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Faculty and Student Perspectives in Online Learning: Basis for Developing an Innovative Modality for Student Engagement in the College of Dentistry

Evalene Ann Perez-Lanting
University of the East Graduate School, Manila
lanting.evaleneann@ue.edu.ph

Abstract

The current research identified the perspective of students and faculty in an online learning approach and measured the quality of online teaching and learning modalities which supported students' engagement of the pre-clinical dental students taking up didactic courses at Lyceum of the Philippines University-Batangas during the 2nd semester of academic year 2020-2021.The researcher utilized a mixed methodology approach and employed online surveys through google forms due to the observance of the guidelines of the quarantine protocols. The respondents of the study were chosen based on the Wi-Fi accessibility and availability of schedule. Based on the findings of the study, the proposed innovative learning modality that can be developed for dental medicine education is the: Flipped classroom learning is the innovative and sustainable learning engagement model which can stand the test of time and an applicable pedagogical approach to enhance student engagement. The student participants recognized that active learning is a key component of engagement in online learning specifically how they solve problems and employ thinking skills as they develop deep learning and engagement in a course. The level of cognitive engagement perceived by the students has been related to the learning strategies put forth by the faculty and how active the learning environment is in an online pedagogical approach. One approach which was brought up by the students is the flipped classroom learning, they viewed this approach based on the findings of the study, the proposed innovative learning modality that can be developed for dental medicine education is the: Flipped classroom learning in an online course to be engaging. The faculty participants unanimously agreed they utilized the social networking sites, communication web tools and student responses systems. They were using the content management system of the university as an instructional technology in online learning. The faculty participants rated blended learning as the most preferred learning modality than just mere face-to-face.

Keywords: Online Learning, Learning Experience, Learning Modalities, Dental Education, Flipped Classroom Learning, and Student Engagement

Introduction

A new generation of learners could be considered as an evolution with their peculiar characteristics. Called by many names: 'Gen Yers', 'Millenials', 'the net geners', 'digital natives', 'netizens'—this generation of learners makes up 20 percent of the world's population in 2006 (NAS Recruitment Communications, cited in Reilly 2012:2) and will absolutely grow more in number this year and years to come. This generation needs attending to since they are fully supported by, well-equipped with, fully-lived by, and fully accommodated by the Internet and computer technologies. The 21st century is described as the Digital Age due to the development of multi-media and various information technologies that are enabling education, industry, health care sector and all other professions as well as home-based persons to conduct even simultaneous collaborations, communications, learnings, meetings and conferences via real time online/ internet connections. Such online efficiency saves time, money and effort to people who are in different locations yet they can meet

with the use of internet technology. Particularly, the current situation wherein the entire world is suffering from a global pandemic that prevents people from having mass gatherings, which became a big obstacle to the academe and to avoid the spread of the virus, the only option would be is to conduct online learning. In fact, the reputable academician and webinar speaker – Arnold B. Peralta, RN, MAN, MHPEd of the College of Nursing, University of the Philippines, Manila, discussed in his webinar conducted last July 21, 2021 that we should be "Developing Technology-Enhanced Instructional Designs in the Next Normal." This topic discussed in the webinar pertains to the "new normal" being globally adapted to control the spread of the deadly corona virus. In the new normal most if not all transactions including academics are now done online or virtually to avoid physical human contact as part of the health protocol.

"Through media and information literacy, students can navigate technology and use them responsibly… Technology has extended its reach to both the physical space and the deepest virtual spaces. On one hand, it is through technology and new media that we can defy time, place, and space, from real-time response from people all over the globe, …to various geographic locations."… And in that virtual space is a world of identities that connect, interact, and create narratives and relationships together even if they are physically apart." (Sayuno, 2019)

New innovative methods of teaching and learning adopted from mainstream research and development in education theory and practice are being adapted to serve the unique needs of the medical professions (Alyaseen, 2017). In 2015, the Commission in Higher Education (CHED) released a memorandum which stated that "While CHED adopts an outcomes-based approach to monitoring and evaluation, specific inputs and processes remain important, as they create the environment and shape the learning experience that is made available to students." The adoption of innovative pedagogical approaches which involves a shift from a traditional pedagogy into a student-centered approach is an opportunity for the educational institutions to address the learning needs which is best suited of the learners of today's generation and in grooming the future professionals. Many disciplines understood that replacing the old classroom for a virtual scenario was not betraying the classic pedagogic pathway, but an opportunity to innovate, facilitate learning, improve access to education and optimize the available resources (Chavarría-Bolaños, Gómez-Fernánde, Dittel-Jiménez, & Montero-Aguilar, 2020)

Dental education is undergoing changes to help it face a competitive future (Haden et al., 2006; Swift, 2008). There is also evidence of constant innovation and changing approaches to electronic teaching and learning in dental education. A major part of that change has been brought by the widespread introduction and use of virtual learning environments – VLEs (Shah, 2009). Much of the dental literature on VLEs has concentrated on students' experiences toward such innovations (Mattheos et al., 2001; Gupta et al., 2004; Welk et al., 2006; Engilman et al., 2007; Zary et al., 2009). As implied by Nguyen (2015), there are studies which can support the effectiveness of online learning versus the traditional face-to-face classroom set-up and educators should consider the advantages of online learning as it can be a supplemental to teaching and learning. In the dental curriculum, a study by Asiry (2017) observed that the students perceived positive attitudes towards an online course and the benefits of online learning as a supplemental tool in the course delivery rather than a replacement of the traditional learning approach. However, several authors agreed that there is still a lack of good evidence to support online learning in the development of a dental curriculum with many reported challenges and concerns from teachers, students, administrators and e-learning developers (Chambers, 2009; Haden et al., 2009; Shah and Cunningham, 2009; Ward et al., 2009; Zary et al., 2009; Handal et al., 2010). Very little is also known about how dental teachers expe-

rience curricular change or innovations, such as teaching and learning modalities approaches, that may contest their established pedagogical views. In fact, Haden et.al (2010) performed a web-based survey for fifty U.S and five Canadian dental schools with regards to the dental curricula and suggested the curriculum modifications such as provisions of the core dental curricula to be in an online format as part of future pedagogical innovation. A closer attention to issues of functionality and contextual factors that may impact sustainability of these systems is also lacking as mentioned in the American implementation of online learning. On a positive note, online platforms could be such influential tools. Consider empowerment by the use of technology as proven in an excerpt of a research paper from Stanford Junior University entitled "Obama and the power of social media and technology." In examining the role of technology during Obama's presidential campaign in 2007. The tools used for his campaign are online platforms. These were used to disseminate information and build his image. As stated in the article, Obama's online campaign is now considered "the legacy of one of the most effective Internet marketing plans in history, where social media and technology enabled the individual to activate and participate in a movement" (published 2010). This holds true with online learning where students can actively participate during virtual discussions as well as develop critical thinking and analysis or problem solving and collaboration using digital platforms. By setting up their own gadgets in attending their virtual class, each student can perform an added skill with self-autonomy.

Currently, in the Philippine setting due to the covid 19 pandemic, aside from the use of modules, online learning is the only means of student engagement in education from pre-school up to graduate school. To better appreciate online learning, as mentioned by Peralta (2021) educators must understand "Media Centrism" which is prioritizing medium and treating content as secondary (Oxford reference, 2021). The researcher agree that it is imperative to choose which digital platform and online medium would enhance learning in which the content of instruction will be delivered to the learner virtually and effectively.

Moreover, the transition from traditional to online learning is not without challenges. It was observed that students have been studying in our learning institutions and have begun to contagiously impact the learning and teaching process by showing their annoying behaviors such as texting during teacher's instruction, quoting their virtual friends' blog posts instead of standard class textbook when asked to explain class lesson, or putting headsets or earphones listening their favorite songs during teacher's explanation. These, among other upsetting attitudes, result from their craze about the latest ICTs and their addiction to social networking and entertainment apps (INSPIRE 2013:9). Though in an experimental study by Imani et. al (2019), the virtual learning environment in a dental course was seen as a good alternative to the traditional specifically in theoretical aspect of the topic in which the students' theoretical test scores served as the basis.

Medical education has many long-established pedagogical approaches to learning including face to face lectures in classrooms - via a teacher-centered model. This particular approach to educational practices can manifest within a teaching culture, becoming pervasive within an organization or discipline, leading to reluctance to adopt new and emerging practices and technologies. Over the last number of decades there has been a shift in medical education practice from traditional forms of teaching to other media which employ online, distance or electronic learning. As described by Howlett et al., "Electronic (e) or online learning can be defined as the use of electronic technology and media to deliver, support and enhance both learning and teaching and involves communication between learners and teachers, utilizing online content". Online learning can provide students with "easier and more effective access to a wider variety and greater quantity of information".

Many factors can influence whether or not an online learning program will succeed or fail, ranging from student led factors to staff led factors. Greenhalgh (2001) quoted that," For example, "cultural resistances" amongst staff have previously been identified as a barrier to student engagement with technology-based education; therefore, staff focused initiatives may be key to the introduction of successful e-learning programs." It has also been recognized that changes and developments in medical education are putting extra pressure on already overworked faculty. Increasing time constraints and demands are continually placed on students and educators alike, driving departments to find new ways of providing a more personalized, self-directed learning experience. Educators beyond number wrote on educating the Gen Yers, which shows how important it is to pay a special attention to pedagogical issues relative to Gen Y's learning engagement strategies and learning preference.

When considering the implementation of e-learning within a medical school or program robust evidence-based research may strengthen one's position when encouraging faculty to remaining abreast of technological advances. It will aid in addressing underlying concerns amongst medical faculty who may be resistant to integrating e-learning into teaching practices. In order to ensure a robust evidence-based research for, or against, e-learning in medical education, it is crucial that account be taken of all perspectives (student, educator, training body / school / university).

Additionally, a recent publication in the Journal of Dental Research discussed some challenges that dentists and dental education will face due to the COVID-19 pandemic (Meng et.al, 2020). The authors analyzed the educative process developed during the COVID-19 outbreak in the Stomatology School at the University of Wuhan, China, emphasizing on the measures taken to ensure the protection of the students' health by reinforcing infection control protocols in the clinical setting. Meng et. al (2020) also recommend using e-learning activities like online lectures, virtual case studies, and problem-based learning tutorials as measures to avoid unnecessary crowding exposure.

Learning methods before COVID-19 pandemic, learning strategies in the pre-clinical didactic course at the Lyceum of the Philippines – Batangas was traditional approach. A face-to-face interaction of teachers and students through lectures is observed. In class, the students are taught about the topics from the course syllabus and assessments were done after the discussions. Homework is usually done before the classroom interaction for the student to have a comprehensive knowledge of the topics at hand. Books and notes were utilized for studying and reviewing. The students can direct queries and views with their classmates and teachers with a continuous interaction. Learning objectives of the studied courses with the sub–topics and list of references can be accessed thru the course syllabus.

