Barriers and Merits of Hybrid Teaching in Vietnam Amid Covid-19

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Abstract - Schools reopening after a nine-month hard lockdown prompted school leaders to implement hybrid teaching in secondary schools in Vietnam. Since hybrid teaching is a new learning model, the study attempts to explore its implementation, barriers to improve its overall quality, and its merits. It employs mixed-methods approach using survey questionnaire and interview. Respondents are teachers, school leaders and program managers. SPSS and thematic coding are used for data analysis. The findings disclose that hybrid teaching has high implementation. The top three barriers are teacher's readiness, technology, Wi-Fi connection and IT support, and administrative support. Its merits include accessibility, flexibility, teaching and learning with technology, effective use of resources, personalization, better learning, and deeper resource usage. The study concludes that although hybrid teaching has high implementation, its barriers, specifically teacher's readiness, demand utmost attention. Hence, research into the link between teacher knowledge and confidence in teaching learners in hybrid classrooms is recommended.

Keywords - Barriers, Covid-19 pandemic, hybrid teaching, merits.

I. INTRODUCTION

The COVID-19 outbreak has significantly impacted more than one billion students, or more than 90 percent of the world's student population.[1] With this unprecedented occurrence, governments, schools, teachers, and students have discovered ways to maintain a positive attitude toward education and continue learning. Online learning is the most widely used alternative to on-campus study during this period of uncertainty. Since the first case of the novel coronavirus was discovered in late January 2020, the Vietnamese government temporarily closed educational institutions. The Ministry of Education and Training (MOET) quickly notified students of the impending closure, and fortunately, students were on Lunar New Year break. Schools and universities implemented online learning as a response strategy.[2] As evidenced by their government policies and guidelines, Vietnam has historically been slow to adopt any form of online learning. MOET announced a strategic plan in 2008 to accelerate the integration of information technology into the education sector between 2008 and 2012.[3] The Vietnamese government approved a project in 2016 to increase the use of information technology in support of teaching in order to help improve the quality of education and training between 2016 and 2020.[4] In the spring of 2020, due to the COVID-19 pandemic, the abrupt transition from in-person to online learning occurred for the first time in Vietnamese history.[5] The COVID-19 outbreak played a critical role in mainstreaming online education in Vietnam.

Thus, in Vietnam, the transition to online learning in most provinces did not occur until mid-March 2020, while in some provinces it occurred relatively quickly (within a few weeks). MOET established online access to remote learning (home-based), which was later supplemented by other modes of instruction such as television, radio, and printed materials. MOET reduced or eliminated many internet costs and partnered with the Ministry of Information and Communications to promote skill development in ICT in general, and particularly in the use of technology in education via the internet and television. Television was added later after it was determined that many students were unable to access online programs. Distance learning programs tended to focus on exam classes (Grades 9 and 12), with only a few programs available for primary and none for preprimary. Local television channels were utilized, but the radio was largely ignored.[5] School closures in Vietnam from February 2020 to May 2021 using remote teaching were interrupted by the lifting of the Covid-19 pandemic lockdown and the reopening of schools. However, when the pandemic virus evolved and significantly affected Vietnam, schools were closed for nine months, from June 2021 to January 2022.

Prime Minister Pham Minh Chinh announced on February 3, 2022, that schools at all levels should resume in-person classes any time between February 7 and 14, 2022.[6] Schools in Vietnam have been allowed to reopen. Students have resumed their normal living and learning routines. After nine months of COVID-19-induced online learning, more than one million kindergarten, primary school, and sixth-grade students in the southern economic hub returned to classrooms on February 14 morning. With the reopening of schools, a phased reopening of schools based on location and grade level has been considered. High schools and secondary schools were the first to reopen. It began with Grades 9 and 12, with lower and upper secondary students preparing for end-of-year exams receiving priority. Primary schools and kindergartens followed. MOET faced the challenge of continuing school openings while keeping staff and students safe from COVID-19. To address this challenge, the school would apply social

distancing if a school was not overcrowded; in another school, an extra shift would need to be organized to reduce the number of students in each class. The rate at which a school opens would also be determined by the virus's transmission rate [2] and if virus cases were discovered within the school, it would be closed again (e.g., in Da Nang, high schools were closed for this reason).

