

## **We can make it: A probabilistic analysis on the satisfaction in flexible learning**

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### **Abstract**

When Higher Education Institutions shifted to online learning due to COVID-19, student satisfaction significantly dropped. Study aimed to determine which of the variables significantly influenced the satisfaction in flexible learning. This research employed quantitative design and used stratified random sampling to determine the 205 respondents who answered the two adapted research questionnaires. Frequency, Spearman's Correlation, and Binary Logistic Regression were used to statistically treat the data. The study confirmed that majority of the students had access to strong internet connection, and they used mobile data to access internet connection. Study revealed that most of the students used both smartphone and laptop to attend flexible learning. It is presented in this study that both modular learning and online learning were the learning modalities used in conducting flexible learning. Most of the instructors used Google Meet in conducting synchronous learning and LMS in the conduct of asynchronous classes. The study concluded a very weak, positive monotonic relationship between access to strong internet connection and student satisfaction in flexible learning and a very weak, positive monotonic relationship between type of internet connection and student satisfaction in flexible learning. Study posited that among the variables, only the access to strong internet connection has a significant influence on student satisfaction in flexible learning which means that when students have strong internet connection there is a likelihood that they will be satisfied in flexible learning. Further investigation is suggested to explore the result of the study employing a qualitative research design to give meaning on the experiences of students during the conduct of online learning.

**Keywords:** Binary logistic regression, COVID-19, flexible learning, quantitative design, student satisfaction

## **Introduction**

When COVID-19 hits the entire world, one of the affected sectors is the Higher Education Institutions (HEI). Student satisfaction significantly dropped after HEIs shifted from regular classroom to digital learning. College students have affected in this situation, and they have struggled on motivation and missed receiving feedback from their instructors and collaborating with other teachers. Moreover, majority of the students also suffered from their internet connections, devices used, software, and different internet online platforms (Means & Neisler, 2020).

With the advent of the modern technologies, traditional classroom is slightly dissolving. Students usually connect with their instructors and with their classmates through different modes. The switch of learning modes happens since the beginning of the COVID-19 learning crisis. In a survey conducted, 60% of the respondents believed that school practices will not be the same when schools will reopen. Reopening of the school during the pandemic becomes challenging and it also has positive effect (School Education Gateway, 20 August 2020).

The use of online learning led to different barriers that added burden to the students. Among the barriers to online learning includes difficulty adjusting learning styles, having to perform responsibilities at home, and poor communication or lack of clear directions from educators. Furthermore, lack of physical space conducive for studying and mental health difficulties were also common problems encountered by the students in an online learning. Moreover, the availability of fast and reliable internet connection was also identified as a bigger concern than either device ownership or technical aptitude (Baticulon, et.al., 2020).

In the United States, over 35% of the students participated the online education. While 77% of the university leaders believe that both online and face-to-face learning are the same or better in terms of learning outcomes and do not significantly different in terms of student learning. It is recommended that taking a survey on the satisfaction of online learning will be conducted to determine which area of e-learning practices will be improved and which could improve student outcomes. Practices such building online community and student-teacher interaction could enhance student satisfaction and learning (Cole, Shelley, & Swartz, 2014).

In the Philippines, policies in online learning were crafted for the continuation of education because of the temporary closure of schools in all levels. Since the pandemic, over 28 million of Filipino students were affected and needed to comply the quarantine measures and 3.5 million of these were undergraduate students who enrolled both in the private and public HEIs. The aim of the online learning is to facilitate the learning activities which help students cope with the challenges in learning during the pandemic (Joaquin, Biana, & Dacela, 2020).

In addressing the gap in the conduct of this research, while the archives of the State College feature research that focused on various academic concerns before onset of this pandemic. A study was conducted to determine the different online platforms used during the online teaching (Boholano, Merin, & Dapat, 2021). There were studies conducted investigating the student satisfaction in the use of the learning management system (Amsal & Meuthia, 2020) and online learning during the pandemic (Shaid, Kamruzaman, & Sulaiman, 2021). Few studies investigated the relationship between online learning experiences and student satisfaction, and what influences the student satisfaction in online learning. The study conducted is a novel case in employing blended teaching and learning setting adapted by the instructors in delivering instructions and complying with the academic requirements during health crisis. Therefore, the urgency of conducting study on the learning experiences and student satisfaction on online learning during the pandemic is deemed necessary.