As the COVID-19 pandemic measures for a work from home scheme, since March 2020, the traditional classroom approach in LPU- Batangas was converted to full distance learning. Synchronous learning for the didactic courses was done thru Zoom and Microsoft Teams in which discussions and lectures between the students and teachers. Asynchronous learning was done using the Learning Management System wherein the online modules were uploaded including course syllabus, web reference links, assignments and quizzes.

The researcher will be focusing in identifying students and faculty perspective of the online learning approach; given that they are required to take greater responsibility for their learning than is required in traditional lectures. As well as investigating students' broader perceptions of online class learning environment, the researcher will explore specifically how students engaged with the online learning in their own time (asynchronous), given their importance to students' preparedness for

class. The proponent chose this study in online learning approach because this calls for a notable paradigm shift in the college of dentistry as dental educator's role during class time, from that of instructor to a facilitator of active learning.

Materials and Methods

Research Design

The study utilized the mixed method research specifically an explanatory sequential approach. As described by Creswell (2014); "Mixed method involves the collection and mixing or integration of both quantitative and qualitative data in a study. The core assumption of this inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone." Schreiber & Asner-Self (2011) also noted that "in a mixed method research study, the researcher data based on research questions that will contain numbers and non-numbers along with related methodologies categorized within a qualitative and quantitative framework." In this type of research method, it helped determine the online learning modalities which can be engaging based on the perspective of the students and faculty. It recognizes the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that often will provide the most informative, complete, balanced and useful research results (Johnson, 2007). Figure 2 illustrates the research questions and instruments which were used.

Sampling Procedure and Participants

This study was performed during the 2nd semester of academic year 2020-2021. Study participants are the second, and the third-year undergraduate students and those faculty members who are teaching in these levels of the College of Dentistry at Lyceum of the Philippines University- Batangas. The name and other personal information of the respondents shall remain confidential. The Graduate School Research Ethics Committee and Faculty of Dentistry approved the study in accordance with the Graduate School policy. Both students and faculty were informed about the study and were asked to sign a consent form.

Research Instrument

The research instrument was a Blended Learning Tool Kit prepared by The University of Central Florida and the American Association of State Colleges and Universities (it is provided as an open educational resource under a Creative CommonsAttribution-NonCommercial-Share-A-Like) https://blended.online.ucf.edu/2011/06/07/survey-instruments/. The permission for modification of the research instrument as an open resource via the Blended Learning Tool Kit website was stated as, "Each researcher can add or delete questions that are more or less relevant to their individual discipline, program or institution." The adapted research instrument was modified by the author to assess the perspective of students and faculty in an online learning approach and to measure the quality of online teaching and learning modalities supported by students' engagement in the College of Dentistry.

Furthermore, the adapted and modified research instrument have undergone face and content validity as well as reliability test by three (3) experts in the field of study, the validators were: the Dean of the College of Dentistry, and the Research Director both are from Lyceum of the Philippines – Batangas and the Dean of the College of Allied Health and Sciences of the University of Batangas.

To be able to achieve the objectives in the study, two sets of questionnaires from the modified and adapted research instrument for the students and faculty were utilized.

A. Content Validation

The initial draft of the adapted and modified research instrument of the students and faculty have undergone face and content validity by three (3) experts in the field of study, the validators were: the Dean of the College of Dentistry, and the Research Director both are from Lyceum of the Philippines – Batangas and the Dean of the College of Allied Health and Sciences of the University of Batangas. By using an Instrument Validation Rating Scale adapted from Oducado (2020), all the experts strongly agreed that both the Online Learning Student Survey and the Online Learning Faculty Survey were acceptable in the conduct of the quantitative and qualitative data gathering.

B. Reliability Test and Pilot Test

The validity and reliability test of the research instrument was done within the timeline of the second and fourth weeks of February 2021. Considering that the faculty respondents are only 12 as the sample size, the Online Learning Faculty Survey had undergone content expert and face validity and reliability test. Whereas the Online Learning Student Survey had a reliability test in which the result will be presented in the appendices.

The pilot-testing of the adapted and modified research instrument was conducted to the students: chronologically, the pre-test transpired during the first week and then the post-test on the third week of March 2021, after the results of pilot-test was statistically proven to have conformed with research standards, the adapted and modified research instrument was made ready for data gathering.

The adapted and modified research instrument for both the students and the faculty had the response options of the questionnaire items represent 4 Likert-type scales with its corresponding numerical and verbal interpretation which are the following: (0 = strongly disagree, 1 = neutral, 2 = agree, and 3 = strongly agree) which was used to answer the specific research question number one and two, except for third section which utilized interview to determine the most effective methods for online learning and open questions for the challenges and positive experience during online learning.

Data Gathering Procedures

Figure 2 illustrates the explanatory sequential mixed methods design as adapted from Creswell (2003) as utilized for the data collection in the study. The integration of the quantitative and qualitative results was completed after the gathering of the quantitative and qualitative data. This will be additionally discussed in the subsequent section.

A. Quantitative Phase

Data collection commenced by securing permission from the Office of the Dean at Lyceum of the Philippines University – Batangas through a letter which pronounced the objective of the study and requested for the participation of the college**.** A modified and adapted questionnaires for the students and faculty respondents were utilized as all samples were purposely selected. The survey was administered with the signed consent by the students and faculty respondents through google forms by a designated research assistant which was coursed through the College of Dentistry at LPU – Batangas.

The data gathered were analyzed using the Statistical Package for the Social Sciences (SPSS) Software version 26. Descriptive statistics which include frequencies, percentages and mean were utilized in analyzing the demographic profiles of the respondents including the perspectives. Likewise, standard deviation was utilized to determine the degree of dispersion and variability of the scores of the respondents. The gathered quantitative data results were presented as a numerical data and descriptive statistics which will be presented on Chapter IV.

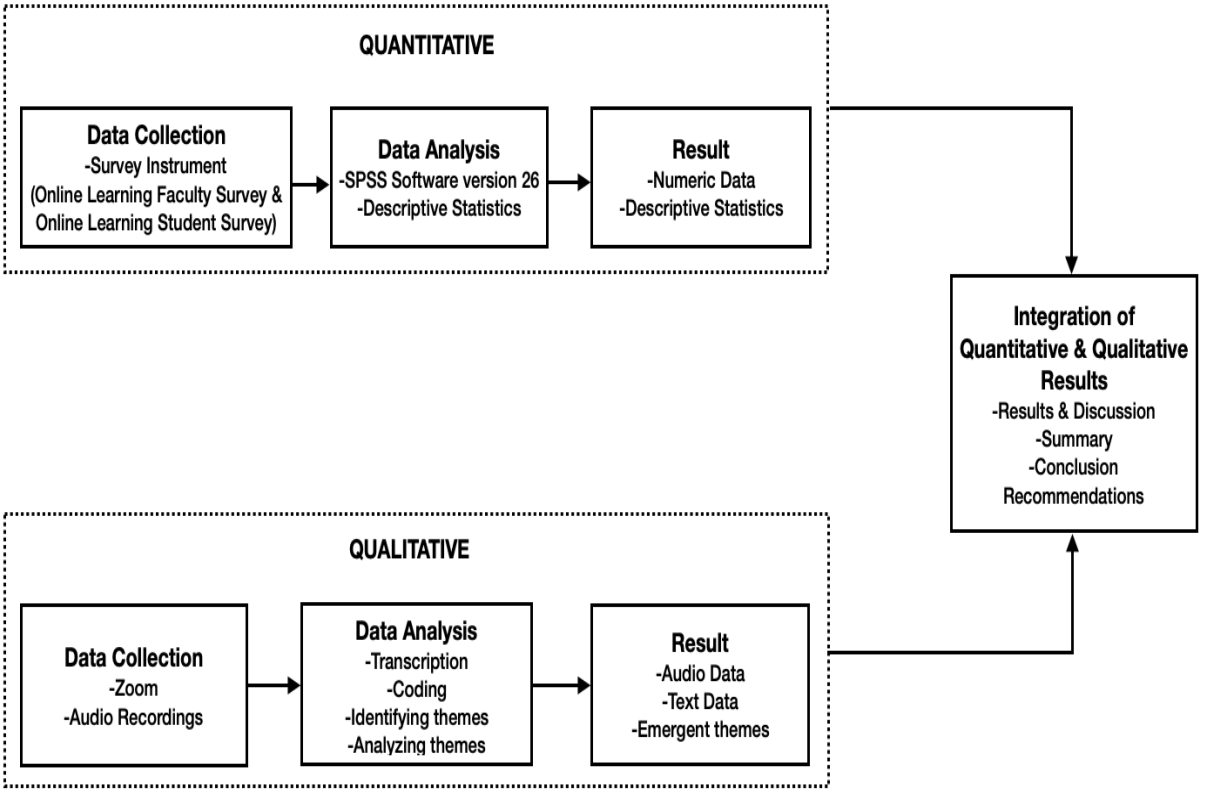

Figure 1. Diagram of the Data Gathering Procedures Utilized for the Mixed Methods Sequential Explanatory Design as adapted from Creswell (2013)

B. Qualitative Phase

Prior to the initiation of the one-on-one interview which involves the students and faculty informants with the research assistant, a letter of approval was secured through the Dean of the College of Dentistry at LPU-Batangas. The interview participants were purposely selected from the respondents in the quantitative phase. To explain the quantitative data analysis results and to help determine the online learning modalities which can be engaging based on the perspectives of the students and faculty, an open-ended questionnaire was utilized which was considered as the third section of the adapted and modified research instrument.

The data collection in the qualitative phase was done in Zoom with audio recordings as the implementation of enhanced community quarantine is still in place during the said period. A one-on-one interview was done in an optimistic interaction by the students and faculty informants with the research assistant. The qualitative data analysis was empirically completed as follows; (1.) the data was transcribed by the research assistant, and (2.) data coding including the identification and analyzing of themes were done by the researcher. The peer reviews and research advisor's auditing of the audio and text data alongside the emergent themes were applied to validate and enhance the credibility of the data gathered.

Statistical Treatment

Figure 4 represents the paradigm of the study which presented the interrelationship of the quantitative and qualitative phase with the research questions and the research instruments utilized.

The internal consistency reliability questionnaire was measured by Cronbach's alpha. Descriptive statistics were computed using frequencies, percentages and mean in the demographic information for all participants and respondents. To determine the degree of dispersion and variability of the scores of the respondents, the standard deviation was used.

As the interview participants both the students and the faculty were purposely selected, the qualitative data analysis was done using transcription, coding, identifying and analyzing of themes. Audio data, text data and emergent themes were noted as the qualitative results.

Integration of the quantitative and qualitative samples was done to determine the most effective learning modality and pedagogical approaches to online learning which will be supported by student engagement.

