

Navigating the Turbulent Terrain: Gauging Student Experiences with Blended Teaching-Learning Modalities

Michael Tomas Sebullen, LPT, CFP, PhD

Faculty, Baguio Central University, Baguio City Philippines 2600

Abstract

This research assessed the challenges faced by senior high school students in blended teaching and learning during the 2020-2021 academic year. Data from 68 teachers and 168 students were analyzed using a descriptive-evaluative and descriptive-evaluative research design. Students rated moderately challenging problems through a Likert-type survey. The study found that the most common challenges were incompatible online resources (50.3%), limited teacher support (45.5%), and technology-related difficulties (4.2%). These challenges were rated as very serious, indicating their significant impact on students' learning. The study highlights the importance of addressing these challenges to improve the educational experience of senior high school students in blended learning. It provides a foundation for future research and modifications in blended teaching and learning practices.

Keywords: *ICT challenges, blended learning, flipped classroom, ICT, TPACK, senior high school*

Introduction

The COVID-19 pandemic has significantly impacted basic educational institutions worldwide, highlighting inequalities and the need for innovative practices (UNESCO, 2020; World Bank Group Education Strategy, 2020). The UNICEF annual report (2020) stresses the importance of adapting education during the pandemic, yet low-income families may struggle with costly online resources and learning at home. Senior high school students in the blended learning modality face challenges in adapting to different learning environments. Access to resources, communication skills, collaboration, self-discipline, time management, and motivation are among the difficulties faced. Maintaining quality learning experiences is a priority for educators, and satisfaction with printed materials, online elements, and blended teaching-learning platforms impacts student outcomes. The pandemic poses challenges for both private and public schools, affecting necessary support from external stakeholders (Magsambol, 2020). Achieving satisfactory outcomes in the new educational setup becomes challenging for students, teachers, and schools.

Students face new challenges in online blended learning during the pandemic. Beyth-Marom et al. (2011) highlight the benefits of blended learning, offering flexible and convenient learning environments. However, more research is needed to measure the effectiveness, implementation, and student satisfaction with different blended teaching-learning modalities (Burgess and Russell, 2003). To enhance student satisfaction, it is crucial to evaluate their expectations and needs (Appleton-Knapp and Krentler, 2006; Kara and DeShields, 2004). Schools should take responsibility for assessing the results of blended teaching-

learning to determine student satisfaction and success (US Department of Education's Office of Innovation and Improvement, 2018). Understanding the challenges of senior high school students in blended learning requires investigating the socio-emotional impact (Jones, 2020) and exploring the effectiveness of instructional strategies (Smith et al., 2020). Research is also needed to address equitable access to resources and technology among senior high school students, as disparities exist (Miller & Johnson, 2020).

To sum up, the shift to blended learning amidst the pandemic was made in an effort to continue teaching and ensure that no student has been left behind. This usually resulted in disparities as Magsambol (2020) and Bridge (2020) have highlighted the gap between those who can and cannot afford the resources to avail the new education platform. Being unprepared for this kind of transition due to closure of schools, new strategies and modalities are being adopted for asynchronous learning experiences (Tanhueco-Tumapon, 2020) and at the same time, technology initiatives are to be undertaken so that student performance is not affected. It is thus the objective of the present research to develop and test a conceptual model regarding student satisfaction pertaining to learning modalities during the pandemic.

The findings of this study will be important because may serve as scientific ground for the stakeholders, curriculum planners and designers in curricular programs assessment and evaluation. This study also aims to provide information on how the stakeholders help in the conduct of the blended teaching-learning this time of pandemic. Finally, it will be beneficial to the basic education because it can add to the growing researches regarding the degree of seriousness of challenges met of learners in the blended teaching-learning this time of COVID-19 pandemic. From there, Educational planners are encouraged to further conduct researches of similar nature but with broader depth and breadth.

Review of Related Literature

In response to the challenges brought about by the Covid-19 pandemic, the Department of Education (DepEd) in the Philippines has made it mandatory for educational institutions to create a Learning Continuity Plan (LCP) that addresses these challenges. Additionally, schools must develop a plan that adheres to the minimum health standards established by the Department of Health (DOH) through their risk-based public health standards (DOH AO No.0015, 2020). This initiative aims to ensure the safety of students, staff, and school employees and aligns with the health protocols set by the DOH and the World Health Organization (WHO) (DepEd Order Nos. 2, 2020). These requirements must be met for the successful commencement of the school year 2020-2021 (DepEd Order No. 14, 2020).

