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Education During COVID-19 Era: Readiness of Students in a Less-Economically Developed Country for E-Learning

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ABSTRACT
The outbreak of Corona Virus Disease-2019 (COVID-19) has forced higher education institutions (HEIs) worldwide to adopt electronic learning (e-learning), the delivery of learning through digital resources. As e-learning is growing, HEIs have become more interested in knowing students' readiness to adapt to the new learning environment, use new technologies, and be involved in self-directed learning. However, HEIs in less-economically developed countries like the Philippines, are challenged in the transition to e-learning due to the financial capabilities of the students and teachers. This study was conducted to determine the readiness of students for e-learning during the COVID-19 era and its association with demographic variables. A quantitative approach based on survey method was used to collect data from 880 students from HEIs in Northern Mindanao, Philippines, through an online questionnaire. Findings revealed that majority of the respondents scored low in the Online Learner Readiness Self-Assessment (OLRS). Respondents who have low readiness scores in OLRS were more likely younger, female, and in the low-income class, rural area, and private HEI. Age, sex, family income class, and living area of the students were associated with low readiness scores in OLRS. This study provides some implications based on the findings.

KEYWORDS: COVID-19; education; e-learning; Philippines; readiness

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1. Introduction

The Corona Virus Disease-2019 (COVID-19) pandemic remains a compelling issue destabilizing not just the economy, but also the education in most parts of the world, especially the less-economically developed countries [1-4]. Geographical variation of COVID-19 case severity was observed, with less-economically developed countries reported suffering the most due to poverty and low testing capacity [5-7]. The Philippines, one of the less-economically developed countries, is a hotspot of COVID-

19 case in Southeast Asia, with an accumulated total case of 1,332,832 and deaths of 23,121 [8].

Existing evidence shows that areas in the country with a low accumulated annual income had high COVID-19 cases and high case fatality rates [9]. With the current state of the Philippine government coupled with the crippling pandemic, a notable impact on the economy and education has been observed. The recent adoption of K-12 program, the transition of first K-12 completers to college, and the provision of free and inclusive education have challenged the education governing bodies in the country even more. The K-12 program includes Kindergarten and 12 years of basic education (six years of primary education, four years of junior high school, and two years of senior high school [SHS]) to allow for mastery of concepts and skills, the development of lifelong learners, and the preparation of graduates for tertiary education, middle-level skill development, employment, and entrepreneurship. The implementation of the K-12 program began in the 2012-2013 academic year, and the first batch of SHS completers was produced during 2018.

Parallel to the Department of Education, the Commission on Higher Education (CHEd) advised other institutions of higher education in the Philippines to implement distance education methods of learning for its classes, such as the use of electronic learning (e-learning), to maximize the academic term despite the suspensions [10]. Several other public and private tertiary institutions implemented such arrangements for their classes; however, several student groups appealed to CHEd to suspend mandatory online classes considering the logistical limitations and well-being of students. In addition, financial and acceptance factors remain a problem that would limit the use of e-learning [11]. While both the supply and demand for e-learning opportunities have risen in recent years, many professionals are beginning to question whether students are prepared to succeed in an online learning environment [12]. After all, the demonstrated success of students in a conventional education and training classroom may not be an adequate predictor of success in an e-learning classroom [13].

E-learning is learning utilizing electronic technologies to access educational curriculum outside a traditional classroom [14]. Because this type of learning requires a technology-mediating environment, students need to have technical training and skills. Therefore, students need a certain degree of readiness to adapt to the e-learning environment, use new technologies, and be involved in self-directed learning. This has raised the question of whether the higher education students in the Philippines are ready for e-learning and prepared to cope with the challenges associated with it. To date, no studies were conducted to determine e-learning readiness in the context of higher education students in the Philippines. In addition, no research was conducted to determine how the demographic variables of Filipino students impact their readiness for e-learning. Hence, this study was undertaken to assess the readiness of Filipino higher education students for e-learning during the COVID-19 era and its association with demographic variables.

2. Methodology

2.1 Design and Participants

A quantitative approach based on an online survey method was used in this study. The study participants were undergraduate students enrolled in either public or private higher education institutions in Northern Mindanao, Philippines. A total of 2,000 internet-based questionnaires were distributed by email and Facebook Messenger for four weeks from March to April 2020. Students could answer the questionnaire anonymously. A sample of 880 usable responses was obtained from students under different undergraduate programs, resulting in an overall response rate of 44.0%.