## **Theoretical framework**

This study is anchored on the Moore's Model of Transactional Distance (1993). The model explained that the mutual action between teachers and students, in environments whose uniqueness is separation from each other and as result exhibit unique behavior patterns of distance education. Furthermore, transactional distance in educational programs is being referred to as a set of variables which can be categorized into three main groups which include dialogues, structures, and autonomy of the learners (Moore, 1993). Additionally, transactional distance is the initial action of teachers which is considered as a product of teaching, while dialogue, autonomy, and structure are mechanisms which are the product of the curriculum (Gavrilisr, Mavroidisr, & Giossos, 2020).

In addition, for transactional distance becomes effective in the teaching and learning, interaction should be considered. Its effectiveness depends on the nature of interaction and what technological medium is used during the interaction (Moore, 1993). When there is meaningful interaction among students, learning experiences and students' satisfaction in the course will be enhanced and when there is positive interaction between the students and the teachers, the student attitudes towards learning and motivation to learn will be increased (Szapkiw & Szapkiw, 2010).

## **Research objectives**

This study aimed to determine which of the variables of online learning experiences significantly influenced the level of satisfaction in flexible learning. Specifically, it aimed to:

1. Identify the online learning experiences of the Bachelor of Technology and Livelihood Education students;
2. Ascertain the satisfaction in flexible learning in terms of:
  - 2.1. Learner's dimension;
  - 2.2. Technological characteristics; and
  - 2.3. Instructor's characteristics.
3. Determine significant relationship between the online learning experiences and student satisfaction on flexible learning.
4. Determine which of the predictors significantly influenced the level of satisfaction in flexible learning.

## **Hypothesis**

The hypothesis was tested at 0.05 level of significance:

1. There is no significant relationship between the online learning experiences and student satisfaction on flexible learning.
2. No predictors significantly influenced the level of satisfaction in flexible learning.

## **Methodology**

### ***Research design***

A quantitative non- experimental research design was employed in this study. This type research design used variables that were not being manipulated by the researcher but instead

were examined as they existed (Creswell, 2014). This research used survey on gathering data that determined the online learning experiences and student satisfaction on flexible learning. The study also used correlational research design which is defined as the degree of association or relationship between two or more variables or set of scores (Creswell, 2014). This was used in the study with the data on the online learning experiences and student satisfaction on flexible learning.

### ***Population and sample***

The respondents of the study were the students of the Bachelor of Technology and Livelihood Education students of Davao del Norte State College, Philippines. A stratified random sampling was used in order to determine the number of samples for this study. This method is used when there is large population. A total of 205 respondents participated the survey.

### ***Research instrument***

The study used an adaptive research instrument for the level of student satisfaction with online learning. The study used an adapted research questionnaire on Student Satisfaction on Online Learning (Shaid, Kamruzaman, & Sulaiman, 2021). It has three indicators namely learner's dimension, technological dimensions, and instructor's characteristics. The first indicator which is learner's dimension had 15 statements, the second indicator which is the technological dimensions had nine statements, and the third indicators which is instructor's characteristics had 13 statements. This was simplified and contextualized in the school setting. A reliability testing was conducted and the Cronbach's Alpha score was 0.796 which means that the questionnaire was reliable. The questionnaires were given to the respondents through Google Form.

### ***Ethical consideration of the study***

One of the important factors that is being considered in this study is the Republic Act 10173 or also known as Data Privacy Act of 2012. In this act it is mandated to set requirements designed to protect personal information in government organizations. The confidentiality and integrity of the data are being considered.

Further, the researcher also protected the gathered data and protected the privacy and confidentiality of the participants' information. The researcher kept the record especially the confidential details to protect the rights and welfare of the participants. A non-disclosure agreement was provided to protect the integrity and confidentiality of both parties. Participants were informed about the purpose of the study and their signatures will be the proof of their voluntarily participation. Further, the participants were oriented about the importance of the study and how they will benefit on the result and the same how the institution will be benefited from this.

### ***Statistical tools***

The following statistical tools were used in treating the data, frequency was used to describe the online learning experiences and student satisfaction in flexible learning; Spearman's Correlation to determine the relationship between the online learning experiences and student satisfaction in flexible learning; and binary logistic regression to assess the impact of a number of factors on the likelihood that of student satisfaction in flexible learning.