Learning continuity plan

DepEd Order Nos. 12 and 13 of 2020 outline the Learning Continuity Plan (LCP) consisting of two sections: the rationale and implementation of home-based learning. The LCP offers modular, blended, or a combination of modular and online (synchronous and asynchronous) learning platforms. The rationale section includes important school details, such as recognition or permit number, accreditation status, and size classification. Enrollment figures reveal a significant decline in private basic education institutions due to the pandemic's economic impact, leading to job losses for parents. Approximately 200,000 students have transferred from private to public schools for this reason, as mentioned by DepEd Secretary Briones in an interview with Rappler on July 8, 2020.

Flexible teaching-learning modality (platform)

In response to the new normal, the second component of the Learning Continuity Plan involves implementing home-based learning (Nardo, 2020). This necessitates a transformation in the delivery of education to incorporate digital learning environments. However, many educational institutions lack the necessary resources, leading to the adoption of a blended approach (Lawless, 2019), which combines synchronous and

asynchronous teaching and learning methods and/or modular learning. The Commission on Higher Education (CHED) states that this approach ensures the continuation of inclusive and accessible education during national emergencies when traditional teaching methods are not feasible (Magsambol, 2020). The shift to online or offline classes at home poses challenges for students who are accustomed to face-to-face instruction. To facilitate this transition, students require proper orientation and familiarization with the new system (Magsambol, 2020). Moreover, parents or guardians are encouraged to act as "para-teachers" to assist their children in adjusting to the new learning modality and comprehending the lessons at their own pace (Nardo, 2020).

Blended learning

Independent learning, rooted in constructivism, empowers students to actively construct their knowledge. This method utilizes learning materials like modules and textbooks, benefiting students unable to attend face-to-face classes (Finol, 2020; Elliott, 2000). Blended learning, combining online and traditional strategies, grants students greater autonomy and trust (Gardiner, 2020). It enables teachers to deliver content to students regardless of internet access, while administrators can facilitate communication through email accounts. A well-designed syllabus and effective communication are crucial for successful implementation (Gardiner, 2020). This approach has thrived during the COVID-19 pandemic, becoming the "new normal" in education.

Technological, Pedagogical, and Content Knowledge (TPACK) Model

The integration of digital and networked technologies has the potential to significantly transform the blended teaching-learning approach. However, the limited expertise of teachers in this domain has resulted in the use of technology primarily for auxiliary purposes and as extension tools to enhance efficiency (McCormick and Scrimshaw, 2021). Shulman (2001) acknowledged the need for appropriate and adaptable teaching-learning techniques to effectively teach a subject, and proposed the concept of pedagogical content knowledge (PCK) as the fusion of content and pedagogy. Building upon this notion, Mishra and Koehler (2011) introduced the technological, pedagogical, and content knowledge (TPACK) framework, which encompasses content knowledge, pedagogical knowledge, and technology knowledge. Research has demonstrated the effectiveness of this framework across various teaching environments, including online and blended instruction, as well as face-to-face learning (McCormick and Scrimshaw, 2021).

Degree of Seriousness of Challenges Met by the Students In the Conduct of Blended Teaching and Learning Modalities

Blended teaching-learning has gained popularity during the pandemic due to the high demand for online learning. The use of printed modules and online tools provides opportunities for social interaction among learners. Collaboration in basic education institutions, especially in private schools, has become more accessible through blended teaching-learning. However, Singh (2020) notes that learners may find this modality challenging and struggle to effectively utilize collaborative tools. While various challenges have been identified in the literature, there is significant diversity among countries due to differences in e-learning infrastructure support and learners' backgrounds (Liu et al., 2010; Roberts et al., 2007; Capdeferro et al., 2012; Zorko, 2009; Black, 2005; Hassanien, 2007).

Moreover, social interaction experienced in an online learning and modular learning environment lacks the aspect of face-to-face interaction experienced in a classroom environment and there do exist notable differences like communication limitations due to lack of interaction support tools in real time, and absence of challenge and explain cycles of interaction that characterize face-to-face tutorials (Curtis & Lawson, 2001).

This gives online learning and modular learning a major disadvantage even though its demand continues to rise. Consequently, online learning and modular learning becomes more challenging than face to face and poses negative interdependence among students (Kim et al., 2005) prompting the need to carry out more empirical research to identify the key challenges and provide mechanisms to address them in order to realize the same benefits as in face to face learning.

