA (Between Groups)

	Sum of Squares	Df	Mean Square	F	Sig.
Tech Learn Mean Gender	.059	1	.059	.325	.571
Tech Learn Mean Age Range	1.219	5	.244	1.419	.234
Tech Learn Mean Year Level	.382	1	.382	2.190	.145
Tech Learn Mean Course/Program	1.883	9	.209	1.215	.311

Since  $p$ -value is  $0.571 > 0.05$  when grouped according to gender, then we do not reject the null hypothesis. There is no significant difference in the technology as the respondents' learning tool when grouped according to gender. Since  $p$ -value is  $0.234 > 0.05$  when grouped according to age range, then we do not reject the null hypothesis. There is no significant difference in the technology as the respondents' learning tool when grouped according to age range.

Since  $p$ -value is  $0.145 > 0.05$ , then we do not reject the null hypothesis. There is no significant difference in the technology as the respondents' learning tool when grouped according to year level. Since  $p$ -value is  $0.311 > 0.05$ , then we do not reject the null hypothesis. There is no significant difference in the technology as the respondents' learning tool when grouped according to course/program.

#### *Significant Difference in the Level of Student Motivation in Intervening Variables*

Null Hypothesis: There is no significant difference in the student motivation in education when grouped according to gender, age range, year level and course/program.

TABLE V

Anova Distribution Of Respondents' Significant Difference In Level Of Student Motivation In Education To Gender, Age Range, Year Level And Course/Program

ANOVA (Between Groups)

	Sum of Squares	Df	Mean Square	F	Sig.
SMotiv Mean Gender	.075	1	.075	.332	.567
SMotiv Mean Age Group	1.193	5	.239	1.076	.385
SMotiv Mean Year Level	.159	1	.159	.707	.404
SMotiv Mean Course/Program	1.871	9	.208	.918	.519

Since  $p$ -value is  $0.567 > 0.05$ , then we do not reject the null hypothesis. There is no significant difference in student motivation in education when grouped according to gender. Since  $p$ -value is  $0.385 > 0.05$ , then we do not reject the



null hypothesis. There is no significant difference in student motivation in education when grouped according to age group.

Since  $p$ -value is  $0.404 > 0.05$ , then we do not reject the null hypothesis. There is no significant difference in student motivation in education when grouped according to year level.

Since  $p$ -value is  $0.519 > 0.05$ , then we do not reject the null hypothesis. There is no significant difference in student motivation in education when grouped according to course/program.

The tables above show, that there is no significant relationship when group according to gender. Because the researchers discover that all of the students uses technology and most of them especially in this modern days they are more highly exposed to technologies, no specific gender is motivated when they are using technology that could increase their student engagement in class instead they need technology through helping and working in their studies. [4] states that “educational technology meets the needs of a diverse group of learners while support teaching in getting all students to achieve at high level”. He recommends that, through the proper use of technology integration, all students can have a high level of achievement.

According to the study [3] all students that have grown up to technology adapt the new lifestyle and they have the privileged to use on it. For the significant relationship of technology and student motivation in education when group into age range, year level and course/program of a student the result found out of the researchers is no significant relationships. In fact, students can easily adapt at the young age and any grade, year or chosen career in college when students engaging to technology and the moment it was supported and connected to New England Charter School in their survey that a technology-rich curriculum was implemented for students from grades 7-12 in an urban location, from students at all levels of achievement meaning starting from grades school they are already use technology to attain achievement. In the same manner, most of the online users are natives in technology which includes high school and college students who grew up with the knowledge and experience of digital technologies as a tool in entering to social media like computers, smartphones, and others. based on [6].

To sum up, among the intervening variables there is no significant relationship to the technology as a learning tool and student motivation when group according to year level and course/program. Some studies suggest students who are provided technology are more motivated learners, when learners are actors engaged in their own learning, they are more likely to make meaning and construct their own understanding of complex ideas [9].

