



BLENDED LEARNING MODALITIES: EXAMINING THE STUDENTS' COGNITIVE PERFORMANCE USING THE DIGITAL AND PRINTED MODULES

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Abstract

Pandemic has not only brought significant changes in the world's economy. The educational sector has also made abrupt adjustments just to cater to the needs of learners. Among the solution that was realized in the Philippines was the implementation of the blended learning modality. Public schools prepared digital and printed copy of modules which will serve as the self-learning kit of the students when the face-to-face teaching was not possible due to the COVID 19 pandemic. Aligned to this context, the present study aimed to gauge the cognitive performance of the students and to know the extent of the usage of digital and printed modules. Utilizing a quantitative approach, the data revealed that the Senior High school students showed similar extent of using the digital and printed module during the implementation of the blended learning modalities. Both were extensively utilized by the respondents. This explains that student's agreement on the usage of digital copy of the module may be because of their ability on the digital technologies, the availability of gadgets and the internet connectivity knowing for a fact that the research locale is a highly urbanized city. Therefore, the study recommends that teachers may consider the preference of students whether to use digital, printed module or whatever modalities that are appropriate to the learning scheme of the students.

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Keywords: *blended learning modalities, cognitive performance, digital module, printed module, covid-19 pandemic, extent, extensive use*

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INTRODUCTION

The Coronavirus (COVID-19) pandemic has caused a dramatic disruption in the delivery of education and health services in the

Philippines. With school closures and challenges in the delivery of distance learning, students' learning losses are expected to be enormous. Because of this unexpected event, the face-to-



face teaching learning modality has to give way for a more innovative way of teaching that fits the immediate cognitive needs of students. Hence, teaching during the pandemic was delivered through “telecommunication”.

Telecommunications involves the study of the science and technology that is involved in communications at a distance. Through it, people can connect all over the world by providing the ability to send and receive text, voice, images, videos or data. This also allows anyone to connect with their family, friends, colleagues, as well as businesses or institutions. Through telecommunications, people are informed about technology. As a result, they are now more aware than ever of what’s occurring in the world around them and with the aid of technology, learning will still be possible despite the hindrances brought about by the pandemic (Levi, 2022).

As stated in one of the reports of the UNICEF (2020), lack of access to digital technologies keeps many children from learning. When schools closure is instituted as a containment measure, such alternatives as distance education (e.g. TV or radio programme) and online learning are deployed as alternatives in some countries including Philippines. However, less than half of households around the world have access to internet. While 73% of urban households possess television, only 38% of rural households do so. Although in the study of Sandal et. al (2022), students’ socio-economic status was not a factor their motivation to language learning. But it is about their willingness to learn the language and the reward it has after learning. But still, it is believed that the pandemic risks aggravating the learning crisis and leaving the most deprived children behind which maybe the case in our country.

That is why, blended learning which refers to a learning delivery that combines face-to-face with any or a mix of online distance learning,

modular distance learning, and TV/Radio-based instruction has been adopted by the Department of Education in the start of the school year 2020-2021. Blended learning is becoming a new normal. It has been around for a while and is the combination of traditional face-to-face instruction with aspects of on line instruction. Blended learning strives to provide students the best face-to-face and on line learning experience

In consonance with the statement above, steadfast in its preparation for School Year 2020-2021, the Department of Education (DepEd.) has provided Self-Learning Modules (SLMs) with the blended learning modality to be offered for various types of learners across the Philippines. Provision of varied learning materials and resources to students help in the development of independent learners (Jaani, 2022).

The integration of SLMs with blended learning modalities (modular, television-based, radio-based instruction, and online) will help DepEd ensure that all learners have access to quality basic education for SY 2020-2021 with face-to-face classes still prohibited due to the public health situation. According to Briones (2020), the SLMs and the other alternative learning delivery modalities are in place to address the needs, situations, and resources of each and every learner and will cover all the bases in ensuring that basic education will be accessible amidst the present crisis posed by COVID-19.

Although blended learning modality have been implemented in the field, only few researches were conducted in order to gauge its effectiveness in the context of the Filipino learners. It is in this light that the researcher would like to pursue this research endeavour to particularly find out the extent of use of the digital, printed module or the combination of both. Hence, this study would fill in the gap and find out the impact of using printed or digital modules to the learning of the students considering they are in the another learning



environment due to pandemic. These scenarios may be also true and happening to many students especially this time of pandemic.