Zorko (2009) examined factors hindering interaction in online learning and suggested ways to enhance collaboration. Commitment imbalance, lack of common learning goals, and inadequate social and group skills can frustrate online learners' collaborative efforts (Capdeferro and Romero, 2012). Roberts and McInnerney (2007) identified common issues in online and modular learning: student resistance to group work, group selection, lack of necessary group-work skills, free-riding, potential inequalities among students, group member withdrawal, and individual assessment within groups. While challenges in online learning are serious, their severity can vary due to infrastructure availability, socio-economic backgrounds, and technological issues (Nyerere et al., 2012; Palloff and Pratt, 2005). In the case of modular learning, Bernardo (2020) identified challenges faced by both learners and teachers. Distribution of modules in remote areas often experiences delays, leading to delayed feedback and misunderstandings among learners. In economically disadvantaged households, torn, missing, and water-damaged modules are commonly reported (ABS-CBN news, 2020). These distressing scenarios represent key challenges encountered in modular learning.

Methodology

A descriptive-evaluative research design employing a quantitative approach was used to examine challenges faced by senior high school students in blended teaching-learning. Stratified random sampling was utilized, selecting four private schools in Baguio City. A total of 84 respondents, evenly distributed between Grade 11 and 12 students, participated in the study. Among the participants, there were 83 males and 85 females, all in their senior high school years. This period corresponds to their familiarity with the blended teaching-learning modality, which combines online and offline materials. The survey questionnaire used in this research was adapted from Mishra and Koehler's (2011) work.

Results and Discussions

Table 1 reveals that students face moderately challenging problems in blended teaching-learning, with an average mean of 4.75. These challenges require competence in skills, resources, or knowledge. While the problems are not highly detrimental to the learning experience, they still pose obstacles during the implementation of flexible

Table 1. Degree of Seriousness of Challenges Encountered by Students in the Conduct of Blended Teaching-Learning Modality

Different Problems Encountered During the Conduct of Blended Teaching-Learning Modality	Mean	DE	T-VAL	PROB.
Lack of feedback from the teacher	4.78	MC	-1.7223 ^{ns}	0.0869
Lack of time to participate	4.82	MC	-1.5018 ^{ns}	0.1350
Low or no participation/ interactions from other students	4.91	MC	-0.4335 ^{ns}	0.6652
Lack of feedback from peers	4.68	MC	-2.7535 ^{**}	0.0065

Topics in the learning packets (modules) lacks explanation/ examples to further understand	5.05	MC	0.4183 ^{ns}	0.6763
Exercises in the learning packets (modules) are too many that consumes so much of my time	4.99	MC	-0.0980 ^{ns}	0.9220
I'd rather search the answers of my learning packet (module) questions in the internet rather answering it on my own	4.23	N	-6.4749 ^{**}	0.0000
Off topic posts in the discussions	4.33	N	-5.7270 ^{**}	0.0000
Group tasks are not shared equally to members	4.70	MC	-2.3265 [*]	0.0212
absence of group mentor	4.73	MC	-1.8744 ^{ns}	0.0626
Single student dominating in online activities	4.95	MC	-0.7576 ^{ns}	0.4497
Difference in skill/ knowledge level among other students	5.23	MC	1.8456 ^{ns}	0.0667
Experiencing slow internet connection or limited network bandwidth	5.02	MC	0.1288 ^{ns}	0.8976
Learning resources cannot be open in other devices (iOs/ android specifications)	4.30	MC	-4.4882 ^{**}	0.0000
Learning resources is limited to the owner (not shareable) is not compatible with other networks/ devices	4.62	MC	-2.5350 ^{**}	0.0122
Learning packets (modules) are delivered late/ submitted late	4.55	MC	-3.1583 ^{**}	0.0019
Instructions in the learning packets (modules) are vague and/or difficult to understand	4.89	MC	-0.7946 ^{ns}	0.4280
OVERALL WEIGHTED MEAN (OWM)	4.75	MC	-2.7930 ^{**}	0.0058

Legend: **ns**- not significant *****-significant at 5% ******- highly significant at 1%

Statistical Limit:

Numerical Rating (NR)	Descriptive Rating (DR)	
6.50-7.00	Extremely Challenging	EC
5.50-6.49	Very Challenging	VC
4.50-5.49	Moderately Challenging	MC
3.50-4.49	Neutral	N
2.50-3.49	Slightly Challenging	SC
1.50-2.49	Least Challenging	LC
0.00- 1.49	Not Challenging	NC

teaching-learning modalities amidst the COVID-19 pandemic. Despite the significant development of blended teaching-learning in delivering instruction and supporting learning opportunities, students encounter difficulties in its implementation. As gleaned from the table, the most challenging problem that the students encounter during the conduct of blended teaching-learning is on difference in skill or knowledge level among other students' with the highest mean of 5.23. Moreover, this is also associated in one of the challenges encountered with mean of 4.70 significant at 1% level of significance that group tasks are not shared equally to members.