Paradigm of the Study:

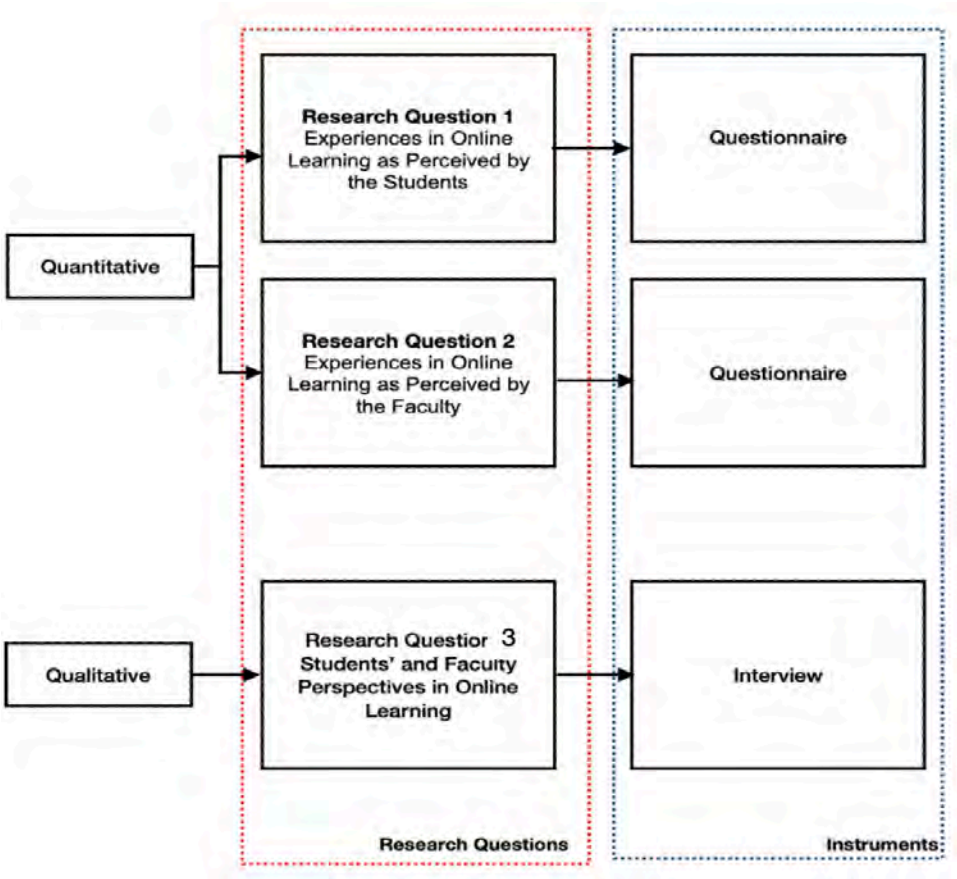

Figure 2. Mixed Method Research Framework of the Study Including the Research Questions and Instruments

Results and Discussions

The purpose of this study was to determine perspectives of the student and faculty in an online learning approach in LPU- Batangas College of Dentistry. This chapter describes the demographic background of the respondents as well as the students and faculty perspectives in relation to the experiences and features of online learning and how the learning modalities enhance the students' engagement. A pseudonym was used for the anonymity of the student and faculty partici-

pants. Results serve as a basis for the development of an innovative learning modality in dental medicine education to further enhance the online learning pedagogical approach.

Demographic Profile of Respondents

The supporting tables and figures which highlight the participants of the study was also provided in this section. The various demographic characteristics will also be presented.

Students' Profile

Sex. The gender composition of the students was 23.10 % male and 76.90 % female which shows that majority of the student respondents are female as documented in Table 1.

Table 1. Student Profile on Sex:

Students Profile	Frequency	Percentage (%)
Sex		
Male	37	23.10
Female	123	76.90
TOTAL:	160	100

Age. The age distribution of the students who participated in the study is seen in Table 1. The sample included only 2nd year and 3rd year Dentistry students and the range of age is from 19 to 23 years old, with a mean age of 20.33 and a standard deviation of 0.757 as presented in Table 2.

Table 2. Student Profile on Age

Students Profile	
Age	
Mean±SD	20.33 ± 0.757

Year Level. The study gathered data from the 2nd year and 3rd year students who are 160 in total number (see table 3.) The results of the study showed that data with students as participants was collected from 77 second year dental students and 83 third year dental students. Table 1 indicates that 48.12 % of the dental students were 2nd year and 51.88 % belonged to the 3rd year dental students. Data in Table 3 shows that most of the respondents belong to the 3rd year level.

Table 3. Student Profile on Year Level:

Students Profile	Frequency	Percentage (%)
Year Level		
2nd year	77	48.12
3rd year	83	51.88
TOTAL:	160	100

General Weighted Average of 1st Semester. Considering the general weighted average (GWA) of the dental students, Table 1 shows that 71.90 % of the dental students have a very good GWA which corresponds to a grade equivalent of 87 % to 92 %. In addition, it was found that 17.50 % of the dental students belonged to the superior mark GWA with a grade equivalent of 93 % and

above. Table 1 also indicates that 10.60 % of the dental students have a fair GWA with a grade equivalent of 75% to 83 %. It will be seen that based on the general weighted average, the dental students were represented in various academic performance levels as shown in Table 4.

Table 4. Student Profile on General Weighted Average of 1st Semester

Students Profile	Frequency	Percentage (%)
general weighted average of 1st semester		
2.5-2.99	28	17.50
1.5-1.99	115	71.90
Less than 1.5	17	10.60
Total No. of Students =	160	100

Faculty Profile

Sex. A total of 12 faculty members who are teaching in the 2nd year and third year levels participated in the study, 75 % are female and 27 % are male. Data in Table 5 shows that majority of the faculty members who participated in the study are female.

Table 5. Faculty Profile on Sex

Faculty Profile	Frequency	Percentage
Sex		
Male	3	25.00
Female	9	75.00
TOTAL	12	100.00

Age. As shown in table 6 the mean age of the faculty teaching in the 2nd year and 3rd year levels is 41 years old and a standard deviation of 9.48. It is observed that the teacher workforce belongs to the middle-aged group.

Table 6. Faculty Profile on Age

Faculty Profile	
Age	
Mean±SD	41.00 ± 9.48

Nature of Work. Regarding the nature of work of the respondents, table 7 indicates that 50% was categorized as part-time employees, 41.70 % as contractual employees and 8.30 % regular employee. The data showed that majority of the faculty was contractual and part-time, as they were mostly full-time dentists or owns a dental clinic.

Table 7. Faculty Profile on Nature of Work

Nature of Work	Frequency	Percentage
Regular Employee	1	8.30
Part-time Employee	6	50.00
Contractual Employee	5	41.70

TOTAL	12	100

Classification. Table 8 indicates the classification of the faculty. It was noted that 66.70% of the faculty were classified as Lecturers, 8.30 % belongs to the level of Assistant Professor, this is also the same percentage of 8.30 % for Associate Professor level and 16.70 % were classified as Professors. As majority of the faculty respondents are Dentists with clinics, the classification of the majority belongs to the Lecturer level as these are the degree holders who have the potential for academic achievements. Few are classified as Assistant Professor, Associate Professor and Professor; as these are generally awarded with doctorate degrees, with published scholarly articles and distinguished record of accomplishment in a national and international levels.

Table 8. Faculty Profile on Classification:

Classification	**Frequency**	**Percentage**
Instructor/Lecturer	8	66.70
Assistant Professor	1	8.30
Associate Professor	1	8.30
Professor	2	16.70
Total No. of Faculty =	12	100

Findings number 1. In order to answer specific research problem number one (1).

What are the experiences in online learning as perceived by the students with respect to the following aspects:

1. 1 Extent of Students' Engagement
    1.1.1 Behavioral
    1.1.2 Emotional
1.1.3 Cognitive
1. 2 Level of Satisfaction in Online Learning
1. 3 Amount & Quality of Interaction
1. 4 Preferred Learning Modality
1. 5 Primary Reasons for Choosing Online Course

This section defines the data analysis procedures that were performed on the collected data which highlights the experiences in online learning as perceived by the students.

Online Learning Experiences as Perceived by the Students

Turning to the quantitative data of the questionnaires for the students, this section discussed the online experiences of the student participants in the online learning course(s). The 160 student respondents consented to answer the quantitative sections of the Online Learning Student Survey which was emailed thru google forms. A descriptive statistical analysis was employed to obtain the perspectives of the students in relation to their online learning experiences.

1.1 The Extent of Students' Engagement in Online Learning as Perceived by the Students

In order to determine the level of students' engagement in online learning as perceived by the students with respect to the features, the students answered the section of the questionnaire in relation to the aspects of student engagement which can be classified as: (1.1.1) Behavioral, (1.1.2) Emotional, and (1.1.3) Cognitive. In the Online Learning Student Survey, questions 1 through 15

(see Tables 9,10 and 11) the Likert Scale included the following levels: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree.

1.1.1 Behavioral

Based on Table 9, the descriptive statistics of students' behavioral engagement has a mean score 11.8 and 3.584 standard deviation. The behavioral engagement of the student participants was represented in the Online Learning Student Survey as questions 3, 5, 6, and 7.

Behavioral engagement was described by Nayir (2017) as one of three dimension of student engagement which tackles about what the students do and can be exemplified as the compliance with the school rules, involvement in school related activities, quality of contribution, presence and participation. Table 9 revealed to the questions in the instrument for students' online experiences to be related in the students' behavioral engagement and a rating of neutrality, (3) *My online course experience has increased my opportunity to access and use information (Mean = 3.29, SD = 0.907)*, (5) *Online learning helps me better understand the course material (Mean = 2.68, SD = 0.908)*, (6) *Generally, I understand course requirements better in an online course (Mean = 2.63, SD = 0.962)*, (7) *Because of online courses, I am more likely to be promoted in the next year level (Mean = 3.20, SD =0.80).* These items can be further clarified in detail in the section of the qualitative data.

Table 9. Students' Behavioral Engagement as Perceived by the Students

Indicators	Mean	SD	Verbal Interpretation	Rank
3. My online course experience has increased my opportunity to access and use information	3.29	0.907	Neutral	8
5. Online learning helps me better understand course material	2.68	0.908	Neutral	13
6.Generally, I understand course requirements better in an online course	2.63	0.962	Neutral	14
7. Because of online courses, I am more likely to be promoted in the next year level	3.20	0.807	Neutral	9
Total Behavioral Engagement	11.8	3.584	Neutral	

Legend: 4.50 – 5.00 = Strongly Agree; 3.50 – 4.49 = Agree; 2.50 – 3.49 = Neutral; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

1.1.2 Emotional

Table 10 revealed a mean score of students' emotional engagement is 14.73 and a standard deviation of 3.584 which includes the data collected for questions 12, 13, 14 and 15. These identified questions relate to the feelings of the students with the online course(s).

