PEDAGOGY
for Online Learning

Theory and Practice

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editors

This is an original copy of the book chapter.

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Preface

During this unprecedented time, almost all educational institutions have shifted from traditional learning to online learning. When the COVID-19 hit the world, online teaching was no longer an option but a necessity. Due to government restrictions and other related protocols, schools, colleges, and universities opted to deliver academic instructions into online to ensure that students still receive quality learning they deserve. Online learning is a tool in which teaching and learning process still become student-centered, innovative and flexible. However, online learning can also become a disadvantage as there are many challenges associated with online teaching and learning. This e-book offers the different perspectives on online learning: framework, learning experiences both on students and teachers and its associated future management.

The introductory part of this book gives an overview and framework of online learning. It provides technical discussions of learning management systems and teaching and learning modalities used in online learning. It serves as guide in the development of the appropriate learning management system and modality relevant to the capacity and necessity of the academic institutions. The authors shared their actual experiences in the development and management of the systems and programs in online learning.

Part 2 of the book contains the efficacy of online learning experience as per the students' perspective. It highlights the attitude of students towards distance learning at the peak of

the pandemic termed as 'behavioral Coronaphobia.' This part also highlights the expectations of high school and higher education students on online learning and teacher-created videos as a tool in the online learning. The authors shared the results of their studies on the actual experience of their students which unveiled the various positive and negative facets of online learning.

In part 3, the efficacy of online learning as per teachers' perspective is presented. This part highlights the experience of the rural science teachers and the school administrator during the new normal in education. Recommendations outlined on this part serve as bases for further analysis in terms of online teaching-learning implementation. Meanwhile, the future of online learning is outlined in part 4, which can be a basis for further review. The model contained in the paper can be particularly applied in higher education where online platform may be adapted for long in the post-pandemic new normal.

This e-book offers major research results on the conduct and implementation of online teaching and learning in the context of COVID-19 pandemic. It provides a unique perspective on the research issues regarding the effects of online learning from many experts in this field.

Let us learn from the various personal experiences and perspectives of the researchers from various fields of specialization!

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Angela L. Reginaldo & Dr. Delon A. Ching

Introduction

Due to the current situation in the world, every institution was challenged to implement a flexible scheme for their academic program offerings and services to ensure that the students will realize the same quality of education (Coman et al., 2020; Tarayo et al., 2021). There were policies developed on flexible learning modalities, adoption of synchronous and asynchronous online learning, blended learning, and other learning modes to replace the conduct of face-to-face sessions following the strict health protocols. As an alternative, most institutions in the Philippines adapted internet-based learning to reach their student-clienteles who are willing to continue their course journey despite the challenges brought by the coronavirus pandemic.

In one state university in Laguna, a flexible learning scheme of using one-time synchronous and twice asynchronous online learning for every course subject was institutionalized during the imposed community quarantine. However, it challenged the university at first on how teachers and students will accommodate the idea and the underlying processes that need to be established to meet success on its implementation. Some believed that there were problems that might be encountered on its implementation, like the knowledge and skills of the teachers in handling online learning, the material preparation that needs to be uploaded for the students, low or no internet connectivity of both students and teachers and other expectations arising from the clientele (Martin, 2019; Mahyoob, 2020; Cicha, 2021). If these were not addressed at first, a poor learning experience might be expected as a result.

Several challenges may need to be faced in implementing flexible learning in an online scheme, but there are also advantages than

can be realized later on. Students will be more focused on learning the lessons as they have comfortable work conditions (Bhamani et al., 2020), more educational resources can be accessed by the students in just one click using their internet connectivity that would broaden the concept they are learning (Lebenicnik et al., 2015) and students can learn at their own pace following the lesson guides prepared by the teachers (Kochar et al., 2018). Being in a flexible learning mode, students managed the time allocation in learning each topic given the privilege to accomplish only what they can for a specific period for as long as they can achieve everything before the deadline (Miertschin, 2015). With all the benefits that the students can realize once subjected to online learning or through the flexible learning scheme of the institution, the institution needs to analyze several factors before the implementation of flexible learning carefully. Expectations of the students as to how the institution can serve them should be examined to be the basis of several internal policies to be implemented.

