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MULTIVIRATE ANALYSIS ON THE STUDENTS' CHALLENGES ON ONLINE DELIVERY EDUCATION

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Abstract

The study analyzed the challenges on online delivery education among university students of Cagayan State University. It determined the profile of the respondents in terms of age, sex, socio-economic status, educational attainment of the respondents' parents and the campus they belong. It also identified the academic performance of the respondents. Furthermore, it identified the problems encountered by the respondents during online class along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation. The profile variables of the student-respondents were correlated to their academic performance. The General Weighted Average of the students was the basis for identifying their academic performance. Descriptive correlation design was utilized. Pearson-R correlation was used to determine the relationship of the respondents' profile and their academic performance and ANOVA was used to compare the problems faced by the students during online when grouped according to campus. It was found out that majority of the respondents' age ranges from 19-21 years old, female dominated, belonged to the poor family and their academic performance is good. The study concluded that the respondents' profile variables are contributory factors for their academic performance. The respondents encountered problems along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation. And the problems encountered by the respondents along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation by the students are highly significant to their academic performance.

Keywords: Academic Performance, Challenges during Online, Multivariate Analysis and On-Line Learning

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INTRODUCTION

Online education is a form of education where students use their home gadgets through the internet staying away academic institutions. Nowadays, online teaching and learning has become a vital platform in contrast to the usual and traditional form which is face to face engagement in a classroom. Due to the emergence of COVID-19, educational form has shifted to big transition. Higher institutions all over the world tremendously modified their educational system. Countries of the world are trying to avoid the gap and minimize the losses of students caused by the ongoing pandemic. However, the outcomes of online education are not always a blessing to the learners 'community as revealing a number of pitfalls to the context of online teaching and learning resulting in wide spread concerns over the controversial issue of online education during Pandemic.

Wu (2020) as cited by Ullah (2021) in his study, the unexpected change to online learning became a measure of organizational agility, with several academic institutions primarily focused on the transfer of educational content to the digital world and not specifically on online teaching and delivery methods. However, it was a reminder of the lack of resources in academic institutions and the social marginalization of students, where insufficient access and availability of the internet and the lack of latest technology affected organizational responsiveness and students' capacity to participate in digital learning (Karademir et al., 2020; Zhong, 2020).

There are some issues that concerns online learning in Pakistan. Ashraf (2021) stated that lack of proper interaction with instructors is another major concern associated with online learning. Additionally, concerns regarding any content of the online course are usually discussed with the relevant course instructor by e-mail, which requires response time (Zhong, 2020). In addition, Ullah (2021) stated that virtual classes cannot be of interest to students who are perceptible learners. Conventional classroom socialization is another major missing in online learning. Students only communicate with their fellows digitally and never see fellow students in person; hence, the real-time sharing of ideas, knowledge and information is partially missing from the digital learning world.

Like other countries, Philippines has been shut down where social distancing matters. The administrators, educators and curriculum planners encouraged the use of online learning. Online education has been mainly focused at higher level of education in the country. In these unprecedented days, online teaching and learning is the only way of solving academic crisis. However, in regard to learning along with assessments, some students encountered technical issues, problems along geographical location, computer literacy issues, motivation and time management of the respondents.

According to William, Cameron and Morgan (2012) in regard to online education assessment, practices are limited in the variety and modes in which they are allocated in online environment.

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Data reveal as expressed by students and teachers regarding online classes that they are experiencing a number of challenges. First of all, it is their first experience to get connected with online class, so they are found to be struggling with the proper adaptability with this trend as switching from traditional learning to digital learning.

There are studies related to the present study such as Adnan and Anwar's (2020) study. They examined the attitudes of Pakistani higher education students towards compulsory digital and distance learning university courses amid Coronavirus (COVID-19). Undergraduate and postgraduate were surveyed to find their perspectives about online education in Pakistan. The findings of Ullah (2021) highlighted that online learning cannot produce desired results in underdeveloped countries like Pakistan, where a vast majority of students are unable to access the internet due to technical as well as monetary issues. The lack of face-to-face interaction with the instructor, response time and absence of traditional classroom socialization were among some other issues highlighted by higher education students.