Indeed, the virus had again spread rapidly in lower and upper secondary schools. This highlights the overlapping layers of anxiety that schools and families were attempting to manage. This situation was particularly difficult for school administrators who were responsible for the health and safety of the children at their schools. Additionally, it affected parents concerned about their children contracting the virus upon returning to school. The Ministry of Health (MOH) mandated that families infected with the virus must adhere to a seven-to-fourteen-day home quarantine, depending on the severity of the infection, in order to prevent the virus from spreading. The Covid patients were classified as FO, F1, F2, etc. FO people were confirmed infected; F1 people were suspected infected or contacted FO, and F2 people contacted F1 and similarly the next generations, F3, F4, etc.[7] FOs, F1s and the rest were quarantined at their homes. As a result, students were concerned about how they would 'fit' into a class where half of the students had studied in traditional classrooms and the other half had not. Concerns about the safety of conventional classes and the potential for students to lose learning during the Covid19 epidemic had prompted some international secondary schools to implement hybrid teaching to accommodate all students in person (those who could attend) and online (those who could not attend) simultaneously during class recitations.

Hybrid teaching model provides flexibility in learning, commitment from parents and personalization for student learning ability to achieve the best academic results possible. Unlike blended learning, where instructors and facilitators combine in-person instruction with online learning activities and learners complete some components online and do others in person, hybrid teaching is an educational approach where some individuals participate in person, and some participate online. Instructors and facilitators teach remote and in-person learners at the same time using technology like video conferencing.[8] Hybrid teaching model gives the flexibility to craft the course to reduce the risk of exposing the teachers or the students to the virus and gives students more ownership over their learning.[9] It is a holistic approach that requires the active participation of school leaders, managers, and teachers. Hybrid teaching is still a very new approach to learning and teaching in basic education in Vietnam. Teachers are challenged to address the needs of both in-person and remote learners simultaneously using technology. Since hybrid teaching requires extensive planning, research, and a significant investment in various areas, including technology, flexible curriculum, appropriate and effective learning materials, and assessment systems as well as teacher knowledge and skills for implementing hybrid teaching, school leaders and teachers who are less ready are challenged to find ways to offer good education to students in person and

remote simultaneously using this model.[10] Hence, the study explores the hybrid teaching implementation, key barriers to its implementation and its merits. Its purpose is to enhance the quality of hybrid teaching for increased student learning and outcomes.

II. METHODOLOGY

This study employed a mixed-methods approach using quantitative and qualitative research methods in a single study to understand a research problem. A survey questionnaire is used to find out the level of hybrid teaching implementation for each of its eight components namely, teaching readiness, student engagement, professional development, access to technology, collaboration, sharing files and materials, communication, and institutional support. It is researcher-made. Three experts of the discipline have validated the content of the questionnaire. Then, it was test piloted to 18 teachers who were not included in the final survey. The pilot test data were analyzed for reliability using Minitab software. It has high reliability having Cronbach's alpha 0.9461. Interview is used to explore the barriers of hybrid teaching implementation and their approaches to deal with them and its merits.

It was conducted in two private secondary schools in Vietnam serving middle school through 12th grade students. The participants were school leaders, program managers and teachers in secondary schools in Vietnam. They were American, British, Filipino, Irish, and Vietnamese nationals. It used purposive sampling. Participants were chosen based on their job title and hybrid teaching experience. They were selected to ensure that the purpose of the study was attained. It had 40 participants consisting of 10 school leaders and program managers and 30 school-based teachers. The school leaders included two principals and two vice principals. The program managers included six people, which covered three managers from each school that participated in the study. Each school leader nominated 15 full-time teachers, totaling 30 full-time teachers from two secondary schools.

The data were collected via an online survey using Google Forms. The survey was limited to 30 items constituting the hybrid teaching components. The interview via online is administered to 10 school leaders and program managers focusing on barriers and merits. Informed Consent was made available. Quantitative data were analyzed using the SPSS software while qualitative data used thematic analysis.