RESEARCH QUESTION

What is the extent of usage of the blended learning modalities in terms of digital module and printed module?

RELATED LITERATURE AND STUDIES

Because of the COVID-19 pandemic, the economy all over the world, started to struggle. However, through telecommunication, a new and improved ways of access to clients or customers is possible, increased collaboration between colleagues, better internal communication, employees are able to work from home more easily and reduce misunderstandings and inefficiencies. Telecommunication also played significant role in the easy access of education especially for modern countries. Despite the restrictions caused by the COVID-19 pandemic, the interaction of teachers and students through telecommunications was still apparent. When participants are linked together with the help of technology in telecommunications, information is exchanged between them. For some, telecommunication way of teaching is also known as the trend in the “new normal”.

Graham (2013) stressed that Blended Learning (BL) and research issues on BL, or the integration of face-to-face and online instruction is widely adopted across higher education with some scholars referring to it as the “new traditional model” or the “new normal” in course delivery. Tracking the accurate extent of its growth has been challenging because of definitional ambiguity combined with institutions’ inability to track an innovative practice, that in many instances has emerged organically. One early nationwide study sponsored by the Sloan Consortium (now the Online Learning Consortium) found that 65.2% of participating institutions of higher

education (IHEs) offered blended courses (also termed hybrid).

Despite being implemented before the birth of COVID-19, studies on blended learning caught the attention of only few Filipino researchers. One of the researches related to the present study A Flexible Learning Framework Implementing Asynchronous Course Delivery for Philippine Local Colleges and Universities (Abisado, 2020). This paper provides a framework for local universities and colleges in implementing flexible learning procedures. Results show that the asynchronous course delivery consists of the design of outcomes-based teaching and learning plan, course materials, scheduled on-line and face-to-face meetings, technology, and center for technology education. It also provided a solution to mitigate the spread of the COVID 19 pandemic, as well as compliant to the WHO, DOH, CHED and IATF standards. The Asynchronous Course Delivery adheres to flexible learning. Even in the development of the research skills of the social science students, asynchronous modality was also perceived by the students to be effective in delivering the research and even in the data gathering during the pandemic.

When the students do not have any access to the Internet, different ways can be done to deliver the LEAP, with the help of the Barangay Unit – Correspondence Style, is a method that can be optimized. Future direction of this study include analysis of the actual implementation and designing OBE-dized recording of course assessments to meet the program outcomes. Identification of the adaptability of students and faculty members are also in the pipeline on the totality of this study (Abisado, 2020).

According to Hofmann (2014), the teaching and learning environment is embracing a number of innovations and some of these involve the use of technology through blended



learning. This innovative pedagogical approach has been embraced rapidly though it goes through a process. The introduction of blended learning (combination of face-to-face and online teaching and learning) initiatives is part of these innovations but its uptake, especially in the developing world faces challenges for it to be an effective innovation in teaching and learning. Blended learning effectiveness has quite a number of underlying factors that pose challenges. One big challenge is about how users can successfully use technology and ensuring participants' commitment given the individual learner characteristics and encounters with technology. Users getting into difficulties with technology may result into abandoning the learning and eventual failure of technological applications. In a report by Oxford Group (2013), some learners (16%) had negative attitudes to blended learning while 26% were concerned that learners would not complete study in blended learning.

In the Philippines, Blended learning through the use of printed and digital module is an Alternative Delivery Mode (ADM) that aims to provide learners with access to quality basic education through a home-based environment to be facilitated by qualified parents, guardians or tutors who have undergone relevant training. It allows families to educate according to their personal faith, philosophy, and values, and to adjust learning schedules and circumstances. However, there remain several issues in its implementation, including the supervision of licensed teachers and alignments with the curriculum. It also enabled the schools to limit face-to-face learning, ensure social distancing, and decrease the volume of people outside the home at any given time. Critical for implementation will be the production of the needed teacher's and learner's learning materials (LR Portal and DepEd Commons will be maximized), as well as the support of media institutions like TV and radio stations.