Students' diverse skills and varying levels of technological knowledge hinder their ability to fully benefit from technology's advantages. Unequal task distribution among students is evident, as highlighted by a study conducted by Day et al. (2021). Collaborating on team projects and fostering a sense of community becomes challenging due to differing technological literacy levels, particularly when using multiple learning platforms. Consequently, team members struggle to share assigned responsibilities, emphasizing the need for

face-to-face interactions in blended learning environments. Technical difficulties further exacerbate these disparities, necessitating face-to-face instruction to alleviate the problems encountered (Dhawan, 2020). Consequently, technologically capable students end up shouldering the teacher's workload, leaving others idle. However, this situation can be viewed as an opportunity for students with diverse skills and knowledge to focus on specific subjects while encouraging different learners to explore alternative avenues for mastering the subject content (Avila and Genio, 2020).

One moderately challenging problem in blended teaching-learning is the lack of explanation/examples in the learning packets/modules, with a mean of 5.05. This indicates that students require additional support from teachers to understand the content. Learning materials often consist of printed texts and supplemental videos or discussions. However, these modalities are insufficient for students to grasp the content effectively. Bernardo's study (2020) highlights that students struggle with answering their learning packets, especially in Mathematics, when examples and explanations are lacking. Insufficient examples hinder their ability to solve problems, compounded by the moderate difficulty of exercises in the modules (mean rating of 4.99). This necessitates more time for computations and problem analysis. Adequate time is crucial for students to comprehend and solve the given problems. Consequently, students often submit their learning packets late (mean of 4.55, T-value of -3.1583 at a 5% level of significance). Overall, students face moderate challenges in completing learning packets due to the need for extended analysis, comprehension, and a high volume of activities.

The study of Avila and Genio (2020) underscores these difficulties met by the learners during the conduct of flexible teaching-learning that most learners do not complete their learning packets because they are overwhelmed with the number of tasks and the time given to complete these tasks. As a result, students turn in their tasks incomplete and unaccomplished or late. Likewise, Capdeferro and Romero (2012) linked these difficulties to academic stress, stating that learning packets (modules) that lack explanation or examples to understand, and that have too many to complete, lead to late submission or no submission at all, because overloading students causes not only academic stress, but also takes a toll on students' mental and physical health, which, unsurprisingly, hinders learning and is taken as difficulties in the conduct of blended teaching-learning modality.

During blended teaching-learning, students face challenges such as one student dominating online activities and encountering slow internet connections or limited network bandwidth, which are moderately challenging. These difficulties stem from the availability of technological resources. Many students rely on mobile data and prepaid internet services, leading to slow connections. Geographical location and limited bandwidth further restrict active participation in online classes, favoring students with faster and unlimited internet access. Toquero's study (2020) highlights that lower bandwidth and slow internet connectivity are perceived as disadvantages, as networked collaboration and problem-solving effectiveness depend on information transfer capacity. Only a few students with reliable connectivity and bandwidth take the lead in online classes.

Conversely, students encounter difficulties when there is no participation or low interaction from other students as well as lack of feedback from peers with means of 4.91 and 4.68 (with T-value of -0.4335 and -2.7535 respectively). This can be attributed to short attention span of learners during the conduct of blended teaching-learning modality. This difficulty may not be technical but a problem that remains universal. It takes self-discipline to be attentive and engaged in a regular classroom setting. Likewise, it takes a lot of willpower to stay up and engaged during the conduct of blended teaching-learning modality. Short attention spans have gone even shorter. True enough, Hernando-Malipot (2020) states that since every student is studying from the comfort of their homes, it cannot help but give in to that comfort. Somehow dozing off became easier and multitasking more frequently leading to no feedback from peers and low participation or interaction from other students. In fact, sitting in silence during the conduct of blended

teaching-learning modality might make background noises stand out much more. Interruptions might come from the television, family members, dogs roaming around the home, or siblings listening to loud music which all leads to lack of interaction and lack of feedback due to students tend to get distracted from all of these distractions (Kamalludeen, 2020).