The study aimed to determine the expectation level of the engineering students on pre-determined factors in the implementation of flexible learning in terms of proficiency with technology, course instructor, course content, social interaction, course organization, and time management and convenience.

Literature review

a. *Implementation of Flexible Learning*

Flexible learning is a learning scheme for students with a unique set of philosophies and systems. It provides a learning arrangement that depends on the learner's choice, capability, comfortability to learning space, and the bulk of tasks to the students (Joan, 2013). The basic questions on how, when, and where the student will learn the concept depends on the flexible arrangement. When it comes to the capability of the learners, the level of difficulty of the materials to be given is also to be considered, which should fit the level of the learners (Huang et al., 2020). Learning styles of the students should be clustered and

should be addressed by every teacher. The learning space has a significant contribution to the flexibility of learning. The infrastructure and devices available for the learners should be identified to enable the institution to effectively plan what online or offline learning mode or platform can be used (Kariippanon et al., 2018).

Several information and communication technologies were developed to satisfy the conditions of flexible learning modality for the institution. The widely used learning platform in the university is the Google classroom. It allows teachers to become facilitators of learning through asynchronous online learning activities (Azhar & Iqbal, 2018). It enables as well to realize a learner-centered standard that students were given flexible modes to respond to educational practices of their teachers (Shaharanee, 2016). Some other benefits of using it are user-friendly features to the students and accessibility using any device (McGinnis, 2020). When it comes to unrestricted use of virtual platforms used for synchronous online learning, the institution utilizes Google meet. It has basic features that allow the active participation of students during the teacher's presentation of the lesson (Basilaia & Kvavadze, 2020).

b.   *Expectations of Students toward Flexible Learning*

Determining the expectations of the students towards the implementation of flexible learning is a good indicator for the institution to improve their satisfaction with the services being offered. Through this, the institution would be able to prepare its capacity to serve its clientele. When there is a high level of expectations among the students, institutions need to work on necessary actions to lead them to successful outcomes. The pre-determined factors on proficiency with technology, course instructor, course content, social interaction, course organization, and time management and convenience should be carefully examined as to the expectations of the students for the flexible learning implementation to be more effective (Harris et al., 2011).

It is expected among the students in the higher institution that they are more proficient in the use of technology as compared to lower levels. Most of their classwork requires basic computer application of word processing, making presentations and reports, basic computing applications, and web-based mailing, which requires their capacity to work proficiently (Batez, 2021). When flexible learning is implemented, there are many academic factors that the students expect to be worth satisfying. The instructor who will teach the course and manage the learning platforms is expected to be knowledgeable. They have a good level of classroom management, which is to be applied in a virtual setup. Expectations are also considered when it comes to the course content (Coman et al., 2021). Learning materials should be prepared with good quality adhering to the standards set by the higher institution. Standards on quality of content, learning approaches, reflective parameters, and active learning components are some of the key indicators that students expect to be included in the learning content of the materials to be given (Khan et al., 2021).

Despite some limitations of flexible learning, the students still expect that there would be social interactions in the learning process. Students would still be given opportunities to interact with their classmates and their teachers (Kokoç, 2019). The organization of the learning process is also one of the critical indicators that need to be satisfied. Students should feel the total quality of teaching and learning service rendered to them through logically organized content and easy-to-understand instructions in the learning activities (Ferri et al., 2020). Lastly, effective time management and convenience should be present in the flexible learning preparation. Proper scheduling of learning tasks and performances are considerably planned (Ahmad et al., 2020).

In order to determine the successful implementation of the flexible learning, the institution need to efficiently monitor and analyze actions in the enrollment to online synchronous and asynchronous, options to take modular distance learning, use of appropriate evaluation, students grades and success tracking, and addressing arising conflicts once it exists (Andrade & Alden-

Rivers, 2019). It is not only the institution that should impart their efforts to attain success in the implementation of flexible learning, the persistence and positive outlook to the policy and programs of the student-clientele must also be present (Naidu, 2017).