Aside from the previously mentioned teaching delivery, the DepEd suggested

platforms/resources/mechanisms are the use of the print materials/learning resources (modules, worksheets, activity sheets, etc.); the use of digital packets (learning materials). Learning is in the form of individualized instruction that allows learners to use self-learning modules (SLMs) in print or digital format/electronic copy, whichever is applicable in the context of the learner and other learning resources like Learner's Materials, textbooks, activity sheets, study guides and other study materials.

In the published article in Manila Times.Net (July 24, 2020), announced that from the standpoint of the Department of Education (DepED), "Blended Learning" or "hybrid learning" is a fusion of online distant learning and in-person delivery of printed materials to the homes of the learners through the barangays for those who don't have internet access and interactive facilities in the comforts of their home. According to Custodio(2020), blended learning is the new normal in Philippine education. Many parents and students may have heard about blended learning or online education only during this time of the COVID19 pandemic, but this type of instruction has been part of the Philippine educational system for many years now. While the world generally was already veering toward digital platforms for news, information, business, research, finance, entertainment and education, Department of Education Secretary asserted that the Philippines has been using online instruction for decades already. Even the University of the Philippines does and specializes in distance education for the longest time and those who take up education and study education are already exposed to. Graham (2019) revealed that the most salient benefits of blended learning are: it is more effective in its use of classroom time, students are more active, students will be more creative, students are better prepared, it is more interesting for students, and it provides the possibility of offering many educational resources for



students. It is further suggested that the best way to implement blended learning correctly is to choose the right component or media package that will deliver the highest efficiency at the lowest possible cost.

The learning module is one of the printed and digital learning media. It can be utilized as a learning resource to develop students' higher-order thinking skills (Suhendi, Mulhayatiah, Yuningsih, et al.,2018). Learning modules are complete units to support the learning activities that are structured to assist students in achieving a number of objectives or competencies (McClellan, Attardi, Faden, &Goldsmidt, 2016 and Ruipérez-Valiente, Muñoz Merino, Leony, &Kloss, 2015).

As cited in the study of Mulhayatiah et al (2019), the use of the modules can drill the students' ways of thinking about the fact and relate them to other facts along with a logical reason. The use of modules in learning can help the student in solving problems independently (Christoyadi et al, 2016; Purnamawati, Ertikanto, &Suyatna, 2017). The digital modules are innovations that can be used by teachers in solving the problems of Government-issued module or textbook. These innovations can be done by utilizing the development of IT technology in schools. Arsyad stated that the development of science and technology is increased by utilizing technology in the teaching and learning process (Arsyad, 2013).More so, technology was found to be one of the coping mechanisms of the students in addressing their concerns in the use of the blended learning modality during pandemic (Parojenog, et. al, 2022).

METHODOLOGY

This study employed the descriptive - quantitative design. The study was descriptive because it aimed to describe the extent of usage of the blended learning modality in terms of digital module and printed module. The numerical data which were collected from the

respondents through the research instrument makes the study quantitative in nature. As explained by Bhandari (2020), quantitative research is the process of collecting and analysing numerical data. It can be used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations.

This study was conducted in two of the senior high schools in Zamboanga City which is located in the Southern part of Philippines and part of Region IX. G – Power was used to determine the sample size for the study with the Power Value .95 and marginal Error of 0.05, it was trimmed down to 202 total respondents.

Using the Chi – Square to determine the validity of the statements in the questionnaire, it revealed a value of 0.00 which means that the statements in the instruments were valid at point 0.01 and 0.05 level of significance. On the other hand,Split-half reliability or also known as internal consistency was used to determine its reliability. In this manner, the research instruments were reproduced and administered to twenty five students non – respondents. The data were tabulated using the Cronbach's Alpha and the coefficient alpha for the use of the blended learning modality was 0.872, this means that, the instrument was acceptable and for the coping mechanisms was 0.671, this means that, the instrument was acceptable. This implies that the research instruments have a high internal consistency level. This means the instrument was highly reliable.