*Relationship of Technology as Learning Tool to Student Motivation in Education*

Table VI  
Correlation Between Measures  
Correlations

		Tech Ler Mean	SMoti Mean
Tech Learn Mean	Pearson Correlation	1	.545**
	Sig. (2-tailed)		.000
	N	54	54
SMotiv Mean	Pearson Correlation	.545**	1
	Sig. (2-tailed)	.000	
	N	54	54

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Two-tailed correlations between variables were further explored in Table 6. Result shows the moderate positive correlation with  $r$ -value is 0.545 which means that there is a relationship in the technology as learning tool and student motivation in education. Since  $p$ -value is  $0.000 < 0.05$ , then we reject the null hypothesis. There is a significant relationship in the technology as learning tool and student motivation in education.

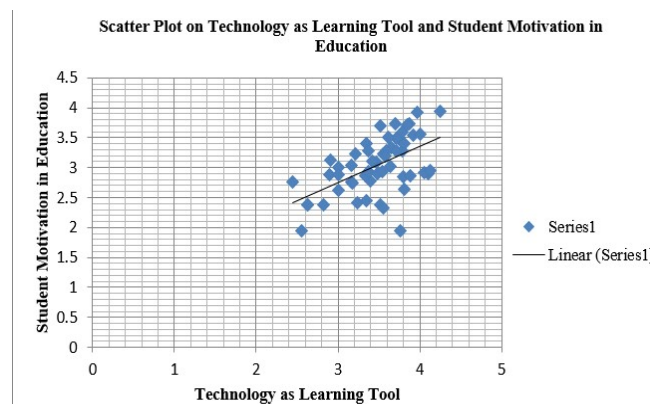


Fig 2. Scatterplot of Correlations

Therefore, moderate correlations and relationship between the two variables and technology really helps the student to motivate in their studies and it really proves that technology could be a learning tool towards education.

Based in the Expectancy-Value Theory of Motivation is a theoretical framework for conceptualizing student motivation [17] of motivation requires effort from the individual so, in large part, it is voluntary though can be reinforced, expectancy component is about students’ belief that they can accomplish the task. As such, motivation in self-learning is effort expended to realize learning objectives. In addition, as technology becomes more and more integrated with daily life, educators must take a modern view on the utilization of technology to support inter-connected learning. This modern

view holds that technology gives the learner flexibility and the ability to be adaptable in multiple scenarios and within different subject areas, technology can be used within many approaches [8]. Moreover, by applying abstract ideas into real-world situations, students can understand complex concepts, which will then increase competence. By adding technology into the classroom, teachers can utilize this technology to differentiate instruction, motivate students, and include all skill levels.

Figure 2 is the scatter plots of blue dots representing the 54 coordinates which stand as the scores of each respondent in the independent and dependent variables. The black line stands for the trend of relationship that represents the arrangement of the dots. The graph shows that the respondents really proves that the technology as a learning tool contributes moderately a great impact to student engagement and learning. As you observe in the graph some of them are really bond and others are far which we called outliers. As you observe scatterplot with dots going from lower left to upper right indicates a positive correlation (as variable x goes up; variable y also goes up). A scatterplot of z scores also reveals the strength of the relationship between variables. If the dots in the scatterplot form a narrow band so that when a straight line is drawn through the band the dots will be near the line, there is a strong linear relationship between the variables. [21]. The more recent study of [19] also found a positive relationship between the use of computers and better results in literacy where it is evident that digital technology is being used by learners to increase study time and practice. In addition, it found that the effective use of digital tools is related to proficiency in reading.

