

IMPACT OF TECHNOLOGY IN ENHANCING STUDENTS' LEARNING

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ABSTRACT: *The main purpose of this study is to determine the impact of technology in enhancing students' learning in Surigao del Sur State University (SDSSU) – Cantilan Campus, College of Engineering, Computer Studies and Technology, during the Academic Year 2018-2019. The findings of this study served as the basis for an intervention program for the enhancement of students' learning. In this study, the descriptive method using questionnaires and follow-up interviews were utilized in analyzing pertinent data. Data were collected and gathered from student-respondents. Based on the findings of the study, the researcher concluded that despite the difference in age, gender and economic status of the respondents, the results manifest that technology has an impact in enhancing students' capacity of learning, provided the various relevant factors are present.*

Keywords: Technology, learning, SDSSU

INTRODUCTION

In this day and age, technology has become ubiquitous in the modern world. Wherever you may be, whichever country you may belong to, whatever status in life you may have, there is no denying that technology is at the fore of our everyday lives.

This holds especially true within the educational milieu. Students of today live in a technological world where almost everything is at their fingertips. Gone are the days when teachers were constrained to teach students within the four corners of the classroom, using chalkboards or whiteboards. Teachers then had to write down the lessons of the day and the students had to copy them to have their notes.

This is no longer the situation nowadays. Students are equipped with various technological gadgets and software to enable them to have easier access to various resources wherever they may be. Students have their laptops, computers, tablets, and smartphones which make research easier for them. They also make use of various file sharing applications or software to enable them to share their notes or resources. They can easily email files to a fellow student and vice versa.

Technology has seen a notable increase in being integrated into our daily lives making access to huge amounts of information very easy and convenient. Students nowadays grew up with technology all around them in a constantly increasing manner. As a corollary, instructors must adapt to this shift in paradigm in the pedagogical setting. Instructors are now called to use and integrate various forms of technology in the classroom, not merely as a motivational tool but more as an instructional tool [1].

Gone are the days when traditional, face-to-face contact with students was the exclusive method of teaching. More and more, technology is utilized to enrich students' learning experience in face-to-face settings, at the same time reducing face-to-face contact or even replacing it entirely in favor of technology-enhanced media [2].

The research and literary findings suggest that technology integration does impact students' capacity of learning with due consideration to variable factors affecting it. Thus, this study zeroes in on the impact of technology in enhancing students' learning by espousing the idea that a positive relationship exists between academic achievement when technology has been incorporated into the curriculum.

In conducting the study, the following variables will be considered to provide background information: profile of participants in terms of age, gender and economic status; higher classroom technology integration; the combination of technology with traditional teaching instruction; exposure of the student to technology at home; instructional and software design; students' interest in technology; an age when Students are exposed to and learn technology.

The profile of the participants will be taken into consideration in undergoing this study as it has been established that varied individuals may yield different results. These will be considered to find out whether or not there were differences in the participants' respective profiles *vis-a-vis* the impact of technology in enhancing their capacity of learning.

Age will be considered in the study because age is a demographic variable that has been reported to be a significant moderator of the impact of technology in enhancing students' learning capacity.

Gender will be also considered to determine any difference between the impact of technology in enhancing students' learning capacity as between male and female students. The corollary, this study may also establish that there may be no distinction between the two sexes when it comes to the impact of technology in enhancing students' learning capacity.

Economic Status will be of primordial importance to this study as students' coming from different walks of life may have different levels of exposure to technology and consequently varying levels of impact of technology in enhancing students' learning capacity.

Higher Classroom Technology Integration played a significant role in this study as studies and other reports exist that show a positive relationship between academic achievement in multiple content areas when technology has been incorporated into the curriculum.

Combination of Technology with Traditional Teaching Instruction will also be considered because in a review of several studies, it was discovered that achievement increased when computer use was combined with traditional instruction.

Exposure of the Student to Technology at Home will be given due consideration in this study as studies show that using

computers at home for productive purposes led to increases in students' performance.

Instructional and Software Design played an integral role in this study. Studies show that students' achievement increased not only by incorporating technology, but by also addressing instructional design, software design, and technology capabilities. The technology could matter, but that this depended on how it was used.

Students' Interest in Technology will likewise be considered in the instant research. Studies show that technology has the potential to be a powerful educational tool for those that have an interest in it. For students with no interest in using technology, they will still benefit educationally from traditional methods.

Age When Students are Exposed to and Learn Technology will be at the core of this study as well. As with any instructional topic, technology needs to be taught and embraced at an early age. If students are taught to hate technology at an early age, then their disdain for technology may follow them into their later years.

Statement of the Problem

The main purpose of this study is to determine the impact of technology in enhancing students' learning and to develop and design an action plan to guide teachers in the efficient use of technology in teaching their students.