Findings and discussion

## Findings and Discussions

### Results

Presented in the Table 1 is the profile of the respondents according to year level. The overall number of respondents is 205. The majority of the respondents were coming from the Second Year Level which is 66 or 32% of the total number of respondents. This is followed by the First-Year respondents with a total number of 59 or 29% of the total number of respondents. Followed by the Third-Year respondents with a total number of 47 or 22% and lastly is the Fourth-Year students with the total number of respondents of 33 or 16%.

Table 1. Profile of the Respondents According to Year Level

Year Level	n	%
First Year	59	29
Second Year	66	32
Third Year	47	22
Fourth Year	33	16
Total	205	100

Table 2 presents the result on the online learning experiences. It is revealed that 50.7% of the respondents say that they have access to strong internet connection and 49.3% said that they do not have the access to a strong internet connection which also led them to late submission of the outputs and requirements. The result of the study also showed that majority of the respondents used mobile data (68.3%) to access in the internet connection. Further, 16.1% of the respondents said that they have their owned WiFi connection at home, 13.2% responded that they were accessing internet connection with the use of WiFi Vendo machine or internet café, and 5 or 2.4% of the respondents said that they were connecting to other's WiFi. It is showed in the table that most of the respondents are using smartphone as device used in attending flexible learning (77.6%), 21% said that they both used smartphone and laptop in attending flexible learning, and 1.5% said that they only used laptop or desktop in attending flexible learning.

Table 2. Result on the Online Learning Experiences

Characteristics (n=205)	Level	Frequency	%
Has access to Strong Internet Connection	Yes	104	50.7
	No	101	49.3
Types of Internet Connection Used	Mobile Data	140	68.3
	WiFi Owned	33	16.1
	WiFi Vendo Machine/ Internet Café	27	13.2
	Connecting to Others' WiFi	5	2.4
Devices used in Flexible Learning	Smartphone	159	77.6
	Laptop/ Desktop Only	3	1.5
	Both Laptop and Smartphone	43	21.0
Learning Modality	Modular Learning	38	18.5
	Online Learning	11	5.4
	Combination of Modular and Online Learning	156	76.1
Digital Used during Synchronous Learning	Zoom Meeting	48	23.4
	Google Meet	157	76.6
Digital Used during Asynchronous Learning	Learning Management System	79	38.5
	Facebook Messenger	71	34.6

Google Classroom	55	26.8
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Table 3 presents the result on the student satisfaction in flexible learning. Result revealed that in terms of learner's dimension 75.1% of the students are satisfied and 24.9% are not satisfied. In terms of the technological characteristics 82.9% of the students are satisfied and 17.1% are not satisfied. Lastly, 96.1% are satisfied on the instructor's characteristics while only 3.9% of the students are not satisfied.

Table 3. Result on the Student Satisfaction in Flexible Learning

Indicators (n=205)	Level	Frequency	%
Learner's Dimensions	Satisfied	154	75.1
	Not Satisfied	51	24.9
Technological Characteristics	Satisfied	170	82.9
	Not Satisfied	35	17.1
Instructors' Characteristics	Satisfied	197	96.1
	Not Satisfied	8	3.9

Table 4 shows the significant relationship between the learning experiences and student satisfaction. A Spearman's correlation was run to determine the relationship between variables of this study. It is revealed that there is a very weak, positive monotonic correlation between the access to strong internet connections and student satisfaction in flexible learning since the r value is 0.155. The result rejected the null hypothesis of no significant relationship between student satisfaction and access to strong internet connection since the p value of 0.027 is lower than 0.05 level of significance. Furthermore, the result also revealed that there is a very weak, positive monotonic correlation between the type of internet connection and student satisfaction in flexible learning with r value of 0.159. The null hypothesis of no significant relationship between the type of internet connection and student satisfaction is rejected since the p value of 0.023 is less than 0.05 level of significance. Other variables such as device used during flexible learning, learning modality, digital technology used during synchronous learning, and digital technology used during asynchronous learning were not significantly related to student satisfaction since the p values of 0.883, 0.929, 0.560, and 0.201 respectively were greater than 0.05 level of significance.

Table 4. Significant Relationship between the Learning Experiences and Student Satisfaction in Flexible Learning

Independent Variables	Learner's Dimensions	Technological Characteristics	Instructor's Characteristics	Overall
Access to Strong Internet Connection	.116	.136	.199*	.155*
Type of Internet Connection	.124	.206*	.074	.159*
Device used during Flexible Learning	.076	.003	.289	.023
Learning Modality	.035	.055	.047	-.010
Digital Technology used during Synchronous	.618	.435	.503	.883
Digital Technology used during Asynchronous	-.001	.002	.073	.006
Digital Technology used during Synchronous	.993	.978	.296	.929
Digital Technology used during Asynchronous	-.078	-.098	.008	-.041
Digital Technology used during Synchronous	.264	.163	.915	.560
Digital Technology used during Asynchronous	-.088	-.070	-.124	-.090
Digital Technology used during Synchronous	.866	.319	.077	.201

Asynchronous  
 Learning

Moreover, the study also revealed that, statistically among the indicators of student satisfaction in flexible learning, instructor’s characteristics is significantly related to access to strong internet connection with very weak, positive monotonic correlation since the r value is 0.199 with p value of 0.004 which is lower than 0.05 level of significance. Additionally, there is a weak, positive monotonic correlation between the type of internet connection and technological characteristics since the result revealed an r value of 0.206 with a p value of 0.003 which is lesser than 0.05 level of significance.

Table 5. Logistic Regression Predicting the Likelihood of Satisfaction in Flexible Learning

Step		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
1 <sup>a</sup>	Access to Strong Internet Connection	1.308	.632	4.287	1	.038	3.699	1.072	12.762
	Type of Internet Connection	.998	.593	2.835	1	.092	2.714	.849	8.678
	Device	-.322	.329	.955	1	.328	.725	.380	1.382
	Learning Modality	.092	.333	.076	1	.783	1.096	.571	2.103
	Digital Technologies Synchronous	-.499	.704	.502	1	.479	.607	.153	2.415
	Digital Technologies Asynchronous	-.565	.344	2.695	1	.101	.569	.290	1.116
	Constant	1.596	1.985	.646	1	.421	4.933		

*\*a. Variable(s) entered on step 1: Access to Strong Internet Access, Type of Internet Connection, Devices, Learning Modality, Digital Technologies Synchronous, Digital Technologies Asynchronous.*

It is presented in Table 5 the logistic regression predicting the likelihood in student satisfaction in flexible learning. Binary logistic regression is run to determine the impact of a number of factors on the likelihood that students will be satisfied on flexible learning. The model contain independent variables were Access to Strong Internet Connection, Type of Internet Connection, Device Use, Learning Modality, Digital Technologies used during Synchronous, and Digital Technologies used during Asynchronous. The full model containing all predictors was statistically significant  $\chi^2 (6, n=205) = 13.07 p < .042$ , indicating that the model was able to distinguish between which of the variables predicts the chance that students will be satisfied in flexible learning. The model explained between 6.2% (Cox & Snell R Square) and 14.2% (Nagelkerke R Squared) of all the variables will influence the student satisfaction in flexible learning. Based on the Classification Table, the result revealed that the correctness of the prediction is 91.7%. Looking at the Model Data Fit, the insignificant result in the Hosmer and Lemeshow Test the  $p > .851$ , means that the model did not deviate from what is happening in the real world.

As presented in Table 5, only the Access to Strong Internet Connection made a unique statistically significant contribution to the model and predictor of the likelihood to satisfy in flexible learning, with a  $p < .038$ , recording an odds ratio of 3.699. This implies that when students are connected in a stronger internet connection during the conduct of flexible learning, the likelihood that the students will be satisfied by approximately 4. Moreover,

looking at the confidence interval for the Access to Strong Internet Connection (odds ratio= 3.699) ranges from 1.072 to 12.762 which is wide range. Although the odds ratio is 3.699, it is 95% confident that the actual value of the odds ratio in the population lies somewhere in the middle of 1.072 to 12.762. However, the confidence interval in this case contains the value of 1; therefore, this result is not statistically significant at  $p < .05$ .

## **Discussions**

The study was conducted to determine the different learning experiences of the students during online learning and to assess the level of student satisfaction in flexible learning. Furthermore, this also aimed to determine if there is a significant relationship between the learning online experiences and student satisfaction in flexible learning. The study was also conducted to determine which of variables of online learning experiences significantly influence the student satisfaction in flexible learning.