Ullah (2021) found out that majority of the students have reservations about online/digital learning. Lack of access to internet facilities, lack of proper interaction and contact with students and instructors and ineffective technology were among the major challenges faced by higher education students of Pakistan. The sudden shift from traditional classrooms and face-to-face learning to online learning has resulted in a completely different learning experience for students. Most students do not have access to high speed or reliable internet services and are thus struggling with online learning.

According to Ahmad (2020), students from less developed areas of former Fata, Balochistan, Chitral and Gilgit-Baltistan are devoid of internet facilities. Due to the limited resources of educational institutions, only several institutions were able to introduce effective online classes during the initial days of pandemic. The research also indicated additional challenges faced by students like lack of campus socialization, teacher's response time. Responded also reported that online classes could not be applicable in Pakistan in future. Thus, it can be concluded that online learning cannot produce effective results in developing countries like Pakistan, where a huge majority of students are not able to access the internet due to technical and financial issues.

One of the less discussed areas of online education is the need of affective factors (Kara & Gök, 2020) such as motivation for online learning. In traditional classes, students usually actively participate in academic activities due to their face-to-face engagement with instructor and class fellows. 71.4% of students reported that learning in the conventional classroom was more motivating than distance learning. As indicated by the majority of the students, they can manage their study time effectively online and can easily complete assignments in time but complete courses cannot be completed online. To ensure an effective and productive online program, students must not only know how to cope up with the fast-paced online classes but they also need to have a sound computer and technological skills to learn from online lectures. For such students

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managing study time effectively is possible and they do not face any difficulty but when it comes to doing group assignments without face-to-face discussion with the group members, they face a lot of problems as reposted by 42.9% of respondents.

Most of the higher education students surveyed have reservations about online/digital learning. Lack of internet facilities, lack of proper interaction and contact with students and teachers, and ineffectiveness of technology are the main challenges facing higher education students in Pakistan. The sudden shift from traditional classroom and face-to-face learning to online learning has led to a completely different learning experience for students. Most students do not have access to high-speed or reliable internet service, so they are working hard to learn online. Students from the underdeveloped areas of former Fata, Balochistan, Chitral and GilgitBaltistan were deprived of internet facilities (Ahmad, 2020)

The said prevailing situations are similar to what the respondents are experiencing at Cagayan State University where traditional classroom to computer-based training in a virtual classroom makes the learning experience completely different for them. Observably, during the lockdown, most of the respondents are living in the rural areas where internet facilities are hardly found. Students use mobile internet which interrupts the online connectivity due to poor internet signal. So, they tend to use data just to catch up with their online classes. In addition, there are some technical issues like poor literacy on handling computer and smart phone. Moreover, students have to download some applications like zoom and google meet, EDMODO, That Quiz, etc.

Moreover, time management has been a crucial thing for other respondents. Some could hardly manage their time since they are using the official learning platform offered in the university, the Learning Network System (LENS), they need sufficient time to comply online requirements. In addition, when using other online application like Zoom, time management is needed because this can connect people online for 40 minutes but students take time to respond to the class due to some technical interruptions. When students join at the middle of the class, they have the chance to understand a little. Significantly, it is difficult for the teachers to manage feedback from every individual as well as to let them engaged in materials. According to Jaques and Salman (2007) as cited by Ullah (2021) adapting to online environment can be a challenge for both facilitators and students. The expensive nature of the Internet and the accessibility of technology have generated a surge in the demand for web-based learning. Online learning is indeed a challenge to the learners across campuses, universities and regions.

This study answered the following questions: “What is the profile of the respondents in terms of age, sex, socio-economic status, educational attainment and the campus?”; “What is the academic performance of the respondents?” “What are the challenges encountered by the respondents during online class along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation?”, “Is there a significant correlation between the profile of

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the student-respondents and their academic performance?" and "Is there a significant correlation between the challenges encountered by the respondents and their academic performance?"