Before the data gathering, the researcher sought permission form the Office of the Division Superintendent of the Division of Zamboanga City. The approved letter was presented to the Heads of the two identified school of the study and discuss the salient things about the present research. With the school head's recommendation, the researcher conduct an orientation to the selected respondents with their advisers to acquaint them about the research. After the orientation, the researcher asked the respondents to give



their approval to participate in the study by signing the consent along with their parents. They were informed on their rights and responsibilities as respondents particularly on the utmost confidentiality of their identity.

The researcher gathered data in any of the two ways which were convenient to the students. The researcher may sent the hard copy of the instrument through the advisers and submit it together with their module. However, for the respondents who have internet connectivity, they answered the instrument using the soft copy which was sent to them. They also submitted through any online application or whichever was convenient to them.

RESULTS AND DISCUSSION

On the Extent of Usage of the Blended Learning Modalities in Terms of Digital Module

Table 1. shows that the statement which obtained the highest weighted mean for the extent of usage of the blended learning using the digital module was "I feel that using digital modules might have an effect on my health due to long exposure to computer radiation" as evident in the weighted mean of "3.30" which the respondents marked as agree and described "Extensive". This means that, the respondents agreed the extensive used of digital module can contribute negative effect to their health due to much exposure to radiation through the monitor of the computer or cellular phones. This was followed by "I feel I am safe because I can avoid contacts with many people especially in getting and submitting my outputs" with a weighted mean of "3.25" described strongly agree interpreted as "Extensive". This means that, the respondents were convince that their extensive used of the digital module makes them safe and free of any contamination of the viral and infectious diseases in the environment and the community as well.

Moreover, choosing the digital module gave them convenience in the submission of their output especially most of them have working parents and guardians which were also

having difficulties in submitting their children's output. Through digital submission, it also gave them opportunity to save time, effort and resources because they do not have to go to school for submission purposes only.

This findings was supported by the study conducted by Stacey and Gerbic (2007), where it revealed that, respondents agreed in their responses that blended such as modular instruction through digital material was effective however, there were health issues such as ophthalmologic concerns on the part of the student due to the exposure to gadgets and other devices. Therefore, it was of big help for students to avoid exposure to any communicable diseases in the learning environment.

On the other hand, the statements which obtained the lowest weighted mean was "I am more comfortable using digital module because I prefer paperless tasks" evident in the weighted mean of "2.30" which the respondents disagreed described "less extensive". This means that, the respondents were convinced to have less extensive use of the module much more on the paperless activities and other requirements in any learning area.

This finding was supported by the study conducted by Hofmann (2014), where it revealed to have high mean score on the responses of the students on the plenty of paper requirements on the digital modular learning particularly in the submission of the requirements due for marking grades in a semester. This result manifested that despite choosing a digital copy of the module, respondents were still open to the idea of printed module. Perhaps this has to do with ophthalmologic concerns on the part of the student due to the exposure to gadgets and other devices, so sometimes, they wanted their lessons and activities in the printed copy.



On the other hand, statement 9 which says “I am more comfortable using digital module because I prefer paperless tasks” was interesting note. This statement has a weighted mean of 2.30 where respondents disagreed. Although the respondents disagree on this statement but it clearly supports the other statements on their preference still to the modular copy of the blended learning modality.

The average weighted mean for the usage of the digital module was “2.98” described “extensive”. This means that, the respondents were extensive in the use of the digital module on the blended learning. This could be construed that, the blended learning using the digital module was extensively used in

the context of this study. This result may also imply that student’s agreement on the usage of digital copy of the module may be because of their ability on the digital technologies, the availability of gadgets and the internet connectivity knowing for a fact that the research locale is a highly urbanized city. Parents, guardians, and other members of the family were considered partners of the school and teachers in the educative process. They play a vital role in the total learning experiences of our learners. As per observation, students found it easy to accomplish their tasks in the modules when they were being supported by their members of the family. Family support was very evident since they can acquire all the resources needed for this type of modality.