Technological challenges in blended teaching-learning are evident from the table. Learning resources may not open on Android or iPhone devices due to compatibility issues (mean of 4.30). Additionally, some resources are limited to the owner and not shareable across networks or devices (mean of 4.62, T-values of -4.4882 and -2.5350). To fully benefit from blended teaching-learning, students need well-maintained learning devices. While their gadgets may meet academic requirements, outdated systems hinder effective use of instructional resources (Bower, Dalgarno, and Kennedy, 2013). However, not everyone can afford regular device upgrades, posing a barrier to learning opportunities in the blended teaching-learning context (Magsambol, 2020).

Further, the result shows that the least challenging problem with the lowest means of 4.23 is 'opting to search answers of their learning packets questions from the internet rather answering it independently'. This implies that since blended teaching-learning modality is self-directed in which students utilize a combination of online and face-to-face learning, they steer their own individualized inquiry, attain academic learning goals, physically and digitally engage with mentors. Also, through blended teaching-learning modality, students are forced to look for information with the use of technology independently rather relying on books and other traditional sources of information.

This is true in the study conducted by Donitsa-Schmidt and Ramot (2020) that instead of attending lectures, learners can immediately access information using technology as learning tools. They may get information that is broader and more in-depth than what teachers can teach. Similarly, flexible learning modality encourages learners to be more interested and pay greater attention to the contents, which in turn increases their responsibility for their own learning (Gillett-Swan, 2020).

The hypothesis that there is no significant difference in the severity of challenges faced by students in blended teaching-learning is accepted. This suggests that all learners are experiencing problems during this new learning modality amidst the COVID-19 pandemic. As students transition from traditional face-to-face classrooms to flexible teaching-learning, it is natural for them to encounter moderate challenges. Their primary challenge is linked to their learning environment. Barron and Salmon (2021) emphasize that students, regardless of grade level and gender, encounter difficulties in learning, and it is crucial for teachers to address these challenges appropriately and provide suitable solutions.

Findings, Conclusions and Recommendations

Findings

1. The challenges faced by students in the blended teaching-learning modality were generally moderately challenging, suggesting the need for competent skills, resources, and knowledge. While the flexibility of blended learning has been beneficial for exploring learning opportunities during the COVID-19 pandemic, the most significant challenge reported by students was the difference in skill or knowledge levels among their peers.
2. One of the significant challenges encountered in the blended learning context is the unequal sharing of group tasks among students, which is associated with diverse technological skills and knowledge levels. Students which comprise to 50.3% of the total respondents reported difficulties in

collaborating on team projects and incompatible online resources particularly when using multiple learning platforms and technologies. However, despite the challenges, having a diverse range of skills and knowledge within student groups can also be seen as an opportunity for individualized learning experiences, allowing students to focus on specific subjects while exploring other avenues for mastery of the subject content.

3. In general, 45.5% of the students reported that the topics in their learning packets or modules lack sufficient explanation and examples, making it difficult for them to understand the content independently and students find it challenging to complete the exercises in the learning packets, particularly in subjects like Mathematics and Applied Economics, as they require more time for computation and understanding. These challenges lead to late submission of learning packets, indicating the need for additional support and time for students to comprehend and complete their assignments effectively.
4. Students face moderately challenging problems related to technology in blended learning. These challenges include one student dominating online activities and experiencing slow internet connection or limited bandwidth. This indicates that technological limitations hinder active participation, allowing a small group of students with better connectivity to lead in virtual learning environments.
5. No significant difference was found in the severity of challenges faced by students in blended teaching-learning. All learners experience difficulties in this new modality during the pandemic. As their first experience with flexible learning, moderate problems are expected, with the main challenge being the learning environment. Teachers must address these challenges and provide suitable solutions.

Conclusions

Based on the findings and summary, the following conclusions were drawn:

1. The challenges encountered in blended teaching-learning are moderately challenging, highlighting the need for competent skills, resources, and knowledge, with the difference in skill or knowledge levels among students being the most significant challenge.
2. Unequal sharing of group tasks and difficulties in collaboration due to diverse technological skills and knowledge levels were identified as challenges in blended learning, but they also present opportunities for individualized learning experiences.
3. Students reported difficulties in understanding the topics in their learning packets due to insufficient explanation and examples, particularly in subjects like Mathematics and Applied Economics, which led to late submission of assignments.
4. The presence of a dominant student in online activities and the experience of slow internet connection or limited bandwidth were moderately challenging, indicating technological limitations that hinder active participation for some students.
5. There is no significant difference in the severity of challenges faced by students, indicating that all learners experience difficulties in blended teaching-learning. The learning environment is identified as a significant challenge, emphasizing the importance of teacher support and appropriate solutions.