2.2 Questionnaire

A 27-item questionnaire, in addition to demographic variables (age, sex, family income class, living area, type of school), was used to gather responses from the sample population. Readiness for e-learning was measured with the adapted version of the Online Learner Readiness Self-Assessment (OLRS) instrument developed by Watkins and colleagues [15]. This questionnaire comprised of six subscales: (1) technology access (3 items, e.g., I have access to a computer with an Internet connection); (2) online skills and relationships (9 items, e.g., I can send an email with a file attached); (3) motivation (3 items, e.g., I think that I would be able to remain motivated even though the instructor is not online at all times); (4) online audio/video (3 items, e.g., I think that I would be able to take notes while watching a video on the computer); (5) internet discussions (4 items, e.g., I sometimes prefer to have more time to prepare responses to a question); and (6) importance to your success (5 items, e.g., Regular contact with the instructor is important to my success in online coursework). The original five-point scale was modified into a dichotomous scale (yes/no). Higher scores indicate that students are ready for e-learning. Individual scores were classified based on the following: (1) high – score above 13 and (2) low – score of 13 and below. The modified scale obtained an overall Cronbach alpha of 0.87.

2.3 Data Analysis

The ratings were descriptively analyzed using frequency and percentages. Differences between respondents who obtained high and low readiness scores in OLRS were evaluated by use of Chi-square tests. Univariate logistic regression was used to determine the association between each demographic profile and the readiness of students. A p-value less than 0.05 was considered significant.

3. Results

Of the 880 respondents, majority were in the age range of below 22 years, female, lower middle class, and private higher education institution (Table 1). There is an equal proportion of respondents living in urban and rural areas. Significant differences between respondents who obtained high and low readiness scores in OLRS were found

Table 1. Readiness for e-learning given by the 880 respondents on demographic variables.

Demographic Variables	Overall (%)	High Readiness (%)	Low Readiness (%)	p-value
Overall	100.0	34.8	65.2	
Age, years				
> 22	59.9	21.1	78.9	<0.001
≤ 22	40.1	55.2	44.8	
Sex				
Male	42.3	45.4	54.6	<0.001
Female	57.7	27.0	73.0	
Family Income Class				
Low	27.3	2.9	97.1	<0.001
Lower Middle	45.5	37.5	62.5	
Middle	18.2	49.4	50.6	
Upper Middle	4.5	80.0	20.0	
High	4.5	95.0	5.0	
Living Area				
Urban	50.0	55.2	44.8	<0.001
Rural	50.0	14.3	85.7	
Type of School				
Public	9.1	56.3	43.8	0.027
Private	90.9	32.6	67.4	

for all demographic variables evaluated. In summary, respondents who have low readiness scores in OLRS were more likely younger (below 22 years), female, and in the low-income class, rural area, and private higher education institution. On the contrary, high readiness scores were observed among older (22 years and above), male, high-income class, urban-thriving, and public-school enrolled respondents.

Univariate logistic analysis was employed to associate each demographic variable with low readiness probability (Table 2). The odds of scoring low in OLRS were higher among younger and female respondents. With reference to high-income class, the odds of scoring low in OLRS were approximately 16.23, 12.02, 5.21, and 1.87 times more likely when respondents belong to low, lower-middle, middle, and upper-middle class, respectively. Respondents living in the rural areas were approximately 19.23 times more likely to score low in OLRS. The type of school is not associated with low readiness probability.

4. Discussion and Conclusions

This study provides strong evidence on the readiness level of Filipino learners for e-learning during the COVID-19 era. Interestingly, while most respondents are in the lower-middle-income class, a higher proportion is currently enrolled in private institutions. Lower middle-income class is a classification referring to a family with

Table 2. Results of the univariate logistic regression models with low readiness probability in OLRS as the outcome variable.

