Surmounting Digital Divide In The Time Of Pandemic By Teacher Education Science Major Students

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Abstract

COVID-19 has pressed the wounds of the world where it hurts, specifically the third world countries so hard, making digital divide more felt than ever. Yet, despite the challenges set by the global health crisis, it is evident that schools in all levels have devised mechanisms in order to push through the delivery of instruction and other academic activities with a new normal way of making things work. This study describes the adaptive capacity of the teacher education major in Science students of Davao del Norte State College. Utilizing descriptive statistics, the results presented the learning barriers emerging such as inaccessibility of Internet connection and unavailability of devices necessary to use in the prescribed learning platforms. These students remained resilient by continuously participating in online class activities and complying with their course requirements. Though there were those who answered that they do not have Internet connection at home, the 68 sampled students did not answer no connection available at all, which means that they did find ways to connect to the web, in every possible way. With the unrelenting wills of these learners to continue their studies, it is therefore suggested that there should be constant monitoring of their participation in blended classes and find other alternatives of delivering instruction with low to no Internet connection. Since, the respondents are teacher education major in Science students, further researches are suggested to be conducted focusing on how teachers and students handle classes with required laboratory exercises.

Keywords: Teacher Education, Science Education, COVID-19, Davao del Norte State College

INTRODUCTION

As COVID-19 creeps into the academic grounds, many students (Fischer, Lundin, & Lindberg, 2020) did not have the resources to move off campus let alone to continue their education in an online modality. The health crisis did not provide any warning for everyone to prepare. COVID-19 threatened the health of students and their family members. In general, this led to a sudden economic downturn as nationwide stay-at-home orders were implemented. Within the span of a few months, students may have to get a job to support their families if their parents were laid off, furloughed, or became unemployed. This may be more applicable to community college students, non-traditional age students, or those who are commuters (Liotine & Magee, 2020).

However, despite the barriers set by the pandemic, students have endured so far, the challenges of these difficult times because students enrolled in the opening of a semester despite all the threats and the challenges brought by the new normal blended learning set-up. They continued to comply with the requirements of the course subjects and surmounted the limitations even having low to no Internet connectivity. In this study, the researcher argues that digital divide may be strongly evident in the situation of teacher education Science major students, yet, not strong enough to halt their desires of still making a step forward in realizing their dreams.

As pointed out by Duckworth, Akerman, MacGregor, Salter & Vorhaus (2009), determination and resilience, particularly through times of adversity, to reach a desired outcome can be the hallmark of a successful student.

This study focuses on describing the status of students in the blended learning set-up. Specifically, this paper seeks to attain the following:

1. Describe the adaptive capacity of Teacher Education Science Major students in terms of:
    a. availability of electricity at home;
    b. availability of television at home;
    c. availability of transistor radio (AM/FM) at home;
    d. availability of Internet Connection at home;
    e. status of Internet connectivity;
    f. type of Internet connection used for virtual learning;
    g. devices available to use for learning;
    h. experienced learning modality;
    i. usage of DNSC LMS;
    j. other platforms used in virtual learning;
    k. features of DNSC LMS used;
    l. platforms utilized with teachers during synchronous sessions and
    m. platforms utilized with teachers during asynchronous sessions.

MATERIALS AND METHODS

Descriptive statistics was employed in describing the adaptive capacity of the target research respondents. A Google Form was made accessible for everyone as the instrument used in collecting data. In the sampling method, only 68 students were able to participate in the data collection phase with representatives from each year level.

RESULTS AND DISCUSSION

The adaptive capacity of Teacher Education Science Major students is displayed in Tables 1.a and 1.b, along with Figures 1 – 4. It can be gleaned in Table 1.a that all students are living in areas with electricity already. This gives them more the advantages of charging their devices that they will utilize in blended learning. This is very essential because even with the traditional set-up, studying can be disrupted with electricity failures in some remote areas (Gulati, 2008).