Recommendation

Based from the findings and conclusions, the following recommendations are respectfully presented:

1. Provide professional development and training opportunities for teachers to enhance their skills and competencies in blended teaching-learning, focusing on addressing the differences in skill or knowledge levels among students.

2. Implement strategies to promote equal sharing of group tasks and effective collaboration among students with diverse technological skills and knowledge levels, such as creating structured group roles and providing clear guidelines for teamwork.
3. Enhance the learning materials in the form of learning packets or modules by ensuring they contain sufficient explanation and examples to facilitate better understanding and comprehension of the content, particularly in subjects that require more computation and analysis.
4. Explore solutions to improve internet connectivity and network bandwidth for students experiencing slow internet connections or limited access, such as providing subsidized or reliable internet services, and considering alternative offline learning options for students with persistent connectivity issues.
5. Develop a supportive learning environment that addresses the challenges faced by students in blended teaching-learning, including providing timely and personalized support, fostering a sense of community, and implementing strategies to manage and address the difficulties encountered by students in the learning process.

References

1. ADNAN, M., AND K. ANWAR. 2020. *Online learning the COVID-19 Pandemic: Students™ perspectives. Journal of Pedagogical Research*
2. ALLEN, M. 2017. *The Sage Encyclopedia of Communication Research Methods (Vols. 1-4). Thousand Oaks, CA: SAGE Publications*
3. ANCHETA, S. 2020. *Online Learning: A Panacea in the Time of COVID-19 Crisis. J. Educational Technology System*
4. APPLETON, E., J. A., KNAPP, and N. KRENTLER. 2020. *COVID-19 and E-Learning: The challenges of students in Tertiary Institutions Social Education Research, ojs. wiser pubcom*
5. BANDURA, A. 2012. *On The Functional Properties of Perceived Self-Efficacy Revisited. Journal of Management, Oxford Publishing*
6. BAO, W. 2020. *COVID-19 and Online Teaching In Higher Education: A Case Study of Peking University. Human Behavior and Emerging Technology.*
7. BENDER, L. 2020. *Key Messages and Actions for Covid-19 Prevention and Control in School, UNICEF and World Health Organization, March 2020.*
8. BERGEN, E., T. ZUIJEN, D. BISHOP, and P. F. JONG. 2016. *Why Are Home Literacy Environment and Children's Reading Skills Associated? What Parental Skills Reveal. Reading Research Quarterly.*
9. BERNARDO, J. 2020. *Remote Knowledge Acquisition and Assessment during the COVID-19 Pandemic. Int. J. Eng. Pedagog. 2020*
10. BOOKER, Q.E., and C.E. REBMAN. 2005. *E-student Retention: Factors Affecting Customer Loyalty for Online Program Success. Issues in Information Systems,*
11. BOLLIGER, B. C. 2021. *Literary technologies: What stance should we Take from Teaching away from School? Journal of Literacy Research*
12. BOWER, M., M.J. DALGARNO, and G.E. KENNEDY. 2013. *Blended Synchronous Learning: Patterns And Principles For Simultaneously Engaging Co-Located And Distributed Learners. 30th ascilite Conference 2013 Proceedings*
13. BRIDGE, W. 2020. *Online and Remote Learning in Higher Education Institutes: A Necessity in light of COVID-19 Pandemic. High. Educ.*
14. CHED Memorandum Order No. 4 . 2020. *Guidelines in the Implementation of Flexible Learning. ched.gov.ph*