III. RESULTS

The components of hybrid teaching implementation

TABLE 1 Hybrid teaching implementation level based on its components

Components	Mean	SD	Interpretation
Teaching Readiness	3.67	0.78	High Implementation
Student Engagement	3.71	0.86	High Implementation
Professional Development	2.90	0.91	Moderate Implementation
Access to Technology	3.72	0.80	High Implementation
Collaboration	3.65	0.86	High Implementation
Files and Materials	4.02	0.77	High Implementation
Communication	3.92	0.79	High Implementation
Institutional Support	3.47	0.86	High Implementation
Overall Mean	**3.63**	**0.83**	**High Implementation**

Legend: 1.00-1.79 – Very Low Implementation; 1.80-2.59 – Low Implementation; 2.60-3.39 – Moderate Implementation; 3.40-4.19 – High Implementation; 4.20-5.00 – Very High Implementation.

The results indicate that hybrid teaching has high implementation, except professional development. From moderate to high implementation, professional development has moderate implementation (2.90), while institutional support (3.47); collaboration (3.65); teaching readiness (3.67), student engagement (3.71); access to technology (3.72); communication (3.92), and files and materials (4.02) have high implementation. Overall, the components of hybrid teaching have high implementation (3.63).

Table 2 Implementation level of the components of hybrid teaching from moderate to high implementation

TABLE 2.1 Professional Development

Indicator	Mean	SD	Description	Interpretation
1. To what extent were you trained to implement hybrid teaching?	3.37	0.99	Moderate	Moderate Implementation
2. To what extent did you receive professional development training in the hybrid pedagogy?	3.17	0.95	Moderate	Moderate Implementation
3. To what extent did you receive professional development training to assist you with sharing files and learning materials in hybrid classroom?	3.04	0.93	Moderate	Moderate Implementation
4. Using Technology, Supporting students' social-emotional needs and IEPs	2.49	0.91	Low	Low Implementation
5. Using technology, Supporting English Language Learners, Supporting academically advanced students.	2.42	0.79	Low	Low Implementation
Overall Mean	2.90	0.91	Moderate Implementation	

Legend: 1.00-1.79 – Very Low; 1.80-2.59 – Low; 2.60-3.39 – Moderate; 3.40-4.19 – High; 4.20-5.00 – Very High

Table 2.1 discloses indicators of professional development in hybrid teaching. From moderate to high implementation, using technology, supporting English language learners, supporting academically advanced students has low implementation (2.42). Similarly using technology, supporting students' social and emotional needs, and IEPs (Individualized Education Programs) has also low implementation (2.49). Whereas professional development training to assist with sharing files and learning materials in hybrid classrooms; professional training in hybrid pedagogy, and professional training in hybrid teaching implementation have moderate implementation (3.04, 3.17, & 3.37). Overall, professional development has moderate implementation (2.90).

Table 2.2 shows indicators of institutional support for hybrid teaching. From moderate to high implementation, training teachers who are less familiar with hybrid teaching has moderate implementation (3.20). School providing resources and administrative support has high implementation (3.40). School having enough technology infrastructure and equipment for use in hybrid classroom has high implementation (3.53). School leaders helpful in resolving challenges has high implementation (3.73). Overall, the institutional support has high implementation (3.47).

TABLE 2.2 Institutional Support

Indicator	Mean	SD	Description	Interpretation
1. My school has enough technology infrastructure and equipment for me to use in my hybrid classroom.	3.53	0.89	Agree	High Implementation
2. My school trains teachers who are less familiar with hybrid teaching.	3.20	0.92	Somewhat Agree	Moderate Implementation
3. My school provides me resources and administrative support.	3.40	0.89	Agree	High Implementation
4. How helpful has leadership at your school been in resolving challenges so far this year?	3.73	0.74	Agree	High Implementation
Overall Mean	3.47	0.86	High Implementation	

Legend: 1.00-1.79 – Strongly Disagree; 1.80-2.59 – Disagree; 2.60-3.39 – Somewhat Agree; 3.40-4.19 – Agree; 4.20- 5.00 – Strongly Agree.

TABLE 2.3 Collaboration

Indicator	Mean	SD	Description	Interpretation
1. Students connecting from home can hear the discussion among their peers and contribute to any classroom discussions, as appropriate.	3.37	0.85	Somewhat Agree	Moderate Implementation
2. Students learning synchronously from home can ask questions, and contribute remotely to a class discussion (e.g., speak up, raise hand electronically, or post in the chat, etc.).	3.63	0.93	Agree	High Implementation
3. Group Projects, Group Presentation, Knowledge sharing	3.49	0.82	Agree	High Implementation
4. Motivate on-campus and online students to collaborate	4.10	0.84	Agree	High Implementation
Overall Mean	3.65	0.86	High Implementation	

Legend: 1.00-1.79 – Strongly Disagree; 1.80-2.59 – Disagree; 2.60-3.39 – Somewhat Agree; 3.40-4.19 – Agree; 4.20-5.00 – Strongly Agree.