Objectives of the Study

The study analyzed the challenges on online delivery education among university students of Cagayan State University. It determined the profile of the respondents in terms of age, sex, socio-economic status, educational attainment of the respondents' parents and the campus they belong. It also identified the academic performance of the respondents. Furthermore, it identified the problems encountered by the respondents during online class along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation and the profile of the student-respondents was correlated to their academic performance.

METHODOLOGY

Research Design

The study used the descriptive correlation method.

Participants

The respondents of the study were the students of CSU Andrews, Gonzaga and Aparri. Stratified Sampling Procedure was used since this method considers stratum or strata for comparison of variables from different groups.

Data Collection Tools

Survey Questionnaire was used to elicit the needed data. Part I of the instrument is about the profile of the respondents and the second part of the said instrument is about the problems encountered by the students during online class particularly along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivatio

Data Analysis

Frequency, percentage and mean were used to treat the student-respondents' profile in terms of age, sex, monthly income of the respondents' parents, educational attainment, campus and the problems encountered by the students during online.

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On the other hand, Pearson Correlation was used to treat the relationship between the respondents' characteristics such as age, sex, organizational affiliation, annual income and exposure to the different channels of communication like printed media, electronic media and interpersonal contact. All computed correlation coefficients were tested at .05 level of significance.

ANOVA was employed to test the significant differences on the problems of adaptability encountered by the respondents during online classes when grouped according to campus. The .05 level of significance was adopted to test the computed t-value as well as f-value.

RESULTS AND DISCUSSION

A. Respondents' Profile

In terms of **age,** the largest group of respondents was distributed to the second age bracket ranging from 19-21 years old which is comprised of 1,423 or 64.45 percent of the total number of respondents while only 8 or 0. 36 percent belonged to the last age bracket, 28-30.

Most of the respondents are female which consisted of 1,544 or 69.93 percent, majority of the student-respondents have parents whose monthly income falls at the income bracket of P2,100 to Php5,000 and their parents are high school graduates. These data imply that most of the respondents belong to poor families and their parents can hardly provide the expected educational or technological gadgets the college students need during online learning.

Table 1. Frequency and percentage distribution of the profile of the student- respondents

Variables		**Frequency (n= 2208)**	**Percentage**
Age	16- 18 years old	572	25.91
	19- 21 years old	1,423	64.45
	22- 24 years old	186	8.42
	25- 27 years old	18	0.83
	28- 30 years old	8	0.36
Sex	Male	664	30.07
	Female	1,544	69.93
Campus	Gonzaga	264	11.96
	Aparri	834	37.77
	Andrews	1,110	50.27
Monthly income of parents	Below 2,000	725	16.30
	2,100-5,000	795	36.01
	5,100- 9,999	328	14.86

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	10,000 and above		360	32.84
Highest Educational Attainment	**Mother**		**Father**	
	Frequency (n= 2208)	**Percentage**	**Frequency (n= 2208)**	**Percentage**
Elem Undergrad	226	10.23	396	17.93
Elem Grad	306	13.86	330	14.94
HS Undergrad	344	15.57	311	14.08
HS Grad	546	24.72	485	21.96
College Undergrad	315	14.27	283	12.81
College Grad	419	18.97	373	16.89
Master's Degree	42	1.90	25	1.13
Doctorate Degree	9	0.41	5	0.23

B. Academic Performance of the Student-respondents

Table 2 shows that 378 out of 2,208 respondents or 17.12% had a grade of 88 with a descriptive value of “Good”. While, 2 or 0.09% have a grade of 99 with “Excellent” as the descriptive value. Similarly, there were 2 respondents also who have a grade of 75 with a descriptive value of “Passing”. The computed mean value is 88.021 with descriptive value of “Good”. This finding intends to convey that the respondents are average learners during this Pandemic using online as the learning platform. They are not that highly intellectual, but they are not also poor in analysis and comprehension. This can be attributed to their exposure to information via the internet which aided them in analysing and comprehending as part of their adaptability struggle due to the sudden change of learning platform used at present.