More specifically, item 12, *I am a multitasker* (M=*3.70,* SD = *0.930*) and item 14, *I am motivated to succeed (*M = *4.05,* SD = *0.903),* center on emotional state of the learner. A sense of belonging that can be an opportunity to initiate interest and curiosity is an important aspect of student engagement, as mentioned by Filgona et.al (2020) that "Motivation is important because it stimulates and energizes the learners to think, concentrate and learn effectively. Students' motivation is a critical part to curriculum implementation." Interestingly, for item 12 the student participants agree that they are a multitasker in the online learning approach. It is palpable that in an online setting the

students as multitaskers can be observed as the access to the vast resources via the internet is a touch away, this claim is mentioned by Lepp et.al (2019) as "This study identified significantly greater multitasking behavior during the online versus the face-to-face courses." The issue about the learners being multitaskers can be efficient or distracting was highlighted by May & Elder (2018) as "Other students multitask on a situational basis according to motive. A student with a specific goal and sufficient motivation, such as studying for an upcoming exam in a difficult class, is likely to multitask." Contrarily, when students multitask of things unrelated to schoolwork in an online setting with the use of online platforms and applications as implied by the study of Judd & Kennedy (2011).

For item 13, *I have strong time management skills (Mean = 3.34, SD = 0.911),* the students suggested the neutrality since shifting from a face-to-face learning to an online learning approach calls for changes in the course goals and objectives, as the coping mechanisms of the students is also required so that the time management skills can also be well adjusted. Miertschin et. al (2015) revealed that there are special challenges for students in online courses as well as their time management skills, but students learned to manage their time as they experienced online learning pedagogy.

The ratings for item 15 indicate that the student participants agreed for *My university/college provides the resource necessary for students to succeed in an online course (M = 3.27, SD = 0.578).* Further discussions on the resources the university/ college utilized in the online learning will be presented in detail it the qualitative data section.

Table 10. Students' Emotional Engagement as Perceived by the Students

Indicators	Mean	SD	Verbal Interpretation	Rank
12. I am a multitasker	3.70	0.930	Agree	4
13. I have strong time management skills	3.34	0.911	Neutral	6
14. I am motivated to succeed	4.05	0.903	Agree	1
15. My university/college provides the resources necessary for students to succeed in an online course	3.64	0.921	Agree	5
Total Emotional Engagement	14.73	3.665	Agree	

Legend: 4.50 – 5.00 = Strongly Agree; 3.50 – 4.49 = Agree; 2.50 – 3.49 = Neutral; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

1.1.3 Cognitive

The third dimension of student engagement is cognitive, in Table 11 revealed the cognitive aspect with 22.41 mean score and standard deviation of 6.512 with the instruments contains seven questions (1, 2, 4, 8, 9, 10 and 11). This cognitive dimension of student engagement involve thinking skills as described in the Bloom's taxonomy and to learn by choice. As described by Nayir (2017), the students with cognitive engagement are those who are able to take the challenge, set goals and self-regulate.

Regarding the utilization of personal devices and Web-based tools, the student participants agree that these are helpful in the online learning environment, the ratings for item 9, *My personal devices (e.g., cell phone, mp3 player, desktop, iPad) (M = 3.81, SD = 0.850)* work well in an online learning environment as the different mode of instructions in teaching and learning is uploaded and

downloaded thru the identified devices. At the same time, the students agreed that item 11 is also valuable, *Web-based tools (e.g., Google Drive, LMS, Email, YouTube, Zoom, Google Meet, Moodle, Blackboard)*, specifically as these tools served as the platforms for the online learning environment and can be utilized as data sources. The results showed that the learning process of science could take place online using the Zoom application, Google Classroom, UPY e-learning and WhatsApp group (Atmojo et.al, 2020).

Moreover, the students' rating of neutrality in the following items (1) *I'm more likely to ask questions in an online course (Mean = 2.97, SD = 0.948)*, (2) *The are more opportunities to collaborate with others in an online course (Mean = 2.78, SD = 0.902*), (4) *I have more opportunities to reflect on what I've learned in online course (Mean = 3.07, SD = 0.946)*, (8) *Generally I am more engaged in online course (Mean = 2.63, SD = 0.957)*, these items can be further clarified in detail in the section of the qualitative data and (10) *Social networking applications (e.g. Facebook, Messenger, TikTok, Instagram, Twitter) help me with learning (Mean = 3.30, SD = 1.033)*. These items will be further clarified in the qualitative data section.

Table 11. Students' Cognitive Engagement as Perceived by the Students

Indicators	Mean	SD	Verbal Interpretation	Rank
1. I'm more likely to ask questions in an online course	2.97	0.948	Neutral	11
2. There are more opportunities to collaborate with others in an online course	2.78	0.902	Neutral	12
4. I have more opportunities to reflect on what I've learned in online courses	3.07	0.946	Neutral	10
8. Generally, I am more engaged in online courses	2.63	0.957	Neutral	15
9. My personal devices (e.g. cell phone, mp3 player, desktop, iPad) help with my learning	3.64	0.921	Agree	5
10. Social networking applications (e.g. Facebook, Messenger, TikTok, Instagram, Twitter) help me with learning	3.30	1.033	Neutral	7
11. Web based tools (e.g. Google drive, LMS, Email, Youtube, Zoom, Google Meet, Moodle, Blackboard) help me with learning	4.02	0.805	Agree	2
Total Cognitive Engagement	22.41	6.512	Neutral	

Legend: 4.50 – 5.00 = Strongly Agree; 3.50 – 4.49 = Agree; 2.50 – 3.49 = Neutral; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

1.2 Level of Satisfaction in Online Learning

From Table 12, it may be observed that in terms of the level of satisfaction of the students in the online learning approach. Of how satisfied the students with the online course(s) are, 43.80 %

expressed that they are neither satisfied nor dissatisfied but 40% of the students were generally dissatisfied. The same is applied to if given a choice to enroll in an online course, results are neither satisfied nor dissatisfied. This may be due to the new environment in an online learning platform and the abrupt adaptation of this pedagogical approach due to uncontrollable circumstances. This is supported by the qualitative data gathered in this study which states that: Turning to the three highest ratings (see Table 15), namely *I have no choice because some are only online courses* (65%), *I like the flexibility of accessing the class content anytime online* (51.25%) and *I like the convenience of not coming to campus as much* (25.63%). These results demonstrate that the primary reasons for preference in online learning is due to online learning is the only possible way for learning continuity as related to the health crisis being experienced.

The flexibility and convenience of online learning rated high also because of the ease of access in terms of the web components and utilization of technology. Further discussions will be mentioned in the qualitative data analysis.

But it should be noted that greater percentage is generally satisfied with the online course if weighed against those who expressed dissatisfaction (see Table 12).

Table 12. Level of Satisfaction in online Learning as Perceived by the Students

In general, how satisfied were you with your online course(s)?	**Frequency**	**Percentage (%)**
Very Satisfied	4	2.50
Generally Satisfied	64	40.00
Neither	70	43.80
Generally Dissatisfied	20	12.50
Very Dissatisfied	2	1.30
Given a choice, would you enroll in another online course?		
Very Satisfied	8	5.00
Generally Satisfied	39	24.40
Neither	61	38.10
Generally Dissatisfied	33	20.60
Very Dissatisfied	19	11.90

1.3 Amount & Quality of Interaction

Considering the how the use of technology with the online learning compared to the face-to-face courses; Table 13 shows the different aspects which the learning interaction may be affected. The results showed that it was about the same in all aspects of interaction of the students in terms of amount and quality with the other students and instructors. Further clarification of these findings will be detailed in the section of the qualitative data.

Table 13. Amount & Quality of Interaction as Perceived by the Students

Indicators	**Mean**	**SD**	**Verbal Interpretation**	**Rank**
1. The amount of your interaction with other students	2.71	1.00	About the Same	3.5
2. The quality of your interaction with other students	2.71	1.05	About the Same	3.5

3. The amount of your interaction with the instructor	2.83	0.98	About the Same	1.5
4. The quality of your interaction with the instructor	2.83	0.93	About the Same	1.5
Composite Mean	**2.77**	**0.89**	**About the Same**	

Legend: 4.50 – 5.00 = Much Better; 3.50 – 4.49 = A Little Better; 2.50 – 3.49 = About the Same; 1.50 – 2.49 = A little Worse; 1.00 – 1.49 = Much Worse

1.4 Preferred Learning Modality

Average percentages of the items making up the learning modality preferred by the students were presented in Table 14. Analysis of the responses as shown in Table 14 revealed that the face-to-face learning was preferred by the students at 60.63% as the learning modality. The learners' preference for blended learning was at 27.50 %. The data showed that online learning was preferred at 6.88 % and modular learning at 5%. It showed that face-to-face learning was the most preferred may be due to the physical interaction it entails with the co-students and instructor but second to this is blended learning, the data also exhibited an inclination of the learners to an equal mix of face-to-face content and utilization of web content. Further details about these findings can be substantiated in the qualitative data section.

Table 14. Preferred Learning Modality as Perceived by the Students

	Frequency	Percentage (%)
Online Learning (Extensive use of the Web and virtual classroom)	11	6.88
Face to Face Learning (Use of traditional teaching & learning format)	97	60.63
Modular Learning (Use of printed modules and reading materials)	8	5.00
Blended Learning (An equal mix of face-to-face and web content)	44	27.50

1.5 Primary Reasons for Choosing Online Course

Turning to the to the three highest ratings (see Table 15), namely *I have no choice because some are only online courses* (65%), I *like the flexibility of accessing the class content anytime online* (51.25%) and *I like the convenience of not coming to campus as much* (25.63%). These results demonstrate that the primary reasons for preference in online learning is due to online learning is the only possible way for learning continuity as related to the health crisis being experienced.

The flexibility and convenience of online learning rated high also because of the ease of access in terms of the web components and utilization of technology. Further discussions will be mentioned in the qualitative data analysis.

Table 15. Primary Reasons for Choosing Online Course as Perceived by the Students

	Frequency	Percentage (%)
I like the flexibility of accessing the class content anytime online	82	51.25
I prefer technology in classes	27	16.88

I choose based on the instructor, not the modality	22	13.75
Online courses “fit” in my schedule	26	16.25
I have no choice because some are only online courses	104	65.00
I like the convenience of not coming to campus as much	41	25.63

Findings number 2. In order to answer specific research problem number two (2).

What are the experiences in online learning as perceived by the faculty with respect to the following aspects:

2. 1 Level of Satisfaction in Online Learning

2. 2 Amount & Quality of Interaction

2. 3 Instructional Technologies Utilized

2. 4 Preferred Learning Modality

Online Learning as Perceived by the Faculty

The experiences of online learning as perceived by the faculty respondents were collected by the utilization of an Online Learning Faculty Survey which will be represented by Tables 16, 17, 18, and 19. The faculty participants who consented to be a part of the study were 12 in total, 3 males and 9 females. In this part of the survey tool, the significance of the results was determined by frequency and percentage.

Considering the extent of effectiveness of online learning as perceived by the faculty with respect to the features, the following were taken into account: (1) Level of satisfaction in online learning (2) amount and quality of interaction, (3) instructional strategies utilized and (4) preferred learning modality. Tables 16 and 17 specifically indicated the landscapes of online learning as perceived by the faculty participants which showed favorable results.