Table 1. Extent of Usage of the Blended Learning Modalities in terms of Digital Module

| Statements | Weighted Mean | Description | Interpretation |
|---|---------------|-------------|----------------|
| 1. The use of digital modules provide me with the flexibility to learn at my own pace. | 3.07 | Agree | Extensive |
| 2. Using digital modules ensures that I learned what I needed to learn for future success in real world scenarios. | 2.94 | Agree | Extensive |
| 3. Using digital modules, I am offered with an opportunity to face content independently since I have the resources like internet connection , pc and the like. | 3.05 | Agree | Extensive |
| 4. Consideration was also be given to how the digital module environment operates in our class. | 2.93 | Agree | Extensive |
| 5. I am losing my interest in the content being discussed when using digital module specially if electricity is down. | 2.92 | Agree | Extensive |
| 6. I am easily distracted by other things in class every time I use digital module . | 2.98 | Agree | Extensive |
| 7. I missed most of my classes due to poor internet connections. | 2.77 | Agree | Extensive |
| 8. I cannot easily grasp the lesson due to the quality of online modules. | 2.88 | Agree | Extensive |
| 9. I am more comfortable using digital | 2.30 | Disagree | Less Extensive |



| | | | |
|---|-------------|--------------|------------------|
| module because I prefer paperless tasks. | | | |
| 10.I feel I am more safe because I can avoid contacts with many people especially in getting and submitting my outputs. | 3.25 | Agree | Extensive |
| 11. Most of the times, I do my tasks alone since my parents are digitally illiterate. | 3.09 | Agree | Extensive |
| 12. I feel lack of guidance especially when my family members cannot assist on some technical problems. | 2.98 | Agree | Extensive |
| 13. I don't encounter any problems such as lack of pages, torn modules and the like in using digital modules. | 3.03 | Agree | Extensive |
| 14. I feel that using digital modules might have an effect on my health due to long exposure to computer radiation. | 3.30 | Agree | Extensive |
| 15. I sometimes worry when my teacher will not acknowledge if they receive my outputs. | 3.21 | Agree | Extensive |
| Average Weighted Mean | 2.98 | Agree | Extensive |

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Legend:

- 3.25-4.00-Strongly Agree (Highly Extensive)
- 2.50-3.24-Agree (Extensive)
- 1.75-2.49-Disagree (Less Extensive)
- 1.00-1.74- Strongly Disagree (Not Extensive)

On the Extent of Usage of the Blended Learning Modalities in terms of Printed Module

Table 2.shows the statements which obtained the highest weighted mean was "I develop a sense of responsibility in accomplishing the tasks provided in the module" as evident in the weighted mean of "3.24" which manifest that respondents agree on this statement and manifest their extensive use. This was followed by the statement "I have difficulty in answering all the printed modules especially when there is a limited time given by the teachers" with a weighted mean "3.23" which the respondents also agreed. However, they find it difficult to answer the activities in the printed modules when there was only limited time allotted for that. It has been

observed also, that students who chose the printed modules were the ones who made inquiries related to their activities such as when they think that instructions are vague to them and there were typographical errors on the printed modules. These instances were clear evidences that they were personally reading and doing their own tasks which were beneficial towards developing their sense of responsibility.

On the other hand, the statement "Sometimes I spend money for the photocopy of the blurred pages" obtained the lowest weighted mean of 2.43 means that, the respondents disagreed that, they spent their personal money to reproduce the material with blurry pages in order for them to have a clearer view on the text of the printed module. Although it has been observed,



since, the beginning of the modular teaching, it was good to know that respondents disagree on the knowledge that they were spending on the photocopy of the blurred pages. Perhaps this problem has been noted and addressed by the school to avoid expenses and inconvenience on the part of the students.

Surprisingly, statement number 13 which states that “I have difficulty in answering all the printed modules especially when there is a limited time given by the teachers” has a weighted mean of 3.23 where respondents agreed with an extensive use. This statement shows the importance of enough time allotment to every task given to the students. DepEd Order No. 31, s. 2012 should be the reference of teachers for the time allotment to be considered in the activities of students.

The study of Grave (2010) “The Effect of Student Time Allocation on Academic Achievement” results suggest that the time allocation matters for educational achievement, even after controlling for a number of variables, including ability, motivation, characteristics of the study, and the university. Regarding the different types of time use considered here, time devoted to courses seems to affect educational achievement positively for female and for high ability students.