Proven that the two variables and through its indicators have its relationship and connected. Using data from the Programme for International Student Assessment (PISA) [19] assessed the relationship between the intensity with which learners used digital tools and resources and literacy scores. They examined uses for: gaming activities (playing individual or collective online games), collaboration and communication activities (such as linking with others in online chat or discussion forums), information management and technical operations (such as searching for and downloading information) and creating content, knowledge and problem solving activities (such as using computers to do homework or running simulations at school). Which is proven and connected that the both variables significantly have its relationship in many instances right now without technology through on their studies they can't collaborate and integrate the classroom learning engagement.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### *Conclusions*

The conclusions of the findings for the relationship of technology as a learning tool to student motivation in education are based on the findings on the motivation in

education among college students of Davao del Norte State College. The conclusions are as stated below:

For the research question number 1 and 2; the number of respondents resulted that the sample were first-year students, and highest sample in year level were second-year students, mostly belongs to the program offered by the Institute of Management, Governance and Continuing Studies second question is about the level in technology for respondents it shows that their learning tool is high. It is proven that the students nowadays are used and surrounded by technology, where most of them access information in only a fingertip away [5]. Many studies believe that the power of technology incorporates meaningful, helpful and necessary for a school to function successfully.

1. Meanwhile, for the research question number 3; talks about the level of student motivation in the education results show of the respondents is moderate. The use of technology in the classroom has the benefit of increasing academic achievement from the perspective of both the students and the educators [13].

2. On the other hand, for the research question number 4 and 5, when the two variables the technology as a learning tool and student motivation tested into their intervening variables it doesn't affect to the independent and dependent variables because there is no significant relationship when group according to gender, age group, year level and course/program. Because the researchers discover that all of the students uses technology and most of them especially in this modern days they are more highly exposed to technologies. According to the study of [3].

All students that have grown up to technology adapt the new lifestyle and they have the privileged to use on it. In fact, students can easily adapt at the young age and any grade, year or chosen career in college when students engaging to technology and the moment. In the same manner, most of the online users are natives in technology which includes high school and college students who grew up with the knowledge and experience of digital technologies as a tool in entering to social media like computers, smartphones, and others [6].

In general, for the last research question about examining the relationship of both variables, the result shows that there is a moderate positive correlation which means that there is a relationship in the technology as learning tool and student motivation in education. Therefore, moderate correlations and relationship between the two variables and technology really helps the student in order to motivate in their studies and it really proves that technology could be a learning tool towards education.

Based on the Expectancy-Value Theory of Motivation is a theoretical framework for conceptualizing student motivation [17] of motivation requires effort from the individual so, in large part, it is voluntary though can be reinforced, expectancy component is about students' beliefs that they can

accomplish the task. As such, motivation in self-learning is effort expended to realize learning objectives. In addition, as technology becomes more and more integrated with daily life, educators must take a modern view on the utilization of technology to support interconnected learning.

### *Recommendations*

This study has yielded findings that indicate values subscribed by participants. They manifest in academe that they should use technology for their studies for them to boost their motivation and engagement. The findings concur with and provide practical implications for all who are in the field of information and communication technology in general and especially for educators and students. The implications are as follows:

First and foremost, to the Information and Communication Technology department of the on-campus and off campus they have the power to help students in their studies especially for making the internet stable and to utilize technology to use by the students. They can also help students for those who can't access digital and technological means.

Secondly, educators/instructors/teachers should also be aware that e-learning management or technology-based learning system could really help students for their performance in school. This could provide better ways for them to work on their tasks. They can embrace the paperless and teach students through the means of learning management websites.

Thirdly, the students, they should also be recommended to make use of the technology for better means and not for excessive use of technology for leisure or online games. They should use technology as their learning tool to uplift their engagement to school. Lastly, for the future researchers, a further study may be conducted to continue, improve and develop student's motivation in education.

### ACKNOWLEDGEMENT

The perfection of work will be of a team work and efforts modulated by various persons to complete it successfully. It will not be a fruitful one unless we extend our heartfelt thanks and gratitude to all who guided us to the treasure of knowledge.

With heartfelt we praise and thank the Lord Almighty who has been my source of strength in every step of our life and foundation of our knowledge and wisdom and for his abiding elegance, love, compassion and immense deluges of blessings on me, to overcome all difficulties.