15. COPELAND, W. E., E. MCGINNIS, Y. BAI, Z. ADAMS, H. NARDONE, V. DEVADANAM, and J. J. HUDZIAK. 2021. *Impact of COVID-19 Pandemic on College Student Mental Health and Wellness*. *Journal of the American Academy of Child & Adolescent Psychiatry*,
16. DepEd Order No. 007 s. 2020. *Private School Requirements for the Opening of Classes for SY 2020- 2021*, Available online at www.deped.gov.ph,
17. DepEd Order No. 14 . 2020. *School Plans for Compliance with Minimum Health Standards*, Available online at www.deped.gov.ph
18. DepEd CAR RM No. 159. 2019. *Guidelines on the Implementation of Synchronized Subject Offerings in Senior High School in DepEd-CAR* Available online at www.deped.gov.ph
19. DOH AO No. 0015 . 2020. *DOH Guidelines on the Risk-Based Public Health Standards for COVID-19 Mitigation*, Available online at www.doh.gov.ph,
20. EDGE, W., and J. P. LOEGERING. 2000. *Distance Education: Expanding Learning Opportunities*. *Wildlife Soc. Bull experts.umn.edu*
21. ELLIOTT, S.N. D. SWELLER, G. AYRES, and R. VOLPE. 2000. *Educational Psychology: Effective teaching and learning*, 3rd edition Boston, MA: -Graw-Hill College
22. EVERITT, J. 2020. *How to Get Stakeholders on Your Side With Campaign Transparency*, Available online at www.wrike.com
23. FRANCESCUCCI, A. and L. ROHANI. 2018. *Exclusively Synchronous Online (VIRI) Learning: The Impact on Student Performance and Engagement Outcomes*. *Journal of Marketing Education* Volume: 41 issue: 1
24. FREDERICKSEN, J. R., N. E. WALLEN, and H. H. HYUN. 2000. *How to Design and Evaluate Research in Education*. New York, N.Y: McGraw-Hill Higher Education.
25. GARDINER, E. 2020. *Remote Teaching: When and How to Use Synchronous vs. Asynchronous Methods*. tophat.com.
26. GILLET-SWAN, J. 2020. *The Challenges of Online Learning: Supporting and Engaging the Isolated Learner*. *Journal of Learning Design*,
27. HALTER, J. R. J. KLEINER and M. W. HESS. 2009. *Business Faculty and Undergraduate Students' Perceptions for Online Learning: a comparative study*. *Journal of Information Systems Education*.
28. HERNANDO-MALIPOT M. 2020. *DepEd Private Schools allowed to open classes ahead of October 5*, Published in the *Manila Bulletin*, March 16, 2021.
29. HUANG, Q. 2019. *Comparing Teachers Roles of F2F Learning and Online Learning in a Blended English Course*. *Computer Assisted Language Learning*,
30. IFRC. 2020 *South Asia Economic Report October, 2020*; World Bank: Washington, DC, USA, 2020.
31. JOAQUIN, J., H. BIANA and M.A. DACELA. 2020. *Education Leadership and the Covid-19 crisis*. *Frontiers in Education*,
32. KARA, A., E. DESHIELDS, and L. KAYNAK. 2014. *Student Satisfaction with an Online and a face-to-face Comparative Study among Allied Health Courses in Pakistan*. New Delhi Publishing Inc.
33. KASREKAR, K. and M. ADNAN. 2020. *Online learning amid the COVID-19 Pandemic: Students perspectives*. *J. Pedagog. Res.*
34. LEINS M. 2020. *Learning networks: A field guide to teaching and learning online*. Cambridge, MA/London, England: The MIT Press.
35. LEPP, A., 2020. *Off Task During Online Learning: Kent State Study Finds Student Multitasking Increases In Online Courses Compared To Face-To-Face Courses*. www.kent.edu
36. LORENZO B. and J. ITTELSON 2020. *Learning and Teaching Online During Covid-19: Experiences of Student Teachers in an Early Childhood Education Practicum*. *Int. J. Early Child. 2020*