Table 1.a
Adaptive Capacity of Teacher Education Science Major students

		Year Level			
Category	Conditions	1st	2nd	3rd	Total
electricity at home	Yes	29	23	16	68
	No	0	0	0	0
television at home	Yes	24	21	12	57
	No	5	2	4	11
transistor radio (AM/FM) at home	Yes	13	11	6	30
	No	16	12	10	38
Internet connection at home	Yes	16	15	8	39
	No	13	8	8	29
Status of Internet connectivity	Good	7	5	1	13
	Poor or Intermittent	22	18	15	55

On the data of the unavailability of television and transistor radio, the count is actually high, yet, not of serious concern because the modes of delivering instruction is combination of modular online and online learning as shown in Table 1.b. On the availability of Internet Connection, though there are students who answered unavailability of such, upon closer examination of the data collected, those who answered No ticked the next box of having poor or intermittent Internet connectivity. Indeed, limited internet access is a major concern in implementing blended learning (Jeffrey, Milne, Suddaby & Higgins, 2014). However, in order to deal with slow to no connection at all times, teachers allow leniency in given homework, that is allowing students to do their tasks when they have more stable connection anytime of the week (Shakeeb, 2020).

Smartphones ranked the highest as the most common device available for students to use, while on the experienced learning modality, students have attested that they experienced both modular online and online learning modalities. The College's initiative of acquiring its own learning management system is evident in Table 1.b., yet, there are still faculty members who asked their students to use other platforms as Google Classroom ranked on top to be the most commonly used other platforms.

Table 1.b
Adaptive Capacity of Teacher Education Science Major students

Category	Conditions	Frequency
devices available to use for learning	Smartphone	66
	Laptop	30
	Desktop	2
experienced learning modality	Combination of Modular Online and Online Learning	47
	Modular (Online)	17
	Online Learning	4
usage of DNSC LMS	Yes	65
	No	3
other platforms used in virtual learning	Google Classroom	66
	Edmodo	2
	Schoology	1

Most students enrolled in private schools have the required technology infrastructure to take virtual classes at home. However, even some students who attend the most premium schools do not have sufficient technology at home (Gonzales, 2020). Reflecting on the type of Internet Connection used by the respondents for virtual learning as shown in Figure 1, it can be apprehended that only a few can afford to get a more stable Internet connection, thus explains why these students in the state college experience poor or intermittent connectivity.

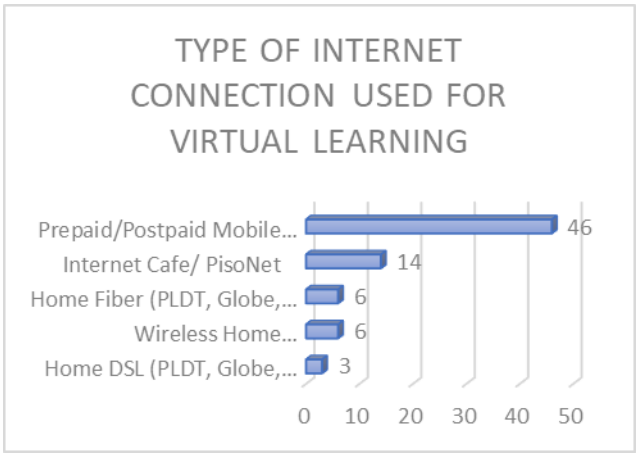

Figure 1. Type of Internet Connection Used for Virtual Learning for virtual learning