2. 1 Level of Satisfaction in Online Learning

In terms of experiences, the level of satisfaction in online learning as perceived by the faculty respondents was presented in Table 16. As each experience about online learning has a unique importance, the sub-items in this section of the faculty survey tool were presented were analyzed with frequency and percentage.

It can be seen that 50 % of the faculty participants expressed that 11-20 students in a learning session can be the preferred number to effectively implement the online learning approach, and few approved to 21-30 students at 8.30 %. This preference of students can be exemplified in factors like the number of students in a synchronous session to effectively engage the students and the heftier workload as the asynchronous sessions will entail a greater number of learning activities and output from the learners.

In the context of the satisfaction in the implementation of the online learning, most of the participants were generally satisfied at 41.70 %. The pedagogical adherence to online learning due to uncontrolled circumstances posed an added challenge for the faculty but this would not change the fact that learning continuity is of greatest concern, thereby the professors know their obligation of the teaching profession to utilize the necessary strategies to address the learning needs of the students. It is in this sense, that the study revealed the general satisfaction of the faculty as how they perceived the effectiveness of online learning as duty calls for the necessary coping mechanisms in unusual scenarios. However, when the faculty participants were asked about having a choice in the

utilization of online learning in the future, neutrality was noted at 50%, this can be clarified in detail in the qualitative data analysis section.

In terms of how effective the teaching methods and strategies in helping design and implement the online course as the faculty participants, 41.7 % of the respondents approved that their approach was generally effective and 50 % showed neutrality.

All the components which was mentioned in the online learning experiences as perceived by the faculty respondents, the added elements will be further discussed in the qualitative data analysis.

Table 16. Level of Satisfaction in Online learning as Perceived by the Faculty

	Frequency	**Percentage (%)**
On average, how many students do you feel you can effectively teach in the online format?		
5-10 Students	5	41.70
11-20 Students	6	50.00
21-30 Students	1	8.30
On average, how satisfied you have been with your online courses?		
Generally Satisfied	5	41.70
Neutral	4	33.30
Generally Dissatisfied	3	25.00
In the future*, if you had a choice,* would you consider teaching a course in the online format?		
Definitely	3	25.00
Probably	6	50.00
Probably Not	3	25.00
How effective was your teaching methods/strategies in helping you design and implement your online course?		
Very Effective	1	8.3
Generally Effective	5	41.7
Neutral	6	50.0

2. 2 Amount & Quality of Interaction

When it is expected that online learning will be compared to face-to-face learning to validate the difference with online learning, the faculty respondents agreed that the quality of the educational experience in online learning had become worse compared to the face-to-face learning approach at 58.30 %, 33.30 % noted that it was the about the same and 8.30 % marked the online learning to be better.

Nonetheless, when online learning was compared to face-to-face learning without web components in terms of amount and quality of interaction, 50% agreed that it turned out be somewhat decreased and 66.70 % rated to be worse respectively. As online learning requires the web component as a crucial aspect in the implementation of the pedagogical approach to teaching and learning, it is important to note that the faculty respondents find online learning with utilization of web com-

ponents as to be disadvantageous against the face-to-face learning with no web components. Looking at 8.30 % who rated the online learning with the web components to have more advantageous effect in the amount and quality of interaction marked an interest as to what specificity made such claim. The disparity which was presented will be clarified in detail in the qualitative analysis section.

Table 17. Amount & Quality of Interaction as Perceived by the Faculty

How would you rate the quality of the educational experience in your online courses compared to the face-to-face format?		
Better	1	8.30
About the Same	4	33.30
Worse	7	58.30
Consider the amount of interaction in your online class. How would you say it compared with the amount of interaction in a face-to-face course with no web components?		
Somewhat Increased	1	8.30
About the Same	3	25.00
Somewhat Decreased	6	50.00
Decreased	2	16.70
Consider the quality of interaction in your online class. How would you say it compared with the quality of interaction in a face-to-face course with no web components?		
Better	1	8.30
About the Same	3	25.00
Worse	8	66.70

2. 3 Instructional Technologies Utilized

When it comes to the instructional technologies as mentioned in table 18, analysis of the responses revealed that about 100% of the faculty utilized the following: social networking sites, communication web tools and student responses systems. Similarly, 91.70 % currently using the content management system of the university. From the data, it appears that 41.70% of the faculty are interested in using the plagiarism detection software, this may be due to the convenience of students' access to the information using digital resources which sometimes plagiarism might be overlooked thereby the interest of the faculty in using detection software will be of great use and ease.

Based on the elements which were currently used by the faculty as their instructional strategies, it is understandable that these web components are employed as to the possibility of the implementation of the online learning pedagogy. Added input of this section will be discussed in the qualitative data analysis.

2. 3 Preferred Learning Modality

Table 19 presented the different learning modalities; Blended Learning was rated the most at 83.30% and face-to-face learning at 16.70%. There is a wide array of research studies with regards to the effectiveness and positive impact of blended and thru the faculty respondents observed the

same. To mention a study by Alsalhi, et.al (2019) which revealed that blended learning is effective in higher education and the positive impact this pedagogical approach in creating a positive learning environment which is advantageous both for the teacher and students. Supplementary points about this section will be further elucidated in the qualitative data analysis.

Table 18. Instructional technologies Utilized in Online Learning as Perceived by the Faculty

	Frequency	Percentage (%)
Social networking (Twitter, Facebook, MyS-pace, Messenger)		
Currently Use	12	100.00
Content Management		
Currently Use	11	91.70
Planning to Use	1	8.30
Communication (chat, web/video conferencing, Zoom, Google Meet, Google Drive, Email, Canvass)		
Currently Use	12	100.00
Student Response Systems (Messenger, Email, Facebook, Texting)		
Currently Use	12	100.00
Plagiarism Detection Software (e.g. Turni-tin.com, Web Assign)		
Planning to Use	4	33.30
Interested in Using	5	41.70
Not Planning to use	3	25.00

Table 19. Learning Modality Preferred as Perceived by the Faculty

	Frequency	Percentage (%)
Face to Face Learning (Use of traditional teach-ing & learning format)	2	16.70
Blended Learning (An equal mix of face-to-face and web content)	10	83.30

Findings number 3. In order to answer specific research problem number three (3).

"How do online teaching and learning enhance the students' engagement?"

This category centered on the students and faculty experiences in online learning and teaching modalities which would enhance the students' engagement. To address the third research question. The transcripts were made thru zoom interviews with audio recordings via voice memo in iPhone. A pseudonym was used for the anonymity of the student and faculty participants. The researcher examined the data collected and information was then compiled in two major areas: students and faculty perspectives in online learning. An anecdotal record of quoted answers from the participants were documented and shall be presented as is to maintain the actual context, as part of the findings to answer specific research problem number three (3) which was done in qualitative form of research.

Online Learning as Perceived by the Student

The data was organized according to following that was discovered in the data analysis: (1) Extent of students' engagement which includes its dimensions of behavioral, emotional and cognitive aspects, (2) Level of satisfaction in online learning, (3) Amount and quality of interaction (4) Preferred learning modality by the students and (5) Primary reasons for choosing online course. Before looking in the results of the qualitative data, it is important to note that the students were asked to speak about what they like the most and least about the online courses including comments and advices about this learning approach, in which salient points were discovered in relation to online learning student survey and derived from the interview. The findings of the qualitative data analysis are correlated with the quantitative data analysis of online learning as perceived by the students.

1.1 The Extent of Students' Engagement in Online Learning as Perceived by the Students

1.1.1 Behavioral

One of the strong points of online learning observed by the student participants is the willingness of the students and faculty to be able to be connected despite the hindrances and as some of the faculty would be more considerate for the students. Olivia in her own words said, **"**Quite amaze on how the students and professors exert effort and cooperation with each other." The ability of certain faculty to be considerate also was recognized by the student participants to create an engaged behavior in the course(s), as verbalized by Ysabella: "Some professors have considerations in submission of activities." The same was also stated by Liam, "Professors are lenient and who can understand including Doc One but are still able to deliver good quality education in an online setup."

Negative experiences were also identified by Henry, William and Ava in relation to delayed feedbacks and unavailable technical support from instructors as a disengaged learning environment was evident. Henry responded; "Posting of activities at 12 Am and no contact for the professor. No interaction or very limited interaction. Matagal mag relpy ang prof *(Took a long time for the professor to reply*)." With regards to the use of the learning management system of the university, William articulated the set-backs as: "Quizzes posted in LMS would have glitches, once our scores are posted." Ava mentioned the challenges of poor internet access also affects the access to the learning management system, "LMS difficulty of accessing with unstable Wi-Fi connection."

Looking through the behavioral commentary of the students, a need for a good support system of the University is quite needed by the students. The mentioned experiences can also have a direct impact to the level of engagement of the students which in turn have negative or positive effects in the students' academic standings.

1.1.2 Emotional

Surprisingly, most of the student participants have a sense of responsibility on their own when it comes to online learning. Emma, Olivia, Liam, Ysabella and William commented on how they connect with the online courses in an emotional level. Emma made one comment in relation to this, "I am well-adjusted and adapted to online learning." Olivia in particular was driven by her goal about the course expressed that, "I am motivated by my dreams and goals." Despite the difficulty and newness in online learning, Liam stated that, "I do multi-tasking to fulfill my responsibilities as a student." As Ysabella also considered the challenges posed by online learning as the sudden shift from face-to-face learning expressed and though still favors classroom interaction expressed, "Be patient with all of the school stuff." William was very specific with the challenges imposed by online learning as, "It is mentally and emotionally tough, always know your priorities and goals." But

despite this, the positivity still overcomes the disadvantages of online learning as he knows the task at hand will bear his future success as he conveyed, “Good time management can finish all task.”

The ability of the participants to control the progress in their schoolwork maybe observed but there are student respondents who aired the aspects of burn-out and social isolation in relation to online learning. Online learning may offer a feeling of aloneness to those who seek actual classroom interaction as Ava commented; “Emotionally draining, no interaction.” The particulars of the absence of interaction and confinement to the student respondents posed concerns in their mental health as Olivia voiced: “Academic problems are mixed with personal problems.” It may be due to these issues also wherein one Rylie stated, “Too much activities keep piling up. I cannot cope with the pressure and fulfill the deadlines.”

Participants of the study noted that too much coursework required them to devote much of their time to comply with the requirements which in turn means missed time for self and family. This type of environment the respondents feel the creation of emotional isolation and burn-out, too much workload in school is burdensome for them to the extent that disengagement in the courses was experienced.

1.1.2 Cognitive

The student participants recognized that active learning is a key component of engagement in online learning specifically how they solve problems and employ thinking skills as they develop deep learning and engagement in a course. An interesting phenomenon found in this study was the how the students participants perceived the various learning strategies in relation to engagement as employed by the faculty in an online learning approach.