Specifically, it will seek to:

1. determine the profile of the participants in terms of:
 - a. Age;
 - b. Gender; and
 - c. Economic Status.
2. determine whether the following factors affect the impact of technology in enhancing students' learning:
 - a. Higher Classroom Technology Integration;
 - b. Combination of Technology with Traditional Teaching Instruction;
 - c. Exposure of the Student to Technology at Home;
 - d. Instructional and Software Design;
 - e. Students' Interest in Technology; and
 - f. Age when Students are Exposed to and Learn Technology.
3. determine whether technology has an impact on enhancing students' learning; and
4. design and develop an action plan.

Research Methodology

In this study, the descriptive method using questionnaires and follow-up interviews were utilized in analyzing pertinent data. Data were gathered and collected from student-respondents.

Research Respondents

The research respondents were the One Hundred Ninety-Two (192) of the College of Engineering, Computer Studies and Technology of Surigao del Sur State University - Cantilan Campus.

Research Instrument

This study used a researcher-made questionnaire. The questionnaire contains three parts: the profile of the participants, the factors affecting the impact of technology in enhancing students' learning and the impact of technology in enhancing students' learning.

RESULTS AND DISCUSSIONS

This part tackles the presentation, analysis, and interpretation of data gathered from the respondents through the researcher-made questionnaire.

Profile of the Participants

a. Age

As shown in Table 1 below, the majority of the respondents are aged 18 years old and above.

Table 1: Age

Age	Frequency	Percentage
Below 17	0	0
17	26	13.54
18	71	36.97
19	44	22.92
20	39	20.31
Above 20	12	6.25

b. Gender

Table 2 shows the participants' profile in terms of gender.

Table 2: Gender

GENDER		
Gender	Frequency	Percentage
Male	75	39.06%
Female	117	60.94%

As shown in Table 2, 75 or 39.06 percent of the respondents were males while 117 or 60.94 percent were females. Hence, the respondents are comprised of more females than males.

c. Economic status

Students of lower socioeconomic status are most likely faced with additional challenges due to a dearth of learning resources, strenuous learning conditions and poor motivation that could negatively impact their academic performance. Families with lower socioeconomic status are the ones who are more likely to have trouble with providing academic support to their children. Limited time and financial resources make it difficult for parents to provide a home environment conducive for learning [3].

The majority of the respondents have a family monthly income of Php70,000 or below, as shown in Table 3. This goes to show that most of the respondents have at least an average family monthly income.

Table 3: Economic Status

Family monthly income	Frequency	Percentage
Below Php10,000.00	34	17.71
Php10,000.01 – Php30,000.00	34	17.71
Php30,000.01 – Php50,000.00	38	19.79
Php50,000.01 – Php70,000.00	56	29.17
Php70,000.01 – Php90,000.00	5	2.60
Php90,000.01 – Php110,000.00	3	1.56
Php110,000.01 – Php130,000.00	5	2.60
Php130,000.01 – Php150,000.00	3	1.56
Above Php150,000.00	3	1.56
Optional	11	5.73

Higher Classroom Technology Integration

According to Francis [1], students should be taught in a manner in which they can learn best. When put into a technology-supported environment that is more conducive to their students' learning style, teachers can utilize a wide array of technologies that can potentially motivate and engage students. These include SMART Boards, Google Docs, clicker based response systems, and various kinds of interactive technology. The aim of teachers is the integration of existing technologies for productive learning.

Majority of the respondents agreed that technology is integrated into the classroom setting, their assignments and projects require the use of technology to be accomplished, their teachers make use of technology in the classroom, they use technology in classroom activities such as reporting, and that the use of technology in the classroom improves their learning capacity. In other words, the respondents agree that there is higher classroom technology integration, as shown in Table 4.

Table 4: Higher Classroom Technology Integration

	Frequency	Percentage
Technology is integrated in the classroom setting.		
Strongly Agree	22	11.46
Agree	164	85.42
Undecided	2	1.04
Disagree	2	1.04
Strongly Disagree	2	1.04
Our assignments and projects require the use of technology to be accomplished.		
Strongly Agree	40	20.83
Agree	138	71.87
Undecided	6	3.13
Disagree	6	3.13
Strongly Disagree	2	1.04
Our teachers make use of technology in the classroom.		
Strongly Agree	24	12.50
Agree	155	80.73
Undecided	11	5.73
Disagree	2	1.04
Strongly Disagree	0	0
We use technology in classroom activities such as reporting.		
Strongly Agree	29	15.10
Agree	154	80.21
Undecided	9	4.69
Disagree	0	0
Strongly Disagree	0	0
The use of technology in the classroom improves my learning capacity.		
Strongly Agree	25	13.02
Agree	155	80.73
Undecided	12	6.25
Disagree	0	0
Strongly Disagree	0	0

Combination of Technology with Traditional Teaching Instruction

As shown in Table 5, the majority of the respondents agreed that teachers use technology in combination with traditional teaching methods in discussing the topics in class and various classroom activities.