Table 2. Academic Performance of the Student-respondents

Academic grade	**Frequency (n= 2208)**	**Percentage**
99	2	0.09
98	10	0.45
97	18	0.82
96	27	1.22
95	24	1.09
94	196	8.88

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93	33	1.49
92	144	6.52
91	190	8.61
90	190	8.61
89	149	6.75
88	378	17.12
87	161	7.29
86	131	5.93
85	42	1.90
84	88	3.99
83	156	7.07
82	35	1.59
81	158	7.16
80	52	2.36
79	22	1.00
75	2	0.09
Mean= 88.021; s. d. = 0.089		

C. Challenges faced by the respondents during Online Learning

The student-respondents encountered problems during online learning such as geographical location, adaptability struggle, technical issues, computer literacy, time management and motivation.

The first statement under the category of geographical location, “Studying in a far flung barrio is hard” has the highest mean which is 4.33 with a description value of “agree” while, the statement, “The community where I study is not comfortable” has the mean of 3.24 and its descriptive value is uncertain. The total mean is 3.77 with a descriptive value of “agree”. This finding implies that the respondents hardly study online most especially when they are from a far flung barrio because they found logging in to online learning system difficult and the internet connection in their place is not stable. In addition, the respondents’ places where they are taking their online classes are not conducive for learning and not comfortable.

On the other hand, the respondents also experienced adaptability struggle with the new learning platform. As gleaned from the table, the mean score is 3.89 with a descriptive value of “Agree”. This finding indicates that the respondents are amenable that switching from traditional classroom and face to face training to computer-based training in a virtual classroom makes the

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learning experience entirely different. The students took time for them to get accustomed to the Learning Management Systems (LENS) and the methods of computer-based education. Moreover, they could hardly cope with online learning since they have the "traditional" mindset and they find it difficult to adapt with the new learning circumstances; thus, they felt stressed because of the numerous academic tasks and online submissions.

In addition, the students also experienced technical issues. As shown in the table, the total mean is 3.52 with a descriptive value of agree. This finding infers that the respondents are not provided with the high bandwidth or the strong internet connection that online courses require; thus, sometimes they fail to catch up with virtual classes. In addition, the students have weak monitors thus, it made it hard for them to follow the online class and their learning experience becomes problematic. They also found online learning difficult to keep in tune with the technical requirements of their chosen course; while, others do not even own computers and they need to seek help from others for technical assistance as well as properly equipping themselves for the successful completion of their course.

In terms of computer literacy, the respondents were not sure of their responses on the statements indicated. The finding has a total mean score of 2.92 with a descriptive value of "uncertain". This means that the students partly know how to operate basic programs such as Microsoft Word and PowerPoint but they are not sure if they can troubleshoot basic computer problems.

As to time management, the respondents are likewise not firm of their responses. As shown in the table, the total mean is 2.40 with a descriptive value of "uncertain". This finding can be inferred that the respondents have time management problem. They find hard to manage their time because online courses require them a lot of time for intensive work. They are not also sure of the

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statements that asked them on their participation during online class due to their various everyday commitments and response household chores assigned to them.

Similarly, the student-respondents are not also sure of their responses when it comes to problems along motivation. It was found out that the total mean score is 3.31 with a descriptive value of "uncertain". This finding infers that the students may nurture the idea of giving up, as they find difficulty in handling a technological medium during online class. They are also unsure of their responses if they are less motivated to follow the new educational trends; if they felt burn out during online class; if they could hardly understand online lectures because they were not that positive driven in attending their online classes and if they were a little bit depressed when attending their online classes or not.