Methodology

The descriptive research design was used to effectively describe the pre-determined factors in the implementation of flexible learning. The pre-determined factors are based on the expectations of the engineering students when it comes to proficiency with technology, the capability of the course instructor, delivery of the course content, setting social interaction, ensuring course organization, and realizing time management and convenience.

The study participants *were* 30 computer engineering and 55 electronic and communication engineering students of the academic year 2020-2021. They were conveniently sampled from the different group of classes in the College of Engineering. Convenient sampling was used to effectively assess the expectations of the students enrolled. The College is relatively small with limited number of students considering only five (5) regular faculty members handling the program and provision of building or learning spaces for engineering students.

The study utilized an adapted instrument based on the developed student's expectation of online learning survey of Harris et al. (2011) noting 0.897 Cronbach's alpha signifying a good level of internal consistency. The parameters used in the study covers the pre-determined factors in terms of proficiency with technology, course instructor, course content, social interaction, course organization, and time management and convenience. The scales used were the four (4) levels of expectations, Very High, High, Low and Poor. The even numbered scales help eliminate safe responses in the middle scales.

From the instrument adapted, the study created a Google form to conduct the survey due to the strict health protocols implemented

during the data-gathering period. The link was disseminated to the engineering students through the help of the College secretary as approved by the College Dean. The data gathered in the study were treated with strict confidentiality and were only used as baseline for the expectations of the students toward flexible learning to be implemented.

Several statistical treatments were used to satisfy the objectives of the study. To describe the expectations of the respondents, mean and standard deviations were used. When it comes to determining significant difference between the expectations of the two respondents, an independent t-test was used. Lastly, Pearson product-moment correlation was used following the parametric requirement of normally distributed data to find out whether there is a significant relationship between and among the study variables.

Findings and Discussion

Table 1
Expectation Level on Pre-Determined Factors in the Implementation of Flexible Learning

Indicators	CE			ECE		
	Mean	SD	VI	Mean	SD	VI
Proficiency with Technology						
1. Use of Computers and Gadgets	2.70	0.65	H	2.67	0.61	H
2. Word processing software program like Microsoft Word	2.80	0.76	H	2.75	0.70	H
3. Use of emails	2.73	0.64	H	2.82	0.58	H
4. Attaching files to email messages	2.80	0.66	H	2.85	0.68	H
5. Use of Internet and search engines.	2.67	0.66	H	2.60	0.63	H
6. Internet searches for personal reasons	2.70	0.60	H	2.67	0.64	H
7. Internet searches for school work	2.70	0.60	H	2.75	0.67	H
8. Google classroom utilization	2.70	0.53	H	2.78	0.66	H
9. Computer software troubleshooting	1.97	0.76	L	2.02	0.65	L
10. Basic technical problems (hardware) troubleshooting	2.10	0.88	L	2.07	0.74	L
Overall mean	**2.59**	**0.49**	**H**	**2.60**	**0.44**	**H**

Indicators	CE			ECE		
	Mean	SD	VI	Mean	SD	VI
Course Instructor						
I expect the course instructor…						
1. clearly communicate the course objectives.	3.40	0.72	H	3.31	0.60	H
2. clearly communicates what they expect from students.	3.17	0.75	H	3.11	0.53	H
3. posts requirements of the course within an agreed upon time.	3.07	0.69	H	3.36	0.59	H
4. delivered assignment feedback in a constructive manner.	3.07	0.83	H	3.20	0.59	H
5. consistently attends discussion sessions.	3.00	0.69	H	3.13	0.55	H
6. is supportive in the promotion of online learning sessions.	3.30	0.70	H	3.29	0.57	H
7. to have an appropriate online tone.	3.17	0.87	H	3.22	0.57	H
8. to be responsive to students' online concerns.	3.20	0.76	H	3.24	0.58	H
9. to provide contact information to students.	3.10	0.66	H	3.00	0.51	H
Overall mean	**3.16**	**0.59**	**H**	**3.21**	**0.45**	**H**
Course Content						
I expect this online course to…						
1. be productive and attentive like face-to-face set-up.	2.90	0.84	H	2.78	0.60	H
2. establish active learning.	3.07	0.64	H	3.02	0.65	H
3. set activities considering large class discussions.	2.77	0.77	H	2.76	0.72	H
4. provide activities for small group discussions.	2.70	0.70	H	2.69	0.66	H
5. allows learner for self-reflection of what they learned.	2.87	0.68	H	3.00	0.61	H
6. relate theory to real life application of concepts taught.	2.93	0.69	H	3.04	0.69	H
7. provide meaningful postings and discussions.	2.87	0.78	H	2.93	0.57	H
Overall mean	**2.87**	**0.62**	**H**	**2.89**	**0.44**	**H**
Social Interaction						
I expect…						
1. the course session allows students to meet new people.	2.63	0.93	H	2.69	0.77	H
2. a respectful academic community with my classmates.	3.37	0.56	H	3.38	0.62	H
3. a frequent online learning sessions like face-to-face scheme.	2.67	0.84	H	2.65	0.95	H
4. to have as many opportunities to get to know my classmates.	2.57	0.86	H	2.60	0.85	H
5. to be optimistic in dealing and learning online.	2.97	0.76	H	3.16	0.66	H
Overall mean	**2.84**	**0.65**	**H**	**2.90**	**0.57**	**H**