Table 5: Combination of Technology with Traditional Teaching Instruction

	Frequency	Percentage
Our teachers use technology in combination with traditional teaching methods in discussing the topics in class.		
Strongly Agree	33	17.19
Agree	154	80.21
Undecided	5	2.60
Disagree	0	0
Strongly Disagree	0	0
Our teachers use technology in combination with traditional teaching methods in various classroom activities.		
Strongly Agree	25	13.02
Agree	161	83.85
Undecided	6	3.13
Disagree	0	0
Strongly Disagree	0	0
I find the use of technology in conjunction with traditional teaching methods as effective in making me learn more easily.		
Strongly Agree	9	4.69
Agree	177	92.18
Undecided	6	3.13
Disagree	0	0
Strongly Disagree	0	0

The participants also agreed that the use of technology in conjunction with traditional teaching methods is effective in making them learn more easily. A corollary; the respondents agree that the combination of technology with traditional teaching instruction enhances their capacity for learning.

Exposure of the Student to Technology at Home

As shown in Table 6, the majority of the respondents agreed that they and their families use technological gadgets and equipment at home. Hence, respondents agree that they are exposed to technology at home.

Table 6: Exposure of the Student to Technology at Home

	Frequency	Percentage
My family uses technological gadgets and equipment at home.		
Strongly Agree	13	6.77
Agree	173	90.11
Undecided	1	0.52
Disagree	5	2.60
Strongly Disagree	0	0
I use technological gadgets and equipment at home.		
Strongly Agree	52	27.08
Agree	137	71.36
Undecided	3	1.56
Disagree	0	0
Strongly Disagree	0	0

Instructional and Software Design

The majority of the respondents agreed that both instructional and software designs of the technologies used in the classroom setting are good, technological gadgets and equipment used in school are updated and modern. As a corollary, the students agreed that instructional and software designs of the technologies used in the classroom setting help in making them learn better in school.

Table 7: Instructional and Software Design

	Frequency	Percentage
The instructional designs of the technologies used in the classroom setting are good.		
Strongly Agree	18	9.38
Agree	164	85.41
Undecided	10	5.21
Disagree	0	0
Strongly Disagree	0	0
The software designs of the technologies used in the classroom setting are good.		
Strongly Agree	5	2.60
Agree	161	83.85
Undecided	18	9.38
Disagree	6	3.13
Strongly Disagree	2	1.04
The technological gadgets and equipment used in school are updated and modern.		
Strongly Agree	18	9.38
Agree	164	85.41
Undecided	6	3.13
Disagree	2	1.04
Strongly Disagree	2	1.04
The instructional and software designs of the technologies used in the classroom setting help in making me learn better in school.		
Strongly Agree	16	8.33
Agree	173	90.11
Undecided	2	1.04
Disagree	1	0.52
Strongly Disagree	0	0

Students' Interest in Technology

Majority of the respondents agreed that they are interested in technology, it makes them curious about things, they find time to make use of technology, they find ways to know how to use technological gadgets and equipment, they enjoy using technological gadgets and equipment, they want to learn more about using technology, and that their interest in technology improved their learning capacity in school. In other words, the respondents agree that their interest in technology enhances their capacity of learning, as shown in Table 8.

Table 8: Students' Interest in Technology

	Frequency	Percentage
I am interested in technology.		
Strongly Agree	24	12.50
Agree	164	85.42
Undecided	2	1.04
Disagree	2	1.04
Strongly Disagree	0	0
Technology makes me curious about things.		
Strongly Agree	26	13.54
Agree	163	84.90
Undecided	3	1.56
Disagree	0	0
Strongly Disagree	0	0
I find time to make use of technology.		
Strongly Agree	34	17.71
Agree	158	82.29
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0
I find ways to know how to use technological gadgets and		

equipment.		
Strongly Agree	38	19.79
Agree	151	78.65
Undecided	3	1.56
Disagree	0	0
Strongly Disagree	0	0
I enjoy using technological gadgets and equipment.		
Strongly Agree	24	12.50
Agree	164	85.41
Undecided	4	2.09
Disagree	0	0
Strongly Disagree	0	0
I want to learn more about using technology.		
Strongly Agree	26	13.54
Agree	163	84.90
Undecided	3	1.56
Disagree	0	0
Strongly Disagree	0	0
My interest in technology improved my learning capacity in school.		
Strongly Agree	15	7.81
Agree	177	92.19
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0

Age when Students are Exposed to and Learn Technology

Studies support the view that early years practitioners have access to a wider range of technologies and that these technologies are utilized in more pedagogically appropriate ways. Educational technologies appear to be increasingly embedded within early years education [4].