Table 2.3 displays indicators of collaboration in hybrid teaching. From moderate to high implementation, students connecting from home can hear discussion among their peers and contribute to any classroom discussions as appropriate has moderate implementation (3.37). Collaborative activities like group projects, group presentations, and knowledge sharing have high implementation (3.49). Students learning synchronously from home can ask questions and contribute

remotely to a class discussion (e.g., speak up, raise hand electronically, or post in the chat, etc.) has high implementation (3.63). The extent of motivating on-campus and online students to collaborate has high implementation (4.10). Overall, collaboration has high implementation (3.65).

TABLE 2.4 Teaching Readiness

Indicator	Mean	SD	Description	Interpretation
1. A hybrid teaching approach is used to ensure that no one is left out on learning.	4.20	0.71	Extremely confident	Very High Implementation
2. How confident are you that you can provide effective instruction in the hybrid classroom?	3.80	0.76	Quite Confident	High Implementation
3. How confident are you that you can motivate your in-person and remote students to learn in the hybrid classroom?	3.70	0.79	Quite Confident	High Implementation
4. How confident are you that you can help your students who need the most academic support in the hybrid teaching model?	3.70	0.92	Quite Confident	High Implementation
5. How would you rate the ease of implementing a hybrid learning model?	2.93	0.74	Somewhat Easy	Moderate Implementation
Overall Mean	**3.67**	**0.78**	**High Implementation**	

Legend: 1.00-1.79 – Not at all confident/not sure; 1.80-2.59 – Slightly confident/not easy; 2.60-3.39 – Somewhat confident/easy; 3.40-4.19 – Quite confident/very easy; 4.20-5.00 – Extremely confident/easy.

Table 2.4 shows teaching readiness indicators. From moderate to high implementation, the ease of implementing a hybrid learning model is somewhat easy and has moderate implementation (2.93). Whereas having confident to motivate in-person and remote students to learn in the hybrid classroom and helping students who need the most academic support both have high implementation (3.70). Being confident to provide effective instruction in hybrid classrooms has high implementation (3.80). Hybrid teaching approach is used to ensure that no one is left out on learning has very high implementation (4.20). Overall, teaching readiness has high implementation (3.67).

Table 2.5 shows indicators of student engagement in hybrid teaching. From moderate to high implementation, the findings show that only about half of remote students participated regularly in hybrid classes over the last week (3.30). Both offline and online students engaged in hybrid teaching has high implementation (3.53). Also, most in-person students participated regularly in hybrid classes has high implementation (3.80). The course content facilitates collaborative learning among in-person and virtual students has high implementation (3.90), and students who attend in-person are encouraged to discuss ideas and concepts with

students who attend class remotely has high implementation (4.00). Overall, student engagement has high implementation (3.71).

TABLE 2.5 Student Engagement

Indicator	Mean	SD	Description	Interpretation
1. The course content facilitates collaborative learning among in-person and virtual students.	3.90	0.66	Agree	High Implementation
2. Students who attend class in person are encouraged to discuss ideas and concepts with students who attend class remotely.	4.00	0.69	Agree	High Implementation
3. How many of your remote students participated regularly in your hybrid classes over the last week? About half of my students	3.30	1.09	Somewhat agree	Moderate Implementation
4. How many of your in-person students participated regularly in your hybrid classes over the last week? Most students	3.80	1.06	Agree	High Implementation
5. How engaged have offline and online students been in your hybrid classes over the last week? Quite engaged	3.53	0.78	Agree	High Implementation
Overall Mean	**3.71**	**0.86**	**High Implementation**	

Legend: 1.00-1.79 – Strongly Disagree/ Almost no students; 1.80-2.59 – Disagree/ A few students; 2.60-3.39 – Somewhat Agree/– About half of my students; 3.40-4.19 – Agree/– Most students; 4.20-5.00 – Strongly Agree/ Almost all students.