The researchers would like to give gratitude to the school and the students enrolled to the Institute of Education and Institute Management Governance and Continuing Studies of Davao del Norte State College being the research participants and study conducted. For those our whom actively answering the online survey,

To our IS 223 Instructor Mr. Mark Van Buladaco we have no words to thank his amazing efforts and support us to guide our research paper, from hard lectures, to his personal experiences.

The researchers also to give special gratitude to our dear adviser and grammarian Ms. Dawn Agudera, for patience, dedication and way of teaching and guiding us to accomplished this work. We wanted to thank her specially for always being so able ask any type of question, and always for sending her feedback and comments and different aspects such as grammar construction and styles.

To Mr. Ellvan Campos we also give thanks for giving his best expertise to be our statistician the one who produce results and analysis to make this work possible.

To other members of the group JaneroseIbon, Freche Amor Patrimonio, and Oscar Namoc, whom together we work as a team to elaborate reviews, discussions and learning to communicate and work through online. Specially to understand to each other strengths in order to distribute the amount of work in an efficient way. We would like to express gratitude to our family who supported us morally and financially. To friends and all those behind our back to help this research project to achieved and chosen to be publish.

We would like to finish our acknowledgement with a significant phrase that Helen Keller once said: "Alone we can do so little; together we can do so much."

### REFERENCES

- [1]. R. Raja\*, Journal of Applied and Advanced Research, 2018 P. C. Nagasubramani Department of Pedagogical Sciences, Tamilnadu Teachers Education University, Karapakkam, Retrieved: <https://dx.doi.org/10.21839/jaar.2018.v3S1.165>
- [2]. Flanagan, S., Bouck, E. C., & Richardson, J. (2013). Middle school special education teachers' perceptions and use of assistive technology in literacy instruction. *Assistive Technology*, 25, 24–30. doi:10.1080/10400435.2012.682697
- [3]. Edwards, B. (2009, October 25). Classic PCs vs. new PCs: Their true cost. *Technologizer*. Retrieved from <http://www.technologizer.com>
- [4]. Egbert, J. (2009). *Supporting learning with technology: Essentials of classroom practice*. Upper Saddle River, NJ: Prentice Hall.
- [5]. Grismore, B. A. (2012). *Mini technology manual for schools: An introduction to technology integration*. Retrieved from ERIC database. (ED533378)
- [6]. Ehrlich, S. B., Spote, S. E., & Sebring, P. (2013, April). The use of technology in Chicago public schools 2011: Perspectives from students, teachers, and principals. Retrieved from University of Chicago, Consortium on Chicago School Research website: [https://consortium.uchicago.edu/sites/default/files/publications/Technology%20Report%202013\\_0.pdf](https://consortium.uchicago.edu/sites/default/files/publications/Technology%20Report%202013_0.pdf)
- [7]. Reddy, V. (2014). *The Influence of Social Media on International Students Choice of University and Course*. MIT. Queensland University of Technology.
- [8]. Ford, K., & Lott, L (2011). *The impact of technology on constructivist pedagogies*. Retrieved from <https://sites.google.com/a/boisestate.edu/edtechtheories/the-impact-of-technologyon-constructivist-pedagogies-1>
- [9]. Futurelab. (2009). *Using digital technologies to promote inclusive practices in education*. Retrieved from [http://www.creativetallis.com/uploads/2/2/8/7/2287089/digital\\_inclusion3.pdf](http://www.creativetallis.com/uploads/2/2/8/7/2287089/digital_inclusion3.pdf)