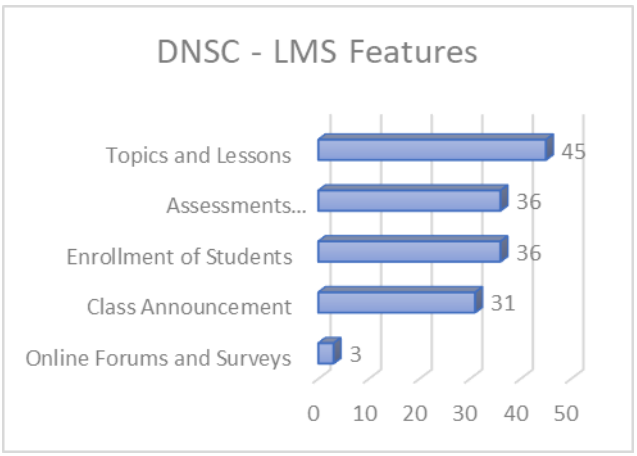

Figure 2. DNSC – LMS Features utilized

It is reflected on the availed DNSC – LMS features shown in Figure 2 that the subscription of the college to Moodle as the platform for this learning management system is not a waste because students have attested that they were able to make use of such features. However, even if the record shows that there are explorations made in the DNSC – LMS, Figure 3 does not put this option as the commonly used platform for synchronous class sessions. It was a notion that it is difficult or almost impossible to imagine today's education without a quality LMS (Dhawan, 2020). As further suggested, a solid LMS is a necessity in these times because it will enable institutions to take education directly to homes, help teachers and students to collaborate on day-to-day activities and support with features to make teaching engaging and

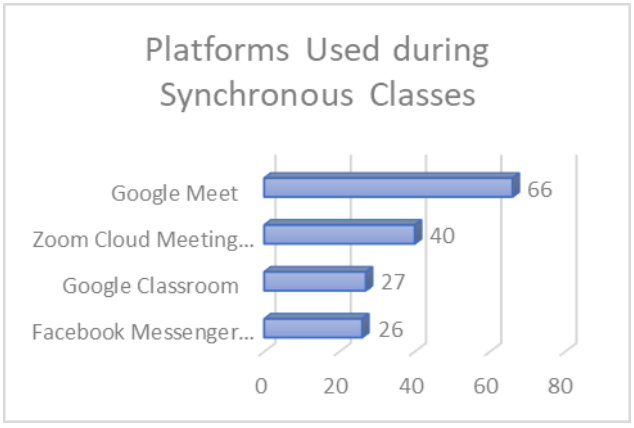

Figure 3. LMS platforms used during synchronous classes

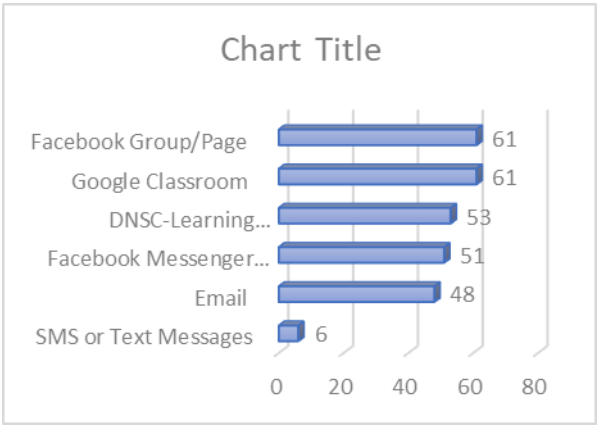

Figure 4. LMS platforms used during asynchronous classes

productive. It must be intuitive and easy to use for students to make their learning interactive, effective and at the same time for administrators to monitor easily and in an organized manner. The result suggests that there are features in other platforms that teachers and students preferred more that are not available in the DNSC – LMS. Nevertheless, in the asynchronous classes, the subscribed platform ranked third as shown in Figure 4.

CONCLUSION

Based from the results generated and discussions crafted from the literature review, it is evident that Teacher Education Science Major students are doing their part to make this blended learning effective. Despite the realities in dealing with the poor and intermittent Internet connection, these barriers did not stop them in continuing to attend online classes, both synchronous and asynchronous sessions. It is therefore suggested that there is constant monitoring of their participation in blended classes and find other alternatives of delivering instruction with low to no Internet connection.

Since the students relied more on their prepaid and postpaid data subscriptions to their Internet Provider networks, the College should initiate the collection of details about the codes to use in availing the network's promos that allow more Internet Data use. Moreover, on the DNSC-LMS platform, it is suggested that the features, if will not match Google Classroom, then at least provide better alternatives that would suit to the needs of the teachers and students in delivering instruction in this blended learning set-up during pandemic.

It is also suggested, to further extract the realities experienced by learners in this time of pandemic, specifically the experiences of Teacher Education Science Major students, further researches should be conducted focusing on how teachers and students handle classes with required laboratory exercises.

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