Table 3. Challenges encountered by the student-respondents during online class

Category		
A. Geographical Location	**Mean**	**Interpretation**
1. Studying in a far flung barrio is hard.	4.33	Agree
2. Logging in to online learning system is difficult.	3.92	Agree
3. The place where I am taking my online class is not conducive for learning	3.43	Uncertain
4. The community where I study is not comfortable.	3.24	Uncertain
5. The internet connection in our place is not stable.	3.93	Agree
Overall Mean	**3.77**	**Agree**
B. Adaptability struggle	**Mean**	**Interpretation**
1. Switching from traditional classroom and face to face training to computer-based training in a virtual classroom makes the learning experience entirely different.	4.41	Agree
2. It takes time for me to get accustomed to Learning Management Systems (LENS) and the methods of computer-based education.	3.72	Agree
3. I could hardly cope with online learning	3.63	Agree
4. I am a student with a "traditional" mindset and find it difficult to adapt with the new learning circumstances.	3.65	Agree

5. I felt stressed because of the numerous academic tasks and online submissions.	4.04	Agree
Overall Mean	**3.89**	**Agree**

C. Technical issues	**Mean**	**Interpretation**
1. I am not provided with the high bandwidth or the strong internet connection that online courses require; thus, I fail to catch up with virtual classes.	3.61	Agree
2. My weak monitors make it hard to follow the online class and my learning experience becomes problematic.	3.64	Agree
3. I find it difficult to keep in tune with the technical requirements of my chosen course.	3.60	Agree
4. I don't even own a computer and I need to seek help from others for technical assistance.	3.38	Uncertain
5. I need technological support as well as properly equipping myself for the course's successful completion.	3.38	Uncertain
Overall Mean	**3.52**	**Agree**
D. Computer Literacy		
	Mean	**Interpretation**
1. I cannot operate basic programs such as Microsoft Word and PowerPoint and therefore I am not able to manage my files.	2.69	Uncertain
2. I find fixing basic computer problems troublesome, as I have no knowledge in this area.	3.13	Uncertain
3. I cannot manage my assignments and courseware in an organized manner.	2.88	Uncertain
4. I have limited fundamental knowledge of computer hardware that hinders me to participate in online classes.	3.10	Uncertain
5. I have no basic course in computer literacy.	2.80	Uncertain
Overall Mean	**2.92**	**Uncertain**
E. Time Management	**Mean**	**Interpretation**
1. I have time management problem.	3.65	Agree
2. I find hard to manage my time because online courses require a lot of time and intensive work.	3.73	Agree
3. I rarely have the time to take the online class due to my various everyday commitments	3.37	Uncertain
4. I have no regular schedule planner that would remind me for my academic assignments.	3.12	Uncertain
5. I attend my online class late due to household chores assigned to me.	3.15	Uncertain

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Overall Mean	**3.40**	**Uncertain**
F. Motivation	**Mean**	**Interpretation**
1. I fall behind and nurture the idea of giving up, as difficulties in handling a technological medium during online class seem insurmountable.	3.28	Uncertain
2. I am less motivated to follow the new educational trends and also I am not properly equip for future challenges	3.33	Uncertain
3. I felt burn out during online class.	3.49	Uncertain
4. I could hardly understand online lectures because I am not that positive driven in attending online classes.	3.23	Uncertain
5. I am a little bit depressed when attending my online class	3.24	Uncertain
Overall Mean	**3.31**	**Uncertain**

D. Relationship between the Profile of the Student-Respondents and their Academic Performance

Table 4 shows the relationship between the profile of the student-respondents and their academic performance. It can be shown that the P-values of the variables age, sex and parents' educational attainment are lesser than 0.05 level of significance. Thus, the null hypothesis is rejected. This means that there is highly significant relationship on the profile of the respondents and their academic performance. This infers that the age, sex and parents' educational attainment are factors affecting the performance of the students.

This finding conforms to Martin's study (2021), role of adaptability in helping high school students navigate their online learning during a period of COVID-19 that entailed fully or partially remote online learning. He found out that beyond the effects of online learning demands, online and parental learning support, and background attributes, adaptability was significantly associated with higher levels of online learning self-efficacy and with gains in later achievement; online learning self-efficacy was also significantly associated with gains in achievement—and significantly mediated the relationship between adaptability and achievement. These findings confirm the role of adaptability as an important personal resource that can help students in their online learning, including through periods of remote instruction, such as during COVID-19.