TABLE 2.6 Access to Technology

Indicator	Mean	SD	Description	Interpretation
1. To what degree was access to your hybrid teaching course(s) adequate?	3.67	0.71	Acceptable	Moderate Implementation
2. To what degree was technical support for your hybrid teaching course(s) adequate?	3.77	0.86	Good	High Implementation
3. To what degree was the online course design simple to use and understand?	3.73	0.83	Good	High Implementation
4. To what degree was the navigation structure easy to use and understand?	3.67	0.80	Acceptable	Moderate Implementation
5. Students and parents/guardians can access technical support for hybrid learning.	3.77	0.81	Good	High Implementation
Overall Mean	**3.72**	**0.80**	**High Implementation**	

Legend: 1.00-1.79 – Very poor; 1.80-2.59 – Poor; 2.60-3.39 – Acceptable; 3.40-4.19 – Good; 4.20-5.00 – Very good.

Table 2.6 shows the indicators of access to technology. From moderate to high implementation, the adequate accesses

to hybrid teaching courses and navigation structure for easy to use and understand have moderate implementation (3.67). The design of online course was simple to use and understand has high implementation (3.73). Adequate technical support for hybrid teaching course(s) and parents/guardians can access technical support for hybrid learning, both indicators have high implementation (3.77). Overall, access to technology has high implementation (3.72).

TABLE 2.7 Communication

Indicator	Mean	SD	Description	Interpretation
1.Teachers consistently communicate with their students online and in person through one-on-one, messages, or email.	3.97	0.89	Agree	High Implementation
2. Teachers communicate with their students collectively and individually.	4.03	0.76	Agree	High Implementation
3. Teachers use verbal or creative technological tool to communicate making their students feel connected.	4.13	0.63	Agree	High Implementation
4. Teachers continue to communicate parents, guardians, and students using the existing methods of communication.	3.53	0.86	Agree	High Implementation
Overall Mean	3.92	0.79	High Implementation	

Legend: 1.00-1.79 – Strongly Disagree; 1.80-2.59 – Disagree; 2.60-3.39 – Somewhat Agree; 3.40-4.19 – Agree; 4.20-5.00 – Strongly Agree.

Table 2.7 shows the indicators of communication. The four indicators show high implementation. From low to high mean, teachers continue to communicate parents, guardians, and students using the existing methods of communication has low mean (3.53). Teachers consistently communicate with their online and in-person students through one-on-one, messages or email has 3.97 mean. Teachers communicate with their students collectively and individually has 4.03 mean and teachers use verbal or creative technological tool to communicate making their students feel connected has 4.13 mean. Overall, communication has high implementation (3.92).

Table 2.8 discloses the indicators of files and materials. From high to very high implementation, learning materials carefully designed to accommodate the hybrid teaching and learning model has high implementation (3.73). Course notes, handouts, and PowerPoint are organized using headings to facilitate students' accessibility, and students from different locations can share files, learning materials, content, etc. using different software smoothly, both indicators have high implementation (4.00). Assignments and learning activities can be shared with the student joining the classroom synchronously from home via Google classroom, LMS, or Email has very high implementation (4.33). Overall, files and materials component has high implementation (4.02).

In all, the components of hybrid teaching have high implementation. Moreover, a need to identify some barriers

that might hamper its implementation is critical. This brings us to the qualitative part of the study, the interview.

TABLE 2.8 Files and materials

Indicator	Mean	SD	Description	Interpretation
1. The learning materials are carefully designed to accommodate the hybrid teaching and learning model.	3.73	0.83	Agree	High Implementation
2. The course notes, handouts, and PowerPoints are organized using headings to facilitate student accessibility.	4.00	0.83	Agree	High Implementation
3. Students from different physical locations can share files, learning materials, content, etc. using different software smoothly.	4.00	0.74	Agree	High Implementation
4. Assignments and learning activities can be shared with the student joining the classroom synchronously from home via Google Classroom, LMS, or Email.	4.33	0.66	Strongly Agree	Very High Implementation
Overall Mean	4.02	0.77	High Implementation	

Legend: 1.00-1.79 – Strongly Disagree; 1.80-2.59 – Disagree; 2.60-3.39 – Somewhat Agree; 3.40-4.19 – Agree; 4.20-5.00 – Strongly Agree.