Indicators	CE			ECE		
	Mean	SD	VI	Mean	SD	VI
Course Organization						
1. Oncourse CL was user friendly.	2.63	0.67	H	2.69	0.60	H
2. The forum names and topic titles are unambiguous.	2.70	0.65	H	2.55	0.74	H
3. The course materials were easy to locate.	2.83	0.65	H	2.84	0.57	H
4. The course instructions were clear and unambiguous.	2.80	0.61	H	2.75	0.64	H
Overall mean	**2.74**	**0.54**	**H**	**2.70**	**0.49**	**H**
Time Management and Convenience						
1. I feel concerned that I may not manage my time well.	3.27	0.83	H	3.13	0.64	H
2. I am an independent learner.	2.03	0.81	L	2.09	0.75	L
3. This online course provides has flexible scheme on requirements.	2.47	0.86	L	2.45	0.79	L
4. I am confident that my family members and friends are supportive.	2.77	0.82	H	2.84	0.86	H
5. My home environment is conducive in learning.	2.27	0.83	L	2.36	0.80	L
Overall mean	**2.56**	**0.51**	**H**	**2.57**	**0.41**	**H**

Legend: 3.50-4.00 Very High (VH), 2.50-3.49 High (H), 1.50-2.49 Low (L), 1.00-1.49 Poor (P)

As can be seen from the values depicted in the table 1, both groups of engineering students have high level of expectations on proficiency with technology for them to be able to cope up with the implementation of flexible learning. As indicated, the respondents feel high capability in most of the indicators, with the indicator "*attaching files to email messages*" getting the highest mean value, and "*use of word processing software like Microsoft Word*" (for the Computer Engineering students). For indicators on software and hardware troubleshooting, low mean values were obtained indicating respondents' confidence that areas such as troubleshooting, which requires practice and proper training, is not highly expected of them in the flexible learning.

The current situation changed the landscape of learning to an online modality, which the results clearly emphasized the findings of Vargo, et al. (2021), Mpofu (2016) and Manu and Mensah (2015) that students are becoming proficient in the use of computers and even other gadgets such as cellphones, laptops and tablets to cope up with the demands of online education. In addition, the use of internet is another familiar and even an

expertise of the students nowadays. As Liesa-Orús, et al. (2020) and Raja and Nagasubramani (2018) affirmed that survival in school has become very much dependent on technology hence almost all students were expected to become computer applications whiz in a blink of an eye. Even though applications are very familiar to them, troubleshooting is still not their expertise.

The results also showed that both groups of engineering students have high level of expectations from their course instructors. Computer Engineering students highly expect their instructor to be clear in communicating the goals of the course while Electronics and Communications Engineering students highly expect their instructors to post the course requirements within an agreed time. It is clear from the responses of the two groups that they want to prepare any course requirements in advance, which also affirm the findings of Aguilera-Hermida (2020), and (Blackmon & Major, 2012). The self-assessment of the students indicates self-discipline and responsibility that no student wishes to be caught off-guarded or unprepared on anything that is expected from them. This also shows the descriptions of Naji, et al. (2020) and Widodo, et al. (2020) that students in the online mode have keen sense of responsibility.