Demographic Variables	OR	95% CI	p-value
Age, Years			
> 22	2.24	2.16 – 2.32	
≤ 22	1		<0.001
Sex			
Male	1		
Female	2.01	1.93 – 2.09	<0.001
Family Income Class			
Low	16.23	16.10 – 16.30	<0.001
Lower Middle	12.02	11.90 – 12.10	<0.001
Middle	5.21	5.13 – 5.29	<0.001
Upper Middle	1.87	1.79 – 1.95	<0.001
High	1		
Living Area			
Urban	1		
Rural	19.23	18.20 – 20.26	<0.001
Type of School			
Public	1		
Private	1.01	1.00 – 1.02	0.43

Note: OR=odds ratio. CI=confidence interval.

combined monthly income of PhP 15,780 to PhP 31,560. In the Philippines, this cluster falls between two and four times the poverty line [16]. Individuals in the lower-middle-class tend to hold low status-professional or white-collar jobs, such as schoolteacher, nurse, or paralegal. These types of occupations usually require some education but generally do not require a graduate degree. In 2018, no less than PhP 10,481, on average, was needed to meet both the basic food and non-food needs of a family of five in a month [17]. Considering food and other essential expenses, it could be observed that the majority of the respondents have placed so much importance on education despite income constraints. Other factors such as school scholarship and government subsidies could be another reason that could explain the distribution. The Universal Access to Quality Tertiary Education Act, officially designated as Republic Act 10931, is a Philippine law that institutionalizes free tuition and exemption from other fees in public HEIs in the Philippines. The mentioned factors may allow realignment of the family budget for education expenses to other basic necessities.

The overall findings of the study revealed that Filipino higher education students were not ready for e-learning during the COVID-19 pandemic. The majority of the respondents had no access to a computer with an Internet connection and adequate software (e.g., Microsoft Word, Adobe Acrobat). Generally, they believe they do not possess basic skills to operate a computer (e.g., saving files, creating folders) and finding ways around the Internet (e.g., using search engines, entering passwords). Although computers are acceptable among millennials which comprised all respondents, previous studies showed that the digital skills of millennials are seemingly low [18-20]. Although no direct comparison was made among different age groups,

studies reported that nearly 60% of the evaluated millennials have low technology skills [18-20]. As observed in practice, most students are fond of playing online games. With these results, strategies may be developed to utilize the online game skills to a more valuable digital competency before shifting to a complete e-learning program.

Low readiness scores were observed among learners in the low-income class and rural areas. In this result, it could be inferred that these groups of learners are not yet ready for e-learning. Financial factor could be one factor that explains this distribution; however, lack of equipment (e.g., computer, speakers) and Internet connection problems in several rural areas might also play a role in their readiness scores. It is quite surprising that younger respondents (22 years and below) had low readiness scores than older respondents. These learners comprised most first K-12 SHS completers who recently experienced drastic transition in their academic careers. Since they were the first to experience an additional two-year secondary education, they may be reluctant to embrace another change of education scheme.

In this study, several factors might affect the readiness scores of the respondents. Since the online survey was administered during the peak of the epidemic in the country where psychological distress is heightened, the respondents could be resistant to potential changes in the education arrangement. At this time, learners and faculty members have been echoing calls for the end of the semester and the mass promotion of students. Mass promotion entails a universal pass that will allow students to proceed to the next academic year regardless of their academic status throughout the second semester [21]. Otherwise known as social or administrative promotion, it is fast replacing class repetition as the alternative response to poor educational achievement. It is an arrangement that allows failed students to proceed to the next higher class despite failing the previous class. With this urgent call, the respondents were most likely disinclined with a probable e-learning shift of classes in higher education institutions.

This study has several limitations. This is a cross-sectional study, and the interpretation of the results could only be applied at one point in time. Longitudinal studies may be conducted to capture the learners' responses through time and determine differences in readiness scores. More meaningful factors that could unravel the learners' readiness may be explored through a qualitative inquiry. Finally, the potential bias of responses had an impact on the overall results of the study. The respondents were in the midst of public health emergency during the survey, and emotional and psychological factors affect their perception of readiness for e-learning [22].

Despite these limitations, this is the first empirical study to analyze and determine variations in the readiness of Filipino learners for e-learning. School officials may first address the lack of digital skills among students and formulate programs that would capacitate them. The possible shift for e-learning should be considered if financial, operational, and Internet connectivity issues of learners in low-income and rural areas are addressed. More strategic planning and quality management mechanisms should be directed towards an equitable and inclusive education without undermining quality learning.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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