In the current study, the majority of the respondents agreed that they were exposed to and learned the use of technology at an early age. The respondents also agreed that their early exposure to and use of technological gadgets and equipment made their learning easier.

Table 9: Age when Students are Exposed to and Learn Technology

	Frequency	Percentage
I was exposed to technology at an early age.		
Strongly Agree	28	14.59
Agree	161	83.85
Undecided	3	1.56
Disagree	0	0
Strongly Disagree	0	0
I learned the use of technological gadgets and equipment at an early age.		
Strongly Agree	27	14.06
Agree	154	80.21
Undecided	6	3.13
Disagree	5	2.60
Strongly Disagree	0	0
My early exposure to and use of technological gadgets and equipment made my learning easier.		
Strongly Agree	38	19.79
Agree	152	79.17
Undecided	2	1.04
Disagree	0	0
Strongly Disagree	0	0

Impact of Technology in Enhancing Students' Learning

Majority of the respondents agree that learning is easier with the aid of technology at home and in school, they find it easier to study and make research works, projects, and assignments with the use of technology, technology enhances their learning capacity and increases their academic achievement, the use of technology in the classroom is a valuable instructional tool and it motivates them to get more involved in learning activities. The data is shown in Table 10 below.

Table 10: Impact of Technology in Enhancing Students' Learning

	Frequency	Percentage
I think learning is easier with the aid of technology at home.		
Strongly Agree	70	36.46
Agree	120	62.50
Undecided	2	1.04
Disagree	0	0
Strongly Disagree	0	0
I think learning is easier with the aid of technology in school.		
Strongly Agree	74	38.54
Agree	118	61.46
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0
Technology enhances my learning capacity.		
Strongly Agree	72	37.50
Agree	120	62.50
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0
I find it easier to study with the use of technology.		
Strongly Agree	100	52.08
Agree	92	47.92
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0
I find it easier to make research works, projects and assignments with the use of technology.		
Strongly Agree	190	98.96
Agree	2	1.04
Undecided	0	0
Disagree	0	0
Strongly Disagree	0	0
Technology increases my academic achievement.		
Strongly Agree	52	27.08
Agree	90	46.88
Undecided	38	19.79
Disagree	12	6.25
Strongly Disagree	0	0
The use of technology in the classroom is a valuable instructional tool.		
Strongly Agree	60	31.25
Agree	111	57.81
Undecided	21	10.94
Disagree	0	0
Strongly Disagree	0	0
The use of technology in the classroom motivates me to get more involved in learning activities.		

Strongly Agree	61	31.77
Agree	125	65.10
Undecided	6	3.13
Disagree	0	0
Strongly Disagree	0	0

CONCLUSIONS

Based on the survey results, the researcher found out that:

1. The majority of the respondents are aged 18 years old and above. The majority of the respondents are females. Most of the respondents have at least an average family monthly income.
2. The majority of the respondents agree that the higher technology classroom integration improves their learning capacity.
3. The majority of the respondents agree that the use of technology in conjunction with traditional teaching methods is effective in making them learn easily.
4. The majority of the students agree that they are exposed to technology at home and that the instructional and software designs of the technologies used in the classroom setting help make them learn better.
5. The majority of the students also admitted their interest in technology and this improved their learning capacity in school.
6. The majority of the respondents agree that they were exposed to and learned technology at an early age and this made learning easier for them.
7. Most of the respondents agree technology has an impact in enhancing their capacity for learning.

Based on the findings of the study, the following conclusions are drawn:

1. The majority of the respondents are 18 years old and most of them are females. The majority of the participants come from the average income family.
2. The factors identified by the researcher were confirmed to affect the impact of technology in enhancing students' capacity of learning.
3. Technology has an impact on enhancing students' learning.

REFERENCES

- [1] Francis, J. (2017). The Effects Of Technology On Student Motivation And Engagement In Classroom-Based Learning. EdD Thesis. University of New England, Portland & Biddeford, Maine.
- [2] Chowdhry, S., Sieler, K., and Alwis, L. (2014). A Study of the Impact of Technology-Enhanced Learning on Student Academic Performance. Journal of Perspectives in Applied Academic Practice, 2 (3): 3-15.
- [3] Ocampo, L. (2015). The Socio Economic Status and the Learners Academic Achievement. Sunstar Pampanga. See also URL <https://www.pressreader.com/philippines/sunstar-pampanga/20150826/281655368824969>.
- [4] Jack, C., and Higgins, S. (2019). Embedding educational technologies in early years education. Research in Learning Technology, 27. See also URL <https://doi.org/10.25304/rlt.v27.2033>.