Moreover, the average weighted mean for the extent of usage of the blended learning in terms of printed modules was 3.04 described “extensive”. This means that the, respondents agreed on the usage of printed copies of modules in the implementation of blended learning with an extensive usage among the senior high school students. It implies that, the senior high school students extensively used the printed modules as form of their blended learning.

This result was in consonance with the article of Malipot (2020) where reported that of all the alternative learning modalities offered by the Department of Education (DepEd) this upcoming school year, most students preferred to use the “modular” distance learning option. The Department of Education implemented Blended/Distance learning modalities such as printed modules, offline digital modules , online , and TV and Radio–based instruction will be used by students and teachers when classes formally start on August 24, Based on partial results of the Learner Enrolment and Survey Forms (LESFS) distributed during the enrolment period, it showed 7.2 million enrollees prefer to use the modular distance learning modality specifically, the printed modules. Using blended/learning modalities, Briones explained that lessons will be delivered to the students in their home through printed modules prepared for learners who have limited access or have absolutely no access to Internet and digital services: via on-line learning such as DepEd commons; and television or radio –based instruction.

Table 2. Extent of Usage of the Blended Learning Modalities in terms of Printed Module

| Statements | Weighted Mean | Description | Interpretation |
|---|---------------|-------------|----------------|
| 1. The use of printed modules provides me with the flexibility to learn at my own pace. | 3.13 | Agree | Extensive |



| | | | |
|--|-------------|--------------|------------------|
| 2. The use of printed modules helps strengthen my other non-academic responsibilities. | 3.03 | Agree | Extensive |
| 3. In the blended printed modules, I am offered with an opportunity to face content independently thus offering a greater amount of autonomy in my learning. | 3.07 | Agree | Extensive |
| 4. I cannot easily grasp the lesson due to the quality of printed copy of the modules. | 2.93 | Agree | Extensive |
| 5. It takes me so much time in understanding and answering the activities in modules especially when there are lacking and torn pages and errors. | 3.22 | Agree | Extensive |
| 6. Our health is at risk during the submission and retrieval of printed modules. | 2.90 | Agree | Extensive |
| 7. Sometimes I spend money for the photocopy of the blurred pages. | 2.43 | Disagree | Less Extensive |
| 8. I can seek assistance from my family members in answering and accomplishing my printed modules. | 2.93 | Agree | Extensive |
| 9. I am provided with a conducive environment when I am answering my school tasks. | 3.09 | Agree | Extensive |
| 10. Using printed modules encourages me to independently do my works. | 3.22 | Agree | Extensive |
| 11. I develop a sense of responsibility in accomplishing the tasks provided in the module | 3.24 | Agree | Extensive |
| 12. With little or no assistance from others, I feel the progress on my own. | 3.11 | Agree | Extensive |
| 13. I have difficulty in answering all the printed modules especially when there is a limited time given by the teachers. | 3.23 | Agree | Extensive |
| 14. I prefer printed modules because we don't have computer or any gadget where I can use to download the digital copy. | 3.15 | Agree | Extensive |
| 15. I prefer printed modules because of the poor internet connectivity in our area. | 2.95 | Agree | Extensive |
| Average Weighted Mean | 3.04 | Agree | Extensive |

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Legend:

3.25-4.00-Strongly Agree (Highly Extensive)

2.50-3.24-Agree (Extensive)

1.75-2.49-Disagree (Less Extensive)



1.00-1.74- Strongly Disagree (Not Extensive)

CONCLUSION AND RECOMMENDATION

Based on the interpreted data, the Senior High school students showed similar extent of using the digital and printed module during the implementation of the blended learning modalities. The average weighted mean for the usage of the digital module was described as extensive. This could be construed that, the blended learning using the digital module was extensively used in the context of this study. This result may also imply that students' agreement on the usage of digital copy of the module may be because of their ability on the digital technologies, the availability of gadgets and the internet connectivity knowing for a fact that the research locale is a highly urbanized city. Moreover, on the extent of usage of the blended learning modalities in terms of printed module, the average weighted mean for the extent of usage of the blended learning in terms of printed modules was described as extensive. Perhaps, these students may be having limited access to computers and most of the times experience connectivity problems. Therefore, the study recommends that teachers may consider the preference of students whether to use digital, printed module or whatever modalities that are appropriate to the learning scheme of the students.

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