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Table 4. **Relationship between the profile of the student-respondents and their academic performance.**

Variable	Chi-squared value	P-Value	Interpretation
Age	203.533	0.0001**	Highly significant
Sex	14.547	0.0007**	Highly significant
Mother's Educational Attainment	48.062	0.0004**	Highly significant
Father's Educational Attainment	26.872	0.0429*	significant
Income	49.958	0.0001**	Highly significant

$\alpha = 0.05$

Correlation between Students' Challenges and their Academic Performances

The different categories such as geographical location, adaptability struggle, computer literacy, time management and motivation as the problems encountered by the students have P-values which are lower than 0.05 level of significance. This means that there is significant correlation between students' challenges during online learning and their academic performance. This can be attributed to the different geographic locations of the respondents. When the respondents are living in the urban, the greater is their chances to have a better internet connection. Thus, they can have a better performance. Contrarily, those respondents who reside in the rural or in far flung barrios, the lesser is their chance to have a strong internet connection. Hence, their academic performance is not that good.

Similarly, there is also a positive correlation between motivation and the academic performance of the respondents. This means that if the students have positive attitude or disposition towards online learning, they have a better academic performance. While, those who are less motivated, their academic performance is not that noteworthy.

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On the other hand, the findings also show that time management of the students has positive correlation to their academic performance. This is attributed to the quality of time spent by the respondents in their academic planning and in exercising their conscious control of time spent on specific academic activities, especially to increase their learning effectiveness, efficiency, and productivity. Significantly, it involves the balancing of various demands upon a learner relating to work, social life, family, hobbies, personal interests, and commitments with the finite nature of time. Using time effectively, it gives the respondents "choice" on spending or managing activities at their own time and expediency. Time management is usually a necessity to online learners because it determines the academic success of the learners.

Furthermore, this finding imply that the more time spent by the respondents in learning, reading or reviewing, the higher is their grades compared to those who have limited time or to those who spent few hours in their academics.

Moreover, as reflected in the table, the P-values of the technical issues and computer literacy are lower than 0.05 level of significance. This means that there is significant correlation between students' challenges on these categories and their academic performance. If the respondents are computer literate and are skillful along technological applications, the easier and the faster they can adopt to the new mode of learning; whereas, those who are coping in terms of technology and in using the new platform, the lower is their grade.

This finding agreed with the study of Martin (2021), who showed that negative impacts of online learning are seen in the technicality of the actual use of it. These impacts include how technology is not always efficient, it is harder for students to grasp concepts being taught, online learning can cause social isolation, and can cause students to not develop needed technical and communication skills.

Likewise, the findings also conform to the studies of Ullah (2021) that technical issues and technological facilities affect students' performance this Pandemic.

Adaptability Category	Pearson Correlation Coefficient (r)	Pearson Chi-square value	P-value	Interpretation
A. Geographical Location	r = 0.0914	39.7699	0.0009**	Highly Significant
B. Adaptability struggle	r = 0.0263	47.876	0.0007**	Highly Significant
C.. Technical Issues	r = -0.0558	31.053	0.0259*	Significant
D. Computer Literacy	r = -0.0445	18.413	0.0008**	Highly Significant

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E. Time Management	r = 0.0514	33.848	0.0001**	Highly Significant
F. Motivation	r = -0.0689	54.816	0.0342*	Significant

α = 0.05
** highly significant
*significant
(Note negative r is inversely correlated and positive r is directly correlated)

CONCLUSIONS AND RECOMMENDATIONS

In the light of aforementioned findings, the study concluded that the respondents' profile are influential aspects for their academic performance in online learning. The respondents encountered challenges along geographical location, adaptability struggle, technical issues, computer literacy, time management and self-motivation. And there is a significant correlation between students' challenges and their academic performance.

The university should encourage the professors to use innovative blended learning so other students who have difficulty in online class can still cope. Significantly, the university should provide and actively promote training for students in the use of technologies that students will use in their courses. Additionally, professors should conduct virtual consultation and counseling to students who are less motivated to study and to those who have time management problem. Consequently, students should be encouraged as well to manage their time judiciously in order to balance their time allocation for each of the courses they enrolled in.

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