Hailey expressed a positive learning experience with regards to the asynchronous online platform, “Asynchronous pre-recorder video are good for reviews.” It is the self-paced learning which made Hailey appreciate the convenience of retrieving the videos again when she experienced difficulties about a particular topic.

Focusing on the specific learning strategy which made the student participants hooked in a certain course was revealed. Ava was enthusiastic to mention a subject which differs on the majority of the online course delivery, “Synchronous classes in Zoom specifically in Subject One had direct to the point lectures and simplified. Learning activities were given before and after lecture discussions. Good visual presentations and clear explanations.” Ava in her anecdotal comments further added that, “Activities are good. When you finished your tasks, you are in the comfort of your home, unlike if you are in school you can be bombarded with so much. Minsan lang po ma meet, per pag time po na nung subject na explain po ng ayos dahil simplified and direct, naiintindihan ko (*The meeting was seldom but when it is the subject’s yime there was a well-explained, simplified and direct discussions which I am able to understand.*).” Another participant in the interview, Liam also pointed out; “Some professors are lenient and who can understand including Doc One but who still are able to deliver good quality education in online set-up.”

It is evident in the responses that the faculty delivered the courses either synchronously and asynchronously, in which the choice of the approach in the delivery of the online learning would vary depending on the instructional method of choice of the instructors. An enhanced level of student engagement also was seen in approaches which use instructional strategies which can be applicable and innovative in online learning approach.

While online learners enjoyed activities done in this approach, most would not wish to be bombarded with activities specifically those to be done asynchronously including the short deadlines imposed for the submissions. “Sobra dami ginagawa (*Too much is being done*), there is no consider-

ation," as expressed by William in the interview. This is similar to what Rylie also pointed out about the workload tasked as, "So much activities were given, professors might think we have nothing to do at home but in reality we have so much household chores and responsibilities to do. I feel so much pressure when activities are piling up."

Participants in the study also stressed the unreasonable time given in answering quizzes and made a disengaged environment in an online learning approach. "Subject Two mahirap (*Subject Two is hard*), wala *(no*) considerations, quizzes of 25 items need to be answered in 5-7 minutes. We understand the tendency of cheating but we feel like the purpose is to make us fail and not to pass." In spite of this, William aslo expressed that there are also faculty who give time for the completion of assessment tasks; "This subject, the professor give us much time to answer the exams, yung naka (*presented in*) multiple choice, fish bone analysis or essay. Mas ok yung (*It is better in*) fishbone analysis or nagbibigay siya (*will give*) performance based exams related sa (*in*) subject naming."

By the commentary of the students, the level of cognitive engagement perceived by the students has been related to the learning strategies put forth by the faculty and how active the learning environment is in an online pedagogical approach which made the students to employ the thinking skills as described in Bloom's taxonomy.

1.2 Level of Satisfaction in Online Learning

Generally, when the participants were asked about how satisfied they are in online learning and if given a choice to enroll again in an online course, neutrality of the student participants were noted with the highest mark. Henry agreed about online learning as, "In this pandemic, online learning is the best response as education should continue." Added with same thought, Ava had learn to accept the benefits of online learning as to cope with untoward circumstances, "It's the new normal and we are adapting in its new phase." This, in turn, Amelia referred to the ups and downs of her pedagogical experience: "Online learning for me is a bitter sweet experience, there are factors which are positive and negative that can affect its outcome." As expressed by the student participants, the indecisiveness as noted in the quantitative data analysis may be noted in the abrupt shift in the pedagogical approach due to uncontrollable circumstances, newness in the online learning environment and day-to-day discovery in adapting to change.

However, the students also expressed few weaknesses in the online approach in which they experienced specifically with the learning strategies. When students were dissatisfied with online delivery of the course, negative experiences resulted. Students expect an active learning environment in the delivery of course contents, instead the traditional approach to learning are observed in an online platform, this was particularly observed by the student participants. During the interview, William described the loop holes, "Some professors intend to read the slides, they could have given the PowerPoint for us to read." Ysabella shared the same commentary in her online learning experience, " Most zoom classes mimic the traditional classrooms, they just put in online." The students also expect that the faculty should be innovative and strategic in the course instruction utilized in online learning. "On our own, students have to initiate the learning process," as experienced by Henry.

1.3 Amount & Quality of Interaction

In terms of the amount and quality of interaction with integrating technology in an online approach as compared to face-to-face courses, positive and negative responses were noted. Though the quantitative data showed an about the same result in all aspects, the qualitative data presented the detailed responses of the students. All participants agreed that the use of the web components is one of the important aspects in online learning. Olivia in her words expressed; "I can search for reli-

able sources and knowledge. Everyone can do it in one gadget." The respondents also expressed satisfaction in the utilization of zoom sessions features as described by Emma, "Easy adaptation and well adjusted, I feel like zoom lectures are the same as in a normal classroom." The positive commentary was also shared by Amelia, "when the cameras are open in Zoom and we use annotations particularly in Subject One, you feel like in a normal setting."

The convenience and easy access of online learning was further elaborated by students participants who live far from LPU or overseas like Brunei and USA. "I'm from Lipa, Batangas, kahit malayo sa (*even far from the*) school may access ako dahil ng Internet (*I have access because of the Internet*)," as verbalized by Amelia. The same commentary was also applied to Emma as, "I'm staying with my family in Brunei. But I'm still able to study because of my access to the Internet." Kayla was also eager to say; "I'm currently in the US and working also while taking up Dentistry, because of technology I can work and study at the same time." Most of the student informants praised that thru the use of technology and the benefit of WiFi connectivity facilitated a lot in the process of their online learning and that the most advantageous aspects was a possibility for distance learning.

Online learning which involves integration of technology and utilization of Web components posed benefits not just of the learning continuity despite the current health crisis but also in removing barriers in distance education. These benefits are observed to be quite related for the possibility in the collaboration of the students with their peers and instructors. Liam expressed that, "Online set up made the learning process dynamic." It is the utilization on online platforms, web applications and learning strategies which particularly engaged Liam about the dynamic process of online learning, he specifically applauded the instructional strategies of few faculty in heightening his interest in studying the course(s). It is important to note that Amelia mentioned a specific course which offered an active learning environment, "I like the Subject One, pinakamarami na (*the most of*) interaction with classmates and teacher, pag doon buhay na buhay ang klase (*in that way the subject it is more engaging*)." Ava had the similar commentary as she added that in this particular course they did not expect that utilization of usual applications related in not the usual school related activities can be enjoyable and possible to be used in learning activities, "Interaction with groupmates specifically if it is entertaining like using online applications such as TikTok."

While learners expressed the strengths of technology as adapted in online learning and the domino effect in collaboration and student engagement, the participants also pointed out the challenges of online learning. It is also the excessive utilization of technology in which the participants recognized dissatisfaction specifically the ones who advocates physical presence which can be seen in face-to-face sessions." Interaction not the same as face-to-face learning," as remarked by William. It was openly uttered by Hailey that, "Most of the time, I experienced headache and eye fatigue due to the time I spend with my gadgets as I learn and research for school related stuff." It also the unfamiliarity of the online platform and usage of Zoom in which Olivia agreed that she is too shy to interact in this platform, "I feel pressure in open camera in Zoom." Amelia and Henry who recognized that the instructional strategies of most of the faculty who adhered to non-engaging online learning lectures have approaches to online learning which are also non-collaborative. In Amelia's words, "Most teachers and students are not engaged in zoom." "80% are still in traditional classroom, lectures are not so interactive. Most questions are not addressed during Zoom and offline," as uttered by Henry.

1.4 Preferred Learning Modality

Majority of the participants would still want the face-to-face learning modality since interaction was the primary concern. Kayla conveyed that, "Everything is online. Different with face-to-

face, there is interactions." It was also stated by Kayla that the best option given the situation about the pandemic that online learning is the best way for learning continuity. At the same time, the participants vented that the unstable connectivity to Wi-Fi also contributed for a face-to-face preference. Most of the student participants concurred that difficulty and non-stable in WiFi access greatly affect the online learning and the interest in this pedagogical approach." As Hailey pronounced," In Mindoro, I have a very unstable internet connection, I usually was left behind in the learning process."

Blended Learning was preferred as second by rank, the student participants observed that an equal mixture of web components and face-to-face sessions can fill the gaps and challenges of both the online learning and face-to-face learning environment. Emma for example commented that, "I like to use gadgets and applications, but I want the physical interaction too." Olivia also found the combination of web components and face to face learning may benefit her learning, "I wish for combination of actual presence of my classmates, di ko pa kilala yung iba (*I don't personally know my other classmates*) and use of technology."

1.5 Primary Reasons for Choosing Online Course

The primary reason for choosing the online course was related to the fact that online learning environments was the only way for learning continuity in the current pandemic situation. "No other Choice," as William considered online learning bridged the gap brought about by the health crisis. Rylie also found that she saved the time committed for travelling to school in an online learning environment and she added that, "Online learning is the online option for now in studying."

Most of the participants also expressed that the flexibility of online education was advantageous as those who are located far from the university would not require to travel and can now conveniently stay at home while learning. Amelia who lives 30 kilometers away from the university said, "I live far from LPU, I don't need to worry in going to campus and be physically present." To add up the convenience also was emphasized by the participants of not preparing much in going to school and to wake up early. "I don't need to wake up early and come to class, I was never late," verbalized by Hailey who resides in the Mindoro province. The strength of online learning was further detailed by the claim of Kayla as, "I work here in the US when I have no classes, I feel good because I can earn and study." Because of the flexibility and convenience of the online learning, having a job and studying can be done simultaneously by the students.

Online Learning as Perceived by the Faculty

The data was organized according to following that was discovered in the data analysis: (1) Level of satisfaction in online learning, (2) Amount and quality of interaction (3) Instructional technologies utilized and (4) Preferred learning modality. Before results of the qualitative data presented, it is important to mention that 6 out of the 12 faculty participants were interviewed using the Zoom and Voice Memo recordings. The faculty participants were given open ended questions for interview about their online pedagogical approaches, experiences and features.

1. Level of Satisfaction in Online Learning as Perceived by the Faculty

Disengagement was seen as one of the inclinations to dissatisfaction of teachers when they have synchronous sessions thru different online platforms. As observed by Dr Noah, Dr. Eloise and Dr. Rose when they delivery their course(s) synchronously thru Zoom, the muted videos was perceived as mind blogging since they have no idea of the physical demeanors of the students in the process of online course delivery. Dr. Noah described, "My primary concern is student engagement, you are not sure if the students are present physically and mentally because the cameras are not on." The same was also noticed by Dr. Eloise, "For teachers, speaking in front of the computer with very

little or no response from the students." Dr. Rose also experienced, "Most of the time I'm having a monologue in synchronous sessions." The teachers also noted that they prefer a smaller group in lecture discussions as a bigger class size entails the students to be disengaged. Dr. Grace made a commentary of suggesting a lesser number of students in her synchronous lectures and the amount of workload, "In Zoom, the students are not participative, it is difficult for synchronous if it is a big class and I only get assessments thru the submissions."