The interview enables us to gain deeper insights of hybrid teaching implementation in Vietnam in the midst Covid-19 pandemic. It communicates that the implementation of hybrid teaching is challenged by its components. With that note, school leaders and teachers collaboratively find methods and approaches to deal with these barriers. The interviewees identified the barriers in teaching hybrid classes and shared their approaches to deal with them.

TABLE 3 A summary of interview results of school leaders and program managers

Barriers	Approaches
Teacher's readiness	▪ Provide teachers training to use virtual platform in hybrid teaching ▪ Provide support to design, implement, and sustain the hybrid teaching program ▪ Provide technical and pedagogical training
Technology, Wi-Fi issues, IT support	▪ Review the navigation guide and train teachers, so teachers know how to deal with common problems ▪ Revisit the online course making it friendly and easy to use and understand ▪ Record and upload classes and instructional materials, so that anyone with major technological issues may still catch up on the session later. ▪ Technological difficulties encountered by students in the classroom are resolved quickly and online students are reached out through emails and cell phones. Interruption is kept to a minimum. ▪ Provide technical support for teachers, parents/ guardians, and students by creating a unit to handle this matter. Another way to prevent disturbance is to urge remote students to join the class a few minutes early if feasible.
Lack of administrative	▪ Encourage inquiries. Instead of asking for traditional feedback, teachers send their concerns,

support	• difficulties via email. • Open-line communication using social media like WhatsApp and Zalo (local app)
Lack of skills to keep students engaged and focused	• Provide training for teachers on their specific needs and supports • Build a professional learning community, so teachers can meet twice a month to share their practices and concerns in hybrid classrooms and find solutions
Lack of students' collaboration in group activities	• Use digital technology for screen sharing and live annotations, and form groups allowing multiple different collaborative groups to be created and kept apart. • Synchronous communication options, such as online chats are used.
Unsure of remote students' participation	• Focus on student engagement activities that are applicable regardless of the learning method, for instance, group classroom discussions and quizzes can potentially be facilitated through technology like screen sharing and live streaming technology. • Find ways around this by attending a training, workshop, webinar, and conference, which offer new ideas and insights
Lack of offline students' participation	• Make the class interesting and engaging using differentiated activities.
Sharing files and materials	• Provide students' training. See to it that students from different locations can share files and materials with students joining the classroom. • Review course materials for in-person and remote students' accessibility
Lack of school budget	• Allocate budget for technology infrastructure and equipment for readily use of teachers, such as computer, laptop, computer room, etc.

Likewise, the interview results disclosed that hybrid teaching makes teaching and learning accessible, flexible, use of technology to learn, use of resources effectively, personalization, better learning, and deeper resources usage. These will be elaborated in the discussion section.

IV. DISCUSSION

Hybrid teaching implementation is affected by its components, namely: professional development, institutional support, collaboration, teaching readiness, student engagement, access to technology, communication, and materials and files and its barriers and merits.

Hybrid teaching implementation

Professional Development The study results show that professional development has moderate implementation. This includes a lack of training to implement hybrid teaching; training of hybrid pedagogy and hybrid technology; sharing files and learning materials in hybrid classroom; lack of support in using technology; supporting students' social-emotional needs and IEPs (Individualized Education Program), supporting English Language learners, and supporting academically advanced students. This demonstrates advancing professional development. The interview results emphasize that teachers are slightly ready to teach in hybrid classrooms. Teachers find keeping online and offline students engaged and focused on class activities, such as group discussion, assignment, knowledge sharing, and facilitating collaboration of *all* students in single classroom

simultaneously a challenge. Teachers need training to handle the challenges they encounter in hybrid teaching. The lack of ability among teachers to share their attention equally between the students present 'in the flesh' and the students attending online suggests that it might be better for all students to attend online rather than having some online and some in person.[11]

However, if the group size is small enough, hybrid teaching strategies appear to have a significantly greater likelihood of success. When students collaborate in groups of little more than eight, experienced instructors can enable both audiences.[12] Obviously, the crucial term here is experience, which is mentioned in several publications. Much of the discussion regarding the possibility of hybrid learning spaces is misguided because it neglects to consider the possibility of including support staff, allocating time to train the teaching staff, and allowing them to rehearse carefully chosen pedagogical patterns collectively – in different physical and digital settings. Teachers need technological and pedagