

THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Digerati: Assessment of Students' Computer Literacy

Jennifer L. Orozco

Instructor, Department of Computer Studies,
North Eastern Mindanao State University (NEMSU) Cantilan Campus, Philippines

Abstract:

This study aimed to assess the students' computer literacy in Surigao del Sur State University (SDSSU) - Cantilan Campus, 2019. Specifically, this study answered the sub-problem: the positive experiences of the informants in enhancing their academic performance through computers. This study employed a qualitative method of research with the aid of an interview guide to inquire about the students' experiences with computers during their senior high school. There were 18 informants who were interviewed individually. Two informants were selected per course. The study was conducted in SDSSU Cantilan, Surigao del Sur. The researcher utilized an interview guide and audio taped with the informants' consent. Thematic analysis was utilized to interpret data and identify meaningful information and organized it into themes. Based on the findings, three themes emerged: Enhanced Learning in Microsoft Office Tools, Practical Application of Knowledge, and Better Job Opportunities. In conclusion, we have to know the positive experiences of the informants in their senior high school, as these would be the reasons that would enhance their academic performance through computers.

Keywords: digerati, computer literacy, academic performance, thematic analysis, SDSSU Cantilan

1. Introduction

In this rapidly changing technological environment, being computer literate gives the learner an opportunity to excel. The term computer literacy has been used by Reynolds, Vannest, & Janzen (2014) to refer to being knowledgeable about the capabilities of hardware and software and understanding how computers and the internet can enhance a student's educational experiences. Dincer (2016) defined computer literacy as an individual's level of knowledge and skill in using computers and technologies to achieve their goals. However, the purposes for which a computer is used may differ from every individual. Having proficiency in computers means having thorough knowledge of how to handle them to get the work done. It is hard to imagine a student entering college today without basic computer skills. On top of that, literacy in computer is considered a very important skill to possess in this day and age. Most employers prefer applicants who have computer skills. With these in mind, the researcher has assessed the students' computer literacy in Surigao del Sur State University (SDSSU) - Cantilan Campus to investigate the positive experiences of the informants in enhancing their academic performance through computer.

In some studies, computer literacy is included in information and communications technology (ICT) literacy together with information literacy and internet literacy. These 3 forms of literacy are absolutely vital throughout many aspects of human life in the 21st century (Lau and Yuen, 2014; Aesaert *et al.*, 2014 as cited in Santos *et al.* 2019). In general, the term computer literacy has been applied to a broader range of technologies of ICT literacy, but the terms overlap significantly and are frequently used interchangeably. Wilson, Scalise, & Gochyev (2015) introduced ICT literacy as a 21st century skill, which encompasses a wide range of subtopics, including learning in networks, information literacy, digital competence and technological awareness, all of which contribute to learning to learn through the development of enabling skills. In the current global economy, learning through digital networks, and the use of digital media, is becoming increasingly important in private life, in learning, and in professional life. The study predicted that such aspects of learning would become even more important in the future, and this was seen as true at the individual, local or regional, and international levels. Ainley, Fraillon, Schulz, & Gebhardt (2016) pointed out that many countries, having recognized the absolute necessity of digital technology, ascertain the need to educate young people in the use of these technologies in order to underpin economic and social benefits. Although ICT has been widely made available in many countries, the actual use of ICT depends on the contexts and cultures, in which it takes place, and the specific purposes it is used for (Vicente and López, 2006, Chinn and Fairlie, 2010, and Rohatgi and Thronsen, 2015, as cited in Scherer, 2017).

One of the principal reasons for adopting computer skills is its competency in the use of information technology is an integral part of learners' computer proficiency. The concept of computer literacy, according to Bawden (2001, 2008, as cited in Santos *et al.* 2019), can be understood as a set of necessary operational powers for handling a wide range of software applications, including word processors, spreadsheets, databases, etc., as well as the knowledge of some generic skills such as copying files or configuring a printer driver. Santos *et al.* (2019) mentioned the importance of not only understanding new technologies, but also mastering them and recognizing that they are constantly changing. To grasp the full scope of this field, it is necessary to believe that ICT are capable of not only performing skillfully the most diverse

software, being proficient in the Web domain, etc., but also of inferring all of this knowledge and knowing how to apply it critically and competently. Regardless of whether understudies don't completely need these, these will truly be useful eventually.

Realizing the compelling need of students to be computer literate, the researcher, therefore, conducted this study to investigate the views of the students in the field of computer education.

1.1. Theoretical Background

This study is anchored in John Sweller's Cognitive Load theory. Cognitive load theory aims to understand how the cognitive load produced by learning tasks can impede students' ability to process new information and to create long-term memories. It is an instructional theory that describes learning structures in terms of an information processing system involving long term memory, which effectively stores all of our knowledge and skills on a more-or-less permanent basis and working memory, which performs the intellectual tasks associated with consciousness. Information may only be stored in long term memory after first being attended to, and processed by, working memory. Working memory, however, is extremely limited in both capacity and duration. These limitations will, under some conditions, impede learning (Cognitive Load Theory, 2016).

From an instructional perspective, information contained in instructional material must first be processed by working memory. For schema acquisition to occur, instruction should be designed to reduce working memory load. Cognitive load theory is concerned with techniques for reducing working memory load to facilitate the changes in long term memory associated with schema acquisition (Sweller, 1988). In the area of instructional design of cognitively complex or technically challenging material, cognitive load theory is best applied. The concentration is on the reasons that people have difficulty learning the material of this nature. Cognitive load theory has many implications in the design of learning materials which must, if they are to be effective, keep the cognitive load of learners at a minimum during the learning process. The theory has been applied primarily to technical areas (Sweller, 1994).

When additional demands are imposed on a learner, cognitive load is typically increased, making the task of processing information overly complex which included the unnecessary distractions of a classroom and inadequate methods used by teachers to educate students about a subject. When the cognitive load is managed well, students can adapt new abilities simpler than high intellectual with the formation of new recollections. The increase of working memory capacity by using auditory as well as visual information under conditions where both sources of information are essential to understanding is therefore recommended to the design of instructional material (Sweller, 1994). As an approach to reducing cognitive load to increase working memory capacity, utilizing verbal and visual channels is suggested. However, redundant information can increase cognitive load by increasing the number of associations that have to be made between the different sources of information (Sweller & Chandler, 1991).

1.2. Objective

This study aimed to investigate the computer literacy of college freshmen and its impact on their academic performance, SDSSU, Cantilan, Surigao del Sur, A.Y. 2018-2019. Specifically, it sought to answer the question pertaining to the positive experiences of the informants in enhancing their academic performance through computer and the themes that can be derived from the informants' experiences.

2. Materials and Methods

This study employed a qualitative method of research using thematic analysis as an approach. Interview guide questionnaire was used in exploring the students' experiences regarding computers during their senior high school. The selected informants were composed of college freshmen. There were eighteen (18) of them; after the data saturation, data analysis commenced. The researcher used an interview guide containing open-ended questions that were related to the sub-problem of the study. Before the conduct of the interview, the researcher disclosed the informed consent regarding the involvement of the research informants, and their rights to confidentiality that they could withdraw from the study at any point in time with repercussions and provided with the name and details of the researcher. As aids to accurately record the interview, the researcher used a voice recorder that recorded the questions and responses during the interview.

4. Results and Discussion

This study was conducted among eighteen informants; all of them were from SDSSU Cantilan Campus. Two informants per course were utilized. The question pertained to the positive experiences of the informants in enhancing their academic performance through computers. The researcher was able to come up with the following themes based on the answers given by the informants:

4.1. Enhanced Learning in Microsoft Office Tools

This theme refers to the different positive experiences of the informants in enhancing their academic performance through computers.

As the researcher interviewed Informant 7, she responded, 'When you have assignments and research to do, it helps a lot, you can easily gather information. As for me, I can learn new things because I can get information that I don't know about. Information is readily available, so research becomes easier and that improves my academic performance.' (IDI 7)

Informant 16 responded joyfully about his positive experience with computers. He stated, 'I think one of the reasons is for us to know how to make PowerPoint presentations. As we encode documents, we tend to learn new things or ways. It has definitely enhanced my learning. Through the computer, it is much easier to make assignments and reports. For example, in research and making PowerPoint presentations, I make my own PowerPoint presentation since I already learned how to do it. In reporting, we can see actual presentations through PowerPoint instead of just merely listening to what the teacher is saying and that is the reason why I have improved academically.' (IDI 16)

4.2. Practical Application of Knowledge

This theme emphasizes that what has been learned, couldn't be easily forgotten since it involves hands-on activities and because what has been learned, could be easily remembered. Thus, the respondents' academic performance has improved.

Informant 9 responded precisely and said, 'Yes, with internet connection, we can search for some information on different sources that would help us in answering our assignments. It helped improve my grades and I have learned a lot because with the internet, everything you need to know can be searched. During my experience as a plumber in Davao, most of the time, my boss was not around attending some bidding; he only sent me important documents through email. So I had to download it and have it printed for him. There was practical application of knowledge I have gained at school.' (IDI 9)

Informant 3 answered without vagueness her positive experiences with computers. She stated, 'Computers have a lot of use. In terms of social media, it is one of the most powerful tools we have today, and if you are literate enough, you would know how to use it in a proper way. Most of the time, we use Facebook chat in communicating with our classmates. Some of them would explain to us further about what they understood in our lesson. They would also remind us that we have homework to do. And by that, there is improvement in our academic performance.' (IDI 3)

4.3. Better Job Opportunities

Informant 3 expressed her positive experiences with computers. She stated, 'At school before, I was not familiar with typing. I was in Grade 10 when we had our 1st activity in Excel which I was not familiar with. I got confused, yet my learning was enhanced in my senior high years. In Grade 12, there was Empowerment. For me, Ma'am, since we are in a high tech world today, mostly, what we do involves computers so it is an advantage if you are computer literate because it is much easier to do your work. For me, the purpose is to prepare us for the future. As of now, we know the basics so that in the future our knowledge would be widened. We wouldn't be innocent with new technologies. So far, my learning has improved because in my senior high years, we had programming in STI, mobile app and web development. So, somehow when I entered college, I was already familiar with programming language. I don't have to grope because I have knowledge on it.' (IDI 3)

Informant 16 confidently answered her positive experiences with computers. She answered, 'Today's generation mostly involves technology, people are becoming dependent on it, so it is important to have knowledge in computers because in time, for example, you need to find a job, you can send it through email and just wait for an interview rather than personally submitting it. It is more convenient to just send it through email and just wait for notifications or feedback whether you passed for the next level of interview or you get hired right away. Also, most companies hire people with computer skills in computer, which is an advantage. You have better opportunities if you are computer literate.' (IDI 16)

After analyzing the responses of the informants of their positive experiences, the researcher has created three emergent themes, namely: (1) *Enhanced Learning in Microsoft Office Tools*; (2) *Practical Application of Knowledge*; (3) *Better Job Opportunities*.

The researcher found out that implementing the ICT curriculum in senior high school helped them improve their learning and that they were able to apply their knowledge and skills when they entered college and in real-life situations such as assisting a family member who is learning to use a computer or other technologies. Our life today is highly dependent on technology such as simplifying the way we do things. It saves time and simplifies communication and that is why the informants are grateful that they were given the chance to make progress in the field of technology. Moreover, they emphasized that what has been learned, cannot easily be forgotten since it involves hands-on activities and because what has been learned can easily be remembered, thus; their academic performance improved. According to Campbell and Williams (1990), students perceive themselves as having a high degree of computer proficiency if they judge that their own talents have contributed to the development of that proficiency.

5. Conclusion and Recommendations

Based on the research's findings, the researcher concludes that the ICT curriculum in senior high school has a positive impact on students' academic performance. To further improve on computer literacy levels of the students and for the utilization of the findings in this study, the researcher, therefore, suggests that the government should invest more on improving the ICT infrastructure in rural areas. Secondary schools should be provided with an adequate number of computer systems and internet facilities for better hands-on performance. There should also be ICT literacy training programs for students as well as teachers to facilitate the integration of computer technology in instruction. Lastly, the Department of Education (DepEd) should assess how the current ICT programs have been working; to check internally and externally if there are problems unknown to them and find solutions. No matter how skilled and confident we are, and with the technology that is constantly evolving, we must find ways to understand and keep with it or else we will get left behind.

6. References

- i. Aesaert, K., Van Nijlen, D., Vanderlinde, R., and van Braak, J. (2014). Direct measures of digital information processing and communication skills in primary education: using item response theory for the development and validation of an ict competence scale. *Computers & Education*, 76:168–181. <https://doi.org/10.1016/j.compedu.2014.03.013>.
- ii. Ainley, J., Fraillon, J., Schulz, W., & Gebhardt, E. (2016). Conceptualizing and Measuring Computer and Information Literacy in Cross-National Contexts, *Applied Measurement in Education*, 29(4), 291-309. <https://doi.org/10.1080/08957347.2016.1209205>.
- iii. Bawden, D. (2001). Information and digital literacies: a review of concepts. *Journal of documentation*, 57(2):218–259.
- iv. Bawden, D. (2008). Origins and concepts of digital literacy, pages 17–32. Peter Lang, New York.
- v. Campbell, N. J. & Williams, J. E. (1990). Relation of computer attitudes and computer attributions to enrollment in high school computer courses and self-perceived computer proficiency. *Journal of Research on Computing in Education*, 22(3), 276-289. <https://doi.org/10.1080/08886504.1990.10781921>
- vi. Cognitive Load Theory (2016). Retrieved November 29, 2018 from <https://www.psychologistworld.com/memory/cognitive-load-theory>.
- vii. Dincer, S. (2016). Assessing the computer literacy of university graduates. In *The Third International Conference on Open and Flexible Education* (pp. 294-303).
- viii. Horton Jr, F. W. (1983). Information literacy vs. computer literacy. *Bulletin of the American Society for Information Science*, 9(4):14–16.
- ix. Lau, W. W. and Yuen, A. H. (2014). Developing and validating of a perceived ICT literacy scale for junior secondary school students: Pedagogical and educational contributions. *Computers & Education*, 78:1–9.
- x. Reynolds, C., Vannest, K. & Janzen, E. (2014). *Encyclopedia of special education*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- xi. Santos, Ramos, Escola, & Reis (2019) ICT literacy and school performance. *The Turkish Journal of Educational Technology* 18(2).
- xii. Scherer R., Rohatgi A. & Hatlevik O.E., Students' Profiles of ICT Use: Identification, Determinants, and Relations to Achievement in a Computer and Information Literacy Test, *Computers in Human Behavior* (2017), <https://doi.org/10.1016/j.chb.2017.01.034>.
- xiii. Wilson, M., Scalise, K., & Gochyyev, P. (2015). Rethinking ICT literacy: From computer skills to social network settings, *Thinking Skills and Creativity*. Elsevier. <https://doi.org/10.1016/j.tsc.2015.05.001>.