In addition, the faculty participants in the interview also observed the methods and learning strategies which they implement in an online learning environment had been advantageous and disadvantageous in relation to the learning process of the students. The faculty participants also stated that an unstable WI-FI connectivity also adds up to the severance of engagement of the faculty with the students, Dr. Juliet made a comment to this effect: "It's hard to lecture kung naiintindihan ako talaga, di ko alam kung nakikinig sila naka off-cam kasi mahina daw internet (*if the students are able to understand and I don't know if they are listening while in off-cam because of their slow internet connectivity*). Minsan nauubos sila sa (*Sometimes they are disconnected in*) Zoom meeting, di na bumabalik kasi intenet issues daw reason (*they are unable to join the meeting because of Internet connectivity issues*)." Dr. Noah in his online class also pointed out the downside of poor internet connectivity and suggested that "To ensure how students to be engaged, make sure there is a faster connectivity because it is difficult to be engaged if there is a delay of 15-30 seconds to answer a question from an instructor."

On the topic of the satisfaction in an online format, the faculty participants were eager to point out more of the setbacks of this pedagogical approach but commented that their satisfaction in the online learning course would depend much on the university and faculty support as there is no other choice but to shift in an online pedagogical approach for learning continuity in the current situation. For example, the faculty participants commented about concerns with devices, training and technological support. With regards to the mentioned concern, the faculty would like a support from the University as they think this can boost the satisfaction of delivery of the online pedagogical approach. Dr. Eloise made a comment as, "Provisions of laptops for the faculty so that everybody would have a synchronous learning experience." This observation was shared the same as Dr. Alice as, "Computers and devices should be provided for the faculty while at home, LMS should be improved on the basis of connectivity issues & technical support and whatever online platforms being used should have a subscription free for the faculty. If this is not possible then maybe an allowance can be given in lieu. The university should invest technology for the educators and regular hands-on trainings, Zoom subscriptions should be given. All of which will strengthen the online learning environment for the benefit of the stakeholders."

Another participant also revealed the limitations in the utilization of Zoom free subscription while having a class as Dr. Rose articulated, "The University should provide a Zoom licensed platform, so we don't use the free version and cut the lecture every 40 minutes. I'm fortunate enough to have a stable connection at home but I also noticed that poor Wi-Fi connection causes class disruptions too." Though it was also noted that the university offered online platforms and Learning Management System trainings, the faculty participants observed that it was only done during the start of the academic year and would have wished to have regular technical support and trainings. In addition to the previous commentary of Dr. Rose, "Before the school year starts, there was a training for Microsoft Teams, but I don't think it is enough because it is a one -time thing and maybe a hands-on training for a small group can be done too. It is important to have a feel of the online platforms while operating it." Dr. Juliet also agreed with Dr. Rose and felt that, "Additional training related to

LMS, kulang pa po di pa ganun na explore (*inadequate and not fully explored*). It is better to have an in depth training." Dr. Eloise also suggested that the training should specifically include the faculty of dentistry which can be deemed beneficial in strengthening the learning strategies implemented in the online learning environment, "The targeted approach strategy should be for dental educators and additional trainings should be particularly designed for this group."

2. Amount and Quality of Interaction

The quality of the interaction in an online learning approach had become worse as perceived by the faculty respondents but on a magnified view of the qualitative data analysis, the faculty participants who were interviewed had shared interesting observations to validate the disengagement and favored the face-to-face learning. Looking at the level of satisfaction with online learning, Dr. Noah, Dr. Eloise and Dr. Rose previously mentioned the disengagement they experienced with online learning. In addition to this, Dr. Eloise expressed: I am a firm believer of face-to-face learning, online learning is a challenge to me and my students. I don't think all of them can grasp everything even in face-to-face they have difficulties, how much more in online learning. During online classroom observations in synchronous sessions, Dr. Rose also noticed, "It's very different, with online I don't feel like a connection with the students, the response from them, some have an excuse of not opening the cameras. Very difficult to create engagement or get a response." Dr. Juliet also found the difficulty of interaction with her students, "I would not know if they are engaged, not unlike face-to-face you can call their attention."

Another issue with regards to the students' engagement in an online approach, is the amount of interaction. Dr. Grace described her challenges as, "limited interaction and how they study their content because it is self-paced." It is also important to note that one of the primary issue is the WiFi connection of both the students and the faculty as online interaction was usually disrupted due to poor internet access as Dr. Alice observed, "WiFi accessibility was an issue. Sometimes they want to engage but the problem is the WiFi accessibility and those living in the provinces would give this problem as I have the same problem with bad connection."

Though the amount and quality of interaction for most of the faculty respondents would favor more of the face-to-face learning than the online learning, looking through quantitative analysis, 8.30% of the faculty respondents rated that the quality and amount of interaction in online learning were better than the face-to-face learning. Dr. Alice had a commentary in relation her interaction in an online learning approach; "Definitely yes, I am flipping the classroom since 2017 getting out of the traditional approach, let them work and how they enjoy the academics because of the need of the student and let the millennials deal with the academics. It's a flipped class in an online platform. I see them performing every lecture meeting, lecture activity before and after class, they are able to deliver. True learning could only happen when the students are engaged, and I see it in flipped classroom learning for this generation." Dr. Alice's comment illustrated the possibility of a learning pedagogy which can be possible in establishing an active learning environment in an online platform as the amount and quality of interaction were observed to be better than face-to-face learning.

3. Instructional Technologies Utilized

There are commentaries which articulated the success of online learning as it relates to instructional technologies utilized which enhanced the student engagement and collaboration of students to their peers and also their instructors. All of this created a positive learning experience for the students and a harmonious interaction as observed by the faculty participants. For example, Dr. Noah manifested in his online class that, "You devote your time in planning your course design and instructional designs. Limit course topics and combine and infuse videos, I have to enhance my Po-

werPoint materials. More time will be devoted in planning rather than delivery." It was also observed by Dr. Noah the significance of the technologies used in an online platform in his course delivery, "Depending on whether it will be asynchronous training on how convert lesson plan or course outline into modular plan. Synchronous how lectures will deliver in platforms and make use of tools to enhance student engagement, provide feed -back. When this is a positive experience is created in an online learning environment."

As presented in the quantitative data analysis, the faculty respondents utilized the instructional technologies such as social networking sites, learning management system, communication tools, student response systems and the same interest in using plagiarism detection software. These web components are used as an integral part of the online learning approach. "I use Zoom, google meet and LMS," as Dr. Grace acknowledge that these online platforms strengthened her course delivery. Dr. Rose shared the value of the online platforms as, "Zoom and messenger are for activities and assignments, quizzes for the learning management system."

An observation of the decreased preference for the learning management was observed due to the unfamiliarity of this web component and further training for the faculty. A manifestation of this issue was made by Dr. Juliet, "Additional training with regards to LMS, kulang pa di ganun na explore (*inadequate and not fully explored*). It is better to have an in-depth training." But as Dr. Juliet had been experiencing a stumbling block with the learning management system, she was fervent to point out the other instructional technologies had been very handy in the online learning environment, "Messenger used in the exchange of ideas and information. Zoom and Microsoft Teams in lecture."

Most of the instructional strategies mentioned in the quantitative data analysis were employed as part of the learning pedagogical approach of the faculty participants as all of this web components is the key component in the course delivery of an online learning environment. It is also important to note that it was perceived by the interviewed faculty respondents that additional training for the instructional technologies utilized by the faculty participants is much need in improving in the course delivery, as this will develop familiarity and proficiency in the use of technology.

4. Preferred Learning Modality

Blended learning in the quantitative data analysis was ranked the highest preferred modality as the participants faculty observed the use of technology and web components is beneficial for learning as for flexibility and convenience. Most of the faculty respondents agreed that blended learning was the suited pedagogical approach to learning as Dr. Alice had experienced, "I am at the comfort of my home while teaching. But better if we mixed the online platforms with face-to-face learning if the situation allows us. I like the flexibility and convenience." As the observation was communicated by Dr. Rose, "Accessibility, my students and I can be connected but I prefer interaction with a face-to-face set up." "A mixture of web components and online learning can be a good alternative compared to traditional classroom after the pandemic," as uttered by Dr. Juliet. Likewise, the faculty participant who advocated the flipped classroom (which is a type of blended learning) expressed; "I get the necessary engagement from my students, we are very interactive, collaborative and connected. I also received positive feedbacks in my faculty evaluation resultant to this."

The approval of the faculty participants for the online learning was expressed as a need for learning continuity and to adapt based on the health crisis being experienced. Dr. Grace commented, "Online learning is good for the situation we are experiencing and the only alternative to learning." The same with Dr. Rose, "With regards to the pandemic, distance learning is a good way to delivery learning and the benefit of the cost of everyday set-up versus the face-to-face, it is convenience and

lessen the burden to the faculty and parents with regards to the health safety and financial concerns." Added to this commentary, Dr. Eloise also revealed that, "the way students accept the distance learning process is not good, no student engagement as compared to face-to-face not everyone can really learn from remote learning. It is very difficult to get a response."

From these comments and quantitative data analysis, blended learning was favored the most as the faculty participants observed the advantage of the combination of web components and face-to-face learning. It is also important to highlight what was mentioned by a faculty participant with regards the level of engagement and active learning environment revealed by a flipped classroom learning as one type of the blended learning approach.

To answer specific research question number four (4):

Based on the findings of the study, what innovative modality can be developed for dental medicine education?

In lieu of the findings of the research study, the researcher would like to propose and develop an innovative online learning modality for the College of Dentistry. The proposed innovative online modality is the "flipped classroom" which is a blended type of learning suitable to the current situation and this would answer the need for the academe to be flexible and adaptable that could outlast varying changes in educational circumstances (see figure 4). To consider a noble endeavor by developing an innovative learning modality that could withstand the test of time and in effect ensure continuous learning even with or without pandemic would prove vital in the success of the teaching and learning process in any field of study.

The General Microscopic Anatomy and Embryology in the succeeding section will be used to exemplify the flipped classroom model. It was delivered by the same lecturer for 4 years (2017 – 2021) using a flipped classroom approach in the didactic course.

Pre-class (Asynchronous)

In figure 4, the students were before the class to read assigned materials and watch online videos to be able to answer the posted questions posted on the online platform (Google Classroom). Looking at figure 5, a screenshot of the assigned task of the topic Epithelium was posted for the students to comply before the online synchronous discussion. Notice that the material sources and videos can also be assigned on the said platform. A self-paced learning of the students was encouraged to promote higher order of thinking including the option of searching and exploring different ideas in relation to the topic at hand.