Since they have finished a school year without too much intervention from their instructors, they have low expectations that the teacher will be consistently with them in discussion forums or even provide contact information to students. This mentality of the students shows the observations of Gopal (2021) and Gillett-Swan (2017) that university students are getting fully aware of their responsibility and are independent in the performance of tasks with or without teachers' guidance. Interestingly, students form their own group chats, even teachers not included, where they freely discuss topics and exchange and share ideas regarding lessons (Broadbent & Lodge, 2021).

The results further showed that both the groups of engineering students have high level of expectations on the course content. The students expect that the course content will provide them with

opportunities for active learning and opportunities to relate theory to real life. Though the specializations differ in their perception of the course content, it is clear that the students expect their course to make them learn actively and relate what they have learned to real life. According to Rapanta (2020) and Coman (2020), learning is not within the confines of the topics but the ability to apply to real life situations and make them better individuals. Simply put it, learning is not just memorizing lines, theories and formulas, but rather it comes with an understanding on how these may be applied to real life situations.

Students do not highly expect that they will be provided with opportunities for small group discussion since they are now fully aware of the fact that due to the current situations outside of their homes, it is not possible for them to face one another and make discussions. There is also the issue of connectivity, which hinders them from creating group discussions for quite a long period of time as to the findings of Apuke and Iyendo (2018) and Jibrin et al. (2017). Similarly, both groups of engineering students have high level of expectations in terms of social interactions even during the implementation of flexible learning. They highly expect that their classmates will be respectful even in an online learning situation. Rules of conduct would still govern the students' behavior. Guidelines set by the instructors on the conduct of classes would still be followed to the letter. Yet they have accepted the fact and does not expect much that they will get many opportunities to get to know their classmates online as they would face to face. They have accepted the reality that conduct of classes and opportunity to meet face to face is hindered by many reasons similar to the findings of Sarmiento (2021) and Raitzer et al. (2020). IATF protocols, safety measures implemented by institutions and even internet connectivity become reasons to limit such interactions.

In addition, both groups of engineering students have high level of expectations on course organizations for them to be able to cope up with the implementation of flexible learning. As indicated, they feel that for them to successfully cope with flexible learning, course materials indicated in the outlines/syllabi would be easy to

locate as provided by their instructors. Since their access to materials is very much limited, them being confined to the comfort of their own homes, deem it necessary that the materials indicated in the materials provided by their instructors would be very much accessible for them as to the findings of Armstrong-Mensah (2020) and Chen (2018). They do not expect much that the materials be user-friendly and the names or topics be unambiguous, yet what they want is for them to have something to consult or look into when they are in the process of learning by themselves.

Furthermore, both groups of engineering students have high level of expectations when it comes to time management and convenience for them to be able to cope up with the implementation of flexible learning. As indicated, both groups have shown high concerns that they may not be able to manage their time well considering the activities they are to be given in every subject. The fact that they are at home, it is a common knowledge that their parents also expect them to at least contribute in some of the household chores, thereby dividing their focus and attention to their studies and home life as described by Baticulon (2021) and Chandra (2020) in their studies. There is also that fact that not every student has the privilege of obtaining unlimited internet connection for online learning thereby limiting their access to classes and discussions which was the same scenario in the studies of Dhawan (2020) and Francisco (2020). Yet, the respondents have quite low expectation that they will become real independent learners since it would still require synchronous sessions to be facilitated by their professors, and in the current situation, it seems not possible yet.

Overall, it can be seen that engineering students have high expectations for them to be able to cope with the implementation of flexible learning, yet all indicators lead to the fact that these expectations will leave them to become learners who were able to overcome the hindrances brought about by the new normal (Callo & Yazon, 2020).