37. LIU, S., M. JOY, and N. GRIFFITHS. 2010. Students' perceptions of the factors leading to unsuccessful group collaboration. In *Advanced Learning Technologies (ICALT), 2010 IEEE 10th International Conference on*. Sousse, Tunisia.
38. MAGSAMBOL, B. 2020. No student left behind? During pandemic, education 'only for those who can afford'. *Rappler*. rappler.com
39. MAGSAMBOL, B. 2020. Over 200,000 students transfer from private to public schools amid pandemic. *Rappler*. rappler.com
40. MALIK J. R. MCCRORY, R. PUTNAM, and A. JANSEN. 2010. Interaction In Online Courses For Teacher Education: Subject Matter And Pedagogy. *Journal of Technology and Teacher Education*,
41. MEANS, B., Y. TOYAMA, R. MURPHY, M. BAKIA, and K. JONES. 2010. Evaluation of Evidence-based Practices in Online Learning: Meta-Analysis and Review of Online Learning Studies. www2.ed.gov
42. MISHRA, P., and M. J. KOEHLER. 2011. The seven transdisciplinary habits of mind: Extending the TPACK framework towards 21st century learning. *Educational Technology*
43. MULLER, C., M. STAHL, M. ALDER, and M. MULLER. 2018. Learning Effectiveness and students' perceptions in a Flexible Learning Course. *European Journal of Open, Distance and E-Learning*,
44. NARDO, P. 2020. What do you mean by collaborative learning?. *Collaborative-learning: Cognitive and Computational Approaches*. Lorimar Publishing House Inc. Philippines
45. NYERERE, J. A., F. Q. GRAVENIR, and G. S. MSE. 2012. Delivery of open, distance, and e-learning in Kenya. *The International Review of Research in Open and Distance Learning*
46. OECD. 2020. Creating effective collaborative learning groups in an online environment. *The International Review of Research in Open and Distance Learning*.
47. PACHECO, L. 2020. Designing communities of learners for asynchronous distance education. *Educational Technology Research and Development*.
48. PARK, Y.J. and C.J. BONK. 2007. Synchronous Learning Experiences: Distance and Residential Learners' Perspectives in a Blended Graduate Course. *Journal of Interactive Online Learning*. Volume 6, Number 3.
- PAPPAS, M. 2015. Effect of E-learning on Academic Performance of Undergraduate Students. *Drug Invent. Today* 2015.
49. PERVEEN, A. 2020. Synchronous and Asynchronous E-Language Learning: A Case Study of Virtual University of Pakistan. *Open Praxis*, Vol. 8 issue 1, January–March 2020
50. QUINONES, M. 2020. Students' Perception towards E-Learning during COVID-19 Pandemic in Philippines: An Empirical Study. *Sustainability* 2020.
51. RICH, M. 2020. 6 ways parents can support their kids through the coronavirus disease (COVID-19) outbreak. www.unicef.org.
52. RUSSELL, T.L. 2001. *The No Significant Difference Phenomenon*, 5th ed. Montgomery, AL: International Distance Education Certification Center.
53. SEAMEO Congress. 2021. *Transforming Southeast Asian Education, Science and Culture in the Digital Age*. congress2021.seameo.org
54. SINGH, V., and A. THURMAN. 2019. How Many Ways Can We Define Online Learning? A systematic literature Review of Definitionsof Online Learning. *American Journal Of Distance Education*,
55. SINTEMA, E. J. 2020. Effect of COVID-19 on the Performance of Grade 12 Students: Implications for STEM Education. *Eurasia Journal of Mathematics, Science and Technology Education*,
56. SMART, C.E., and E. CAPPEL. 2007. *Online Instruction: Student Satisfaction, Instruction and Pet Peeves*. *The Quarterly Review of Distance Education*
57. SHAH, J. A. 2012. Constructivism and connectivism in education technology: Active, situated, authentic, experiential, and anchored learning. *Technology*,

58. SHEHZADI, A. E.E.HASANEIN, and A.M. ABU ELNASR. 2020. *Responses to COVID-19 in Higher Education: Social Media Usage for Sustaining Formal Academic Communication in Developing Countries. Sustainability*
59. SHULMAN, R. 2001. *Technological determinants of Primary School Retention: Evidence from southeast Delhi, India. Eur. J. Soc. Sci. 2001.*
60. SINGH-VERGIERE, I. 2020. *Safety Prevention Protocols Against Covid-19, Press Release, Department of Health*
61. SMALLWOOD, G. 2021. *Connectivism: A learning theory for the digital age. International Journal of Instructional Technology and Distance Learning,*
62. SNYDER, H. 2019. *Literature Review as Research Methodology: An Overview and Guidelines, Journal of Business Research, Vol. 104,*
63. SWEENEY, J.C., and D. INGRAM. 2001. *A Comparison of Traditional and Web-Based Tutorial in Marketing Education: An Exploratory Study. Journal of Marketing Education.*
64. THE BEST SCHOOL. 2018. *Synchronous Learning Vs. Asynchronous Learning in Online Education, Available online at www.thebestschools.org,*
65. UNESCO. *GLOBAL EDUCATION MONITORING REPORT (GEM): How Many Students Are at Risk of Not Returning to School? Advocacy Paper–UnescoBiblioTeca unesdoc.unesco.org*
66. U.S. Department of Education's Office of Innovation and Improvement. 2018. *Measuring Students' Perceptions of Online Learning in Higher Education. Int. J. Sci. Technol. Res. 2020.*
67. WANG, B. 2020. *Learning about problem based learning: Student teachers integrating technology, pedagogy and content knowledge. Australasian Journal of Educational Technology*
68. WHITAKER, J. A. 2003. *Group size as a factor in success of academic discussion groups. The Journal of Educational Sociology.*
69. WORLD BANK. 2020. *Learning for all: Investing in people's knowledge and skills to promote development. World Bank Group education strategy 2020. Washington, D.C.: World Bank.*
70. ZIMMERMAN, N. M., and J. G. SCHUNK. 2011. *Flexibly adaptive professional development in support of teaching science with geospatial technology. Journal of Science Teacher Education*