- [10]. Heafner, T. (2004). Using technology to motivate students to learn social studies. *Contemporary Issues in Technology and Teacher Education*, 4, 42–53. Retrieved from <http://www.citejournal.org/>
- [11]. Floyd, K. K., & Judge, S. L. (2012). The efficacy of assistive technology on reading comprehension for postsecondary students with learning disabilities. *Assistive Technology Outcomes and Benefits*, 8, 48–64. doi:10.1080/10400435.2012.682697
- [12]. Godzicki, L., Godzicki, N., Krofel, M., & Michaels, R. (2013). Increasing motivation and engagement in elementary and middle school students through technology-supported learning environments (Master's research project, Saint Xavier University). Retrieved from ERIC database. (ED541343)
- [13]. Courville, K. (2011). Technology and its use in education: Present roles and future prospects. Paper presented at the Recovery School District Technology Summit, Baton Rouge, LA.
- [14]. Piaget, J. (1955). *The construction of reality in the child*. London, United Kingdom: Routledge. Stone
- [15]. Usher, A. (2012). What nontraditional approaches can motivate unenthusiastic students? Washington, DC: Center on Education Policy.
- [16]. Jones-Kavalier, B., & Flannigan, S. (2008, February). Connecting the digital dots: literacy of the 21st century. *Teacher Librarian*, 13–16.
- [17]. Wigfield, A., & Eccles, J. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology* 25, 68–81.
- [18]. OECD (2012). PISA 2012 technical report, scaling procedures and construct validation of context questionnaire data. Retrieved from [http://www.oecd.org/pisa/pisaproducts/PISA%202012%20Technical%20Report\\_Chapter%2016.pdf](http://www.oecd.org/pisa/pisaproducts/PISA%202012%20Technical%20Report_Chapter%2016.pdf)
- [19]. Gensburg, R., & Herman, B. (2009). An analysis of the theory of constructivism as it relates to pre-service and in-service teachers and technology. Retrieved from <https://sites.google.com/a/boisestate.edu/edtechtheories/analysis-of-the-theory-of-constructivism-as-it-relates-to-pre-service-and-in-service-teachers-and-technology-1>
- [20]. Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- [21]. Fraenkel, J., R., & Wallen, N., E. (2010). *How to design and evaluate research in education*. (7th ed.). McGraw-Hill, New York: NY. Retrieved from <http://doha.ac.mu/ebooks/Research%20Methods/DesigningAndEvaluatingResearchInEducation.pdf>
- [22]. Kothari, C.R. (2004) *Research Methodology Methods and Techniques*. 2Nd Edition, New Age International Publishers, New Delhi. - References - Scientific Research Publishing. [online] Available at: [https://www.scirp.org/\(S\(lz5mqp453edsnp55rrgjt55\)\)/reference/ReferencesPapers.aspx?ReferenceID=1285422](https://www.scirp.org/(S(lz5mqp453edsnp55rrgjt55))/reference/ReferencesPapers.aspx?ReferenceID=1285422) [Accessed 2 June 2020].
- [23]. Maree, J. G., & Van der Westhuizen, C. (2009a). The scope of violence in some Gauteng schools. Gauteng Department of Education Inaugural Research Conference, 9 March. Maree, J. G., & Van der Westhuizen, C. (2009b). Head start in designing research proposals. Cape Town: Juta.
- [24]. Bricki N, Green J (2007) A guide to using qualitative research methodology. New York: Medicins Sans Frontieres.
- [25]. Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage.
- [26]. Norris, D. M., & Lefrere, P. (2011). Transformation through expeditionary change using online learning and competence-building technologies. *Research in Learning Technology*, 19, 61–72. doi:10.1080/09687769.2010.549205
- [27]. Halat, E. (2013). Experience of elementary school students with the use of WebQuests. *Mevlana International Journal of Education*, 3(2), 68–76. Retrieved from ERIC database. (ED543594)
- [28]. Creswell, J., W. (2006). *Five Qualitative Approaches to Inquiry*. SAGE Publications, Inc. Retrieved from <http://www.sagepub.com/upm-data/13421> Chapter4.pdf
- [29]. Elliot, Mark, Fairweather, Ian, Olsen, Wendy Kay, and Pampaka, Maria(2016). *A Dictionary of Social Research Methods*. Oxford, UK: Oxford University Press; retrieved at <https://libguides.usc.edu/writingguide>