Table 2

Test of Significant Relationship between and among the Expectation Level on Pre-determined Factors in the Implementation of Flexible Learning

Expectation to Online Learning	1	2	3	4	5	6
Proficiency with Technology	1					
Course Instructor	.158	1				
Course Content	.163	.503**	1			
Social Interaction	.233*	.503**	.688**	1		
Course Organization	.185	.358**	.401**	.324**	1	
Time Management and Convenience	.288**	.311**	.456**	.367**	.462**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

It is reflected in table 2 that there is a positive significant relationship between and among the expectation level on pre-determined factors in the implementation of flexible learning. The expectations of the students with regard to their proficiency with technology considering that they will be subjected for a flexible learning mode of synchronous and asynchronous online significantly relates positively to their expectations on social interaction to be established and how they will be able to management time and convenience. On the other hand, no significant relationship is depicted with their expectations level on technological proficiency and their expectations with their course instructor, content and organization. It only implies that even though they highly expect high level of technological proficiencies in using word processing, and other computer applications to be used in an online set-up, it may not influence the way they view academic practices in learning the lesson. Students are used with these computer applications even without the implementation of flexible learning. Ever since they were in a face-to-face learning modality, ICT skill should be developed among students in order for them to prepare and submit their best learning outputs as affirmed by the studies of Heerwegh (2016) and Verhoeven (2012).

The results further show that there is a moderate positive significant relationship between and among the pre-determined factors on expectations with the course instructor, course content, social interaction, course organization, and time management and convenience. All these factors contribute to one another in order for a university student to be more prepared in attending flexible learning set-up in the institution. When one factor increases its expectation level, there is a moderate evidence that the others will follow. There might be challenges being faced by several institutions in the implementation of flexible learning modalities considering the current situation brought by COVID-19, it is beneficial that the institution should study or plan effectively all aspects concerning students' success of being part of the learning modes (Ishmael, 2020). The instructors that are well-trained and well-informed of the educational policies, there would be a smooth implementation of the flexible learning. With these, the students may be able to realize the organization of every course and the established learning spaces for them (Joaquin, 2020; Benade, 2019; Müller, 2018).

Conclusion

The engineering students have a high level of expectations on proficiency with technology, the capability of the course instructor, delivery of the course content, setting social interaction, ensuring course organization, and realizing time management and convenience. Furthermore, there is no significant difference between the expectations of the computer engineering students and electronics and communication engineering students. When both of them are to be subjected to an online learning delivery, they expect to have a high level of proficiency in word processing and attaching files to emails but had low expectations on computer software troubleshooting. They expect their course instructors to communicate the learning goals and post the course requirements as agreed upon. When it comes to the course content, they expect that it would provide them with active learning conditions and can be applied appropriately to real-life implications. Though there may be limitations of face-to-face interaction with their classmates, engineering students expect for

an online collaboration where they can respect one another. Engineering students expect that their instructors' course materials are logically organized and can be easily located through the reference list to be provided. Lastly, they expect that they would be able to effectively manage their learning time, ensuring that there are enough and appropriate activities to be given by all instructors within the specified time agreed upon. It is depicted that there is a significant positive relationship between and among the pre-determined factors in the implementation of flexible learning. Each factor is essential and should be considered by the college administrators to efficiently and effectively implement the flexible learning mode. When one of the factors is addressed and considered its relevance, most likely it would bring a positive outcome to the total learning experience of the engineering students.

University officials and college heads may use the result in ensuring an organized policy toward smooth implementation of flexible learning and examining pre-determined expectations that can be satisfied. The instructors have to be considerate in giving flexible arrangements for the students in a gradual shift of making them independent learners, which revealed to have low expectations. If needed, virtual consultation is recommended to students who will need assistance to cope with challenges brought by educational reform in order for them to comply with different course requirements. On the other side of the spectrum, students may continue to develop proficiency in using the technology to achieve more in flexible learning conditions. Since there is a significant positive relationship between and among the pre-determined factors in the implementation of flexible learning, it is suggested that curriculum planners and developers may consider that proficiency with technology and the expectations to the course instructor, content, social interaction, course organization and time management and convenience work together. With these, greater accomplishments can be realized among engineering students. For future researchers, since the study only focused on perspectives on flexible learning among limited number of engineering students, the parameters can also be adopted to other

courses with greater number of potential respondents that will serve as a guide for university-wide policy implications.

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