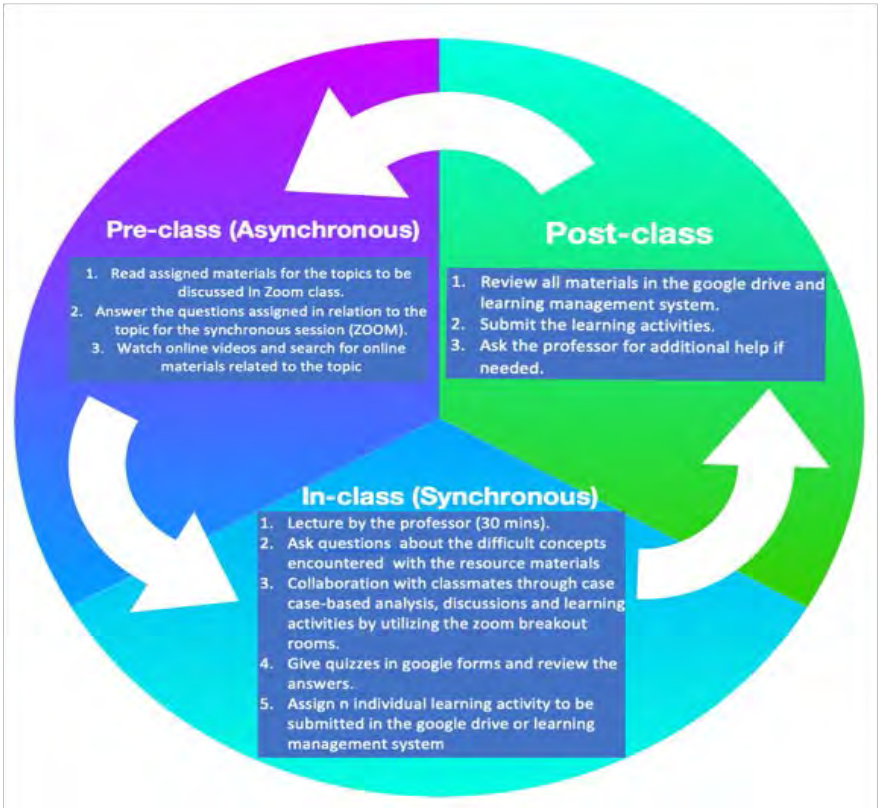

Figure 4. Flipped Classroom Learning Modality in General Microscopic Anatomy & Embryology (Adapted from the University of Waterloo, 2015)

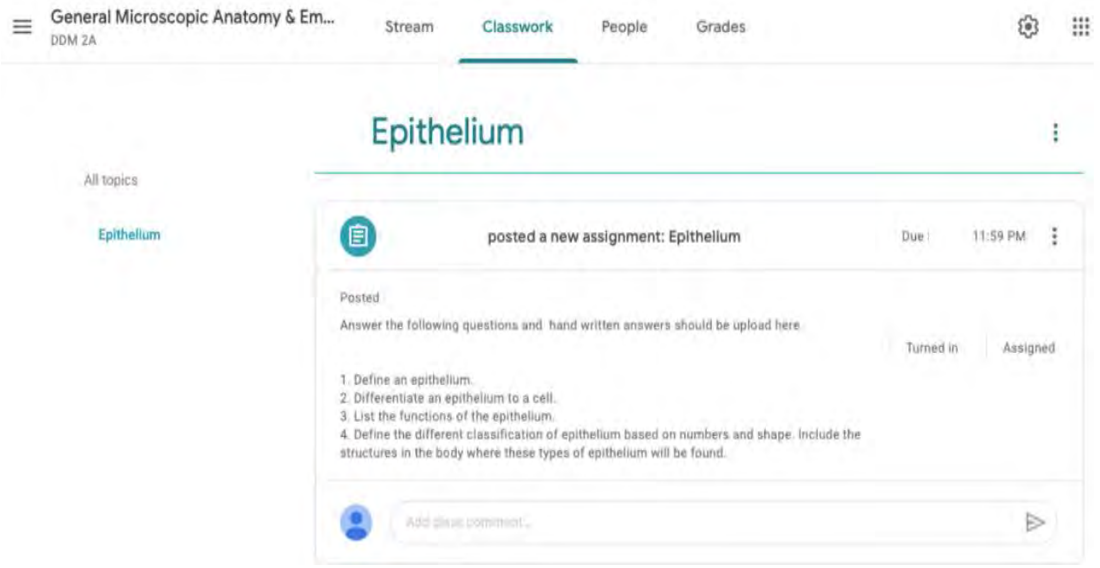

Figure 5. Screenshot of Google Classroom in Relation to the Topic Epithelium

In-class Synchronous

During the online synchronous session, the instructor delivered a 30-minute lecture about the topic Epithelium including an opportunity for the students to ask difficult concepts and ideas (see figure 6). The synchronous online session was done in Zoom for a total of 2 hours which include the 30-minute course delivery by the professor and the peer-to-peer collaborations in form of a case study through the breakout rooms as seen in figure 7. A screenshot was also evident of a breakout room where a group of students discussed the assigned case study and was later able to present the synthesis of their work in-class during the Zoom session.

Figure 6. Screenshot of In-class Synchronous Session through Zoom

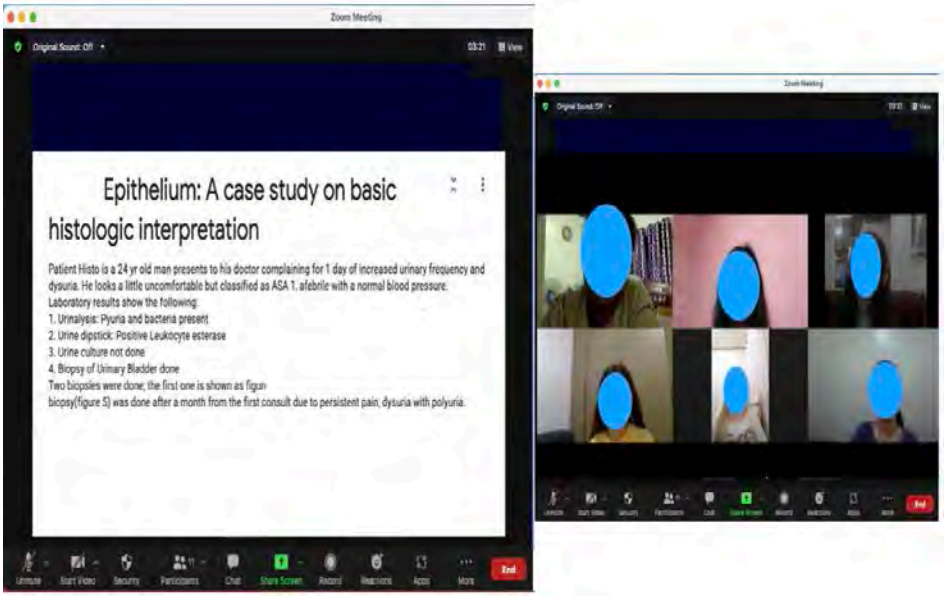

Figure 7. Screenshot of Peer-to-Peer Collaboration in Zoom Breakout Room of a Case Study apbout the Epithelium

As seen on figure 8, quizzes in google forms are also posted before the synchronous session ended succeeding the lecture discussion of the professor and peer-to-peer collaborations. A learning activity was also assigned as “From Scratch, Eureka!” as the objective was to look for any materials available inside their house and make a model of the different types of epithelium which is a squamous, cuboidal and columnar type and the submission was done during the post-class. The summary of the concepts about the in-class synchronous session was visualized in figure 4.

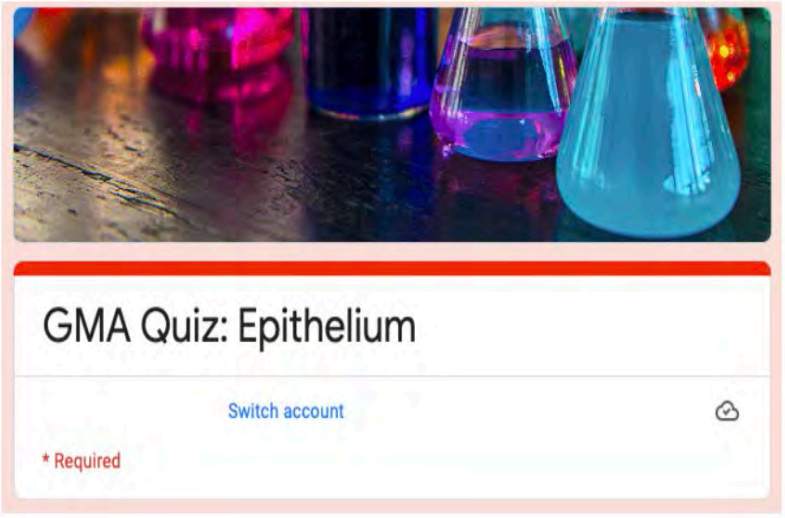

Figure 8. Screenshot of the Google Form Quiz of the Topic Epithelium

Post-class

Review of all the materials in the google drive and learning management system was highly encouraged during this time including the submissions of the learning activity assigned and uncleared concepts of the discussions was clarified offline with the professor (see figure 4). Figure 9 illustrated a screenshot of the sample submissions made by the student in relation to the topic of the Epithelium.

Figure 9. Screenshot Submissions of the Learning Activity entitled “From Scratch, Eureka!”

In the implementation of a flipped classroom in an online learning modality through the observation of the professor in General Microscopic Anatomy and Embryology on the topic about the Epithelium, the following benefits were noted: (1.) Students' level of engagement was enhanced during in-class discussions, peer-to-peer collaborations including discussion forums and offline submissions of assigned tasks and learning activities, (2.) Higher order of thinking was observed during the analysis and synthesis of the case study presented, (3.) Online platforms and technologies utilized in the course content delivery of the flipped classroom learning enhanced easy access and convenience both for the students and faculty. Considering the strengths and benefits presented, the flipped classroom in online modality in dental education would be an innovative and sustainable learning engagement model that can be a stand-alone pedagogical approach.

Conclusion

The change of times called for a notable paradigm shift in the Dental Educator's role from that as an instructor to a facilitator of active learning. The study offers the students and faculty perspective in the online learning approach. For the successful adaptation in the online teaching and learning, the acceptance of the online pedagogical approach should be the first consideration despite the good and positive issues. Considering that blended learning specifically a flipped classroom approach is highlighted in the study which offers the best alternative as perceived by most students and faculty in the study, it is a valuable information that this approach should be looked into in relation to a successful online pedagogical approach. Both the students and faculty expressed Wi-Fi instability to be affecting the online learning environment as most reside in rural areas. The faculty also expressed additional training programs both in the pedagogical approaches and utilization of technology in several online platforms. In terms of the pedagogical approaches, the students and faculty noted that learning continuity should be done despite the health crisis. At the other end of the table, the faculty noticed this as disengagement in both the asynchronous and synchronous sessions. Most students and faculty also observed traditional classroom approaches in an online platform, which also added to the severance of interconnection among each other. Conversely, a flipped classroom learning in an online platform enhanced the level of students' engagement.

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