The study revealed that most of the students have access to strong internet connection and they are using mobile data to access the internet. It is also revealed in this study that the students were using their mobile phone to attend in their synchronous and asynchronous learning. Having a low bandwidth and lack of advanced equipment which includes hardware may lead to incomplete sessions and classes (Sarvestani, Mohammadi, Afshin, & Raeisy, 2019). During the conduct of flexible learning, the use of both modular learning and online learning were mostly used. Majority of the instructors were using Google Meet in the conduct of synchronous learning as perceived by the students. In term of the digital technology used during the conduct of the asynchronous learning, students confirmed that most of their instructors were using learning management system. Moreover, the use of Google hangouts was also sees as the most effective delivery tool while Moodle as medium of assessments and course portfolio management (Almusharraf & Khahro, 2020). Online learning has found to be conducive to students and it allows them to work at the time and place where it is compatible with their learning needs (gilbert, 2015). There is a need for different digital technologies to be used during the synchronous learning which include Google Meet, Google Classroom, Zoom Cloud Meeting, and Facebook Messenger were used by the instructors. During the asynchronous classes, the use of Facebook Messenger, Google Classroom, LMS, and emails were also used. So, the use of online media can provide multiple benefits for both the teachers and the students especially in supporting the learning experiences specifically those who students who are isolated (Swan, 2017).

Learner satisfaction is one of the important bases for assessing the success and effectiveness of the course (Nguyen, 2016). Student satisfaction dropped when HEIs shifted to online learning due to the global pandemic (Means & Neisler, 2020). However, research has concluded that blended learning and online learning results in improvement in student success and satisfaction (Dziuban, et.al., 2018). This is also true to the result of the study that majority of the students were satisfied in learners' dimension, technological characteristics, and instructor's characteristics. The high satisfaction rate of the students in online learning was brought by the different learning activities in which excitement and active learning participation were present in the online course created by the instructors (Nguyen, 2016). But the result of the study is contrary to the study conducted in which student rating on their satisfaction with their course during the online course were dramatically lower and fewer than half of students expressed dissatisfaction with their learning after their courses went online (Means & Neisler, 2020). In terms of the instructors' characteristics, the result of the study revealed that most of the students are satisfied. According to Somosot (2018) that one of the factors that increases the student satisfaction in terms of teaching is when the instructors have better way of teaching.



Technology is one of the most important factors that need to be considered in delivering online learning (Dziuban, et.al., 2018). When students attended synchronous learning, the status of internet connectivity, type of internet connection, devices used in flexible learning, and digital technologies used during synchronous flexible learning do not affect the satisfaction of the students if there is a smooth learning process during the entire course (Nguyen, 2016). However, the result of the study revealed that when students have access to strong internet connection and the type of internet connection to access the internet, there is a possibility that the level of student satisfaction in flexible learning. But the result of the study confirmed that only the access to strong internet connection can influence the level of student satisfaction in flexible learning.

## Conclusions

The following conclusions were drawn based on the result of the study. The study was conducted since it aimed to determine which of the variables of online learning experiences influenced the student satisfaction in online learning. It is concluded majority of the student's has access to strong internet connection, and they were using their mobile data to access to internet connection. The study revealed that most of the students were using both smartphone and laptop to attend to their flexible learning. It is also presented in this study that both modular learning and online learning were the learning modalities used in the conduct of flexible learning. Most of the instructors were using Google Meet in conducting synchronous learning and LMS in the conduct of asynchronous classes. The study also confirmed that most of the students were satisfied in flexible learning specifically in terms of learner's dimensions, technological characteristics, and instructor's characteristics. The study posited that there is a very weak, positive monotonic relationship between the access to strong internet connection and student satisfaction in flexible learning and very weak, positive monotonic relationship between the type of internet connection and student satisfaction in flexible learning. It is concluded that among all the variables being studied, only the access to strong internet connection influenced the student satisfaction in flexible learning, which means that when students have strong internet connection there is a likelihood that they will be satisfied in flexible learning. The result of the study served as the basis for crafting a research-based policy in the conduct of online learning. This research also served as basis for the enhancement of subject modules for the conduct of flexible learning.

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## References

- Almusharraf, NM. & Khahro, S.H. (2020). Students' satisfaction with online learning experiences during the COVID-19 Pandemic. *International Journal of Emerging Technologies in Learning (iJET)*, 15 (21), 246-267. <http://dx.doi.org/10.3991/ijet.v15i21.15647>
- Amsal, A.A. & Meuthia (2020). Students' online learning satisfaction on learning management system. *In Proceedings of the 3<sup>rd</sup> International Conference on*

- Educational Development and Quality Assurance (ICED-QA 2020)*. Advances in Social Science, Education and Humanities Research 506, 528-534
- Baticulon, R.E., Alberto, N.R.I., Baron, M.B.C., Mabulay, R.E.C., Rizada, L.G.T., Sy, J.J., Tiu, C.J.S., Clarion, C.A., & Reyes, J.C.b (2020). Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. <http://dx.doi.org/10.1101/2020.07.16.20155747>
- Boholano, H. B., Merin, J. A., & Dapat, L. C. (2021). Building online facilitating skills in the new normal. *Journal of Research, Policy & Practice of Teachers and Teacher Education*, 11(1), 13-24. <http://dx.doi.org/10.37134/jrppte.vol11.1.2.2021>
- Cole, M.T., Shelley, D.J., & Swartz, L.B. (2014). Online instruction, e-learning, and student satisfaction: A threeyear study. *The International Review of Research in Open and Distance Learning*, 15 (6) 111-113.
- Creswell, J.W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches 4th Edition. SAGE Publication Ltd. USA
- Dziuban, C., Graham, C.R., Moskal, P.D., Norberg, A., & Sicilia, N. (2018). Blended learning: the new normal and emerging technologies. *International Journal of Educational Technology in Higher Education*, 15 (3). <http://dx.doi.org/10.1186/s41239-017-0087-5>
- Gavrilisr, V., Mavroidisr, I., & Giossos, Y. (2020). Transactional distance and student satisfaction in postgraduate distance learning program. *Turkish Online Journal of Distance Education*, 21 (3): 48-62. <http://dx.doi.org/10.17718/tojde.762023>
- Gilbert, B. (2015). Online learning revealing the benefits and challenges. *Education Masters Paper*, 303. Retrieved from: <https://core.ac.uk/download/pdf/48619313.pdf>
- Joaquin, J.J.B., Biana, H.T., & Dacela, M.A (2020). The Philippine higher education sector in the time of COVID-19. *Frontiers in Education*, 5:576371. <http://dx.doi.org/10.3389/feduc.2020.576371>
- Means, B. & Neisler, J. with Langer Research Associates (2020). Suddenly online: A national survey of undergraduates during the COVID-19 pandemic. San Mateo, CA: Digital Promise
- Moore, M.G. (1993). Theory of transactional distance. In D. Keegan (ed.), *Theoretical principles of distance education* (pp. 22-38). New York: Routledge
- Nguyen, V.A. (2016). Examining students' satisfaction with online learning activities in blended learning course: A case study. *Proceedings of ICERI2016 Conference*. <http://dx.doi.org/10.21125/iceri.2016.1716>
- Sarvestani, M.S., Mohammadi, M., Afshin, J., & Raeisy, L. (2019). Students' experiences of e-learning challenges; a phenomenological study. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 10 (3), 1-10.
- School Education Gateway. Survey on online and distance learning. 20 August 2020 Retrieved from <https://www.schooleducationgateway.eu/en/pub/viewpoints/surveys/survey-on-online-teaching.htm>
- Shaid, N. A. N., Kamruzaman, F. M., & Sulaiman, N. A. (2021). Online learning during ongoing Covid-19 Pandemic: A survey of students' satisfaction. *International Journal of Academic Research in Business and Social Sciences*, 11(7), 924-937. <http://dx.doi.org/10.6007/IJARBS/v11-i7/10557>
- Somosot, I.S. (2018). Instructional practices of beginning TLE teachers and student satisfaction among secondary schools of Sto. Tomas, Davao del Norte. *Asian Journal of Multidisciplinary Studies*, 1 (3), 6-13.

- Swan, J.K.G. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10 (1), 20-30. doi: <http://dx.doi.org/10.5204/jld.v9i3.293>
- Szapkiw, M. & Szapkiw, A. (2010). An overview of distance education. Retrieved from: [http://amandaszapkiw.com/elearning/principles-of-design/module-1/moores\\_model\\_of\\_interaction.html](http://amandaszapkiw.com/elearning/principles-of-design/module-1/moores_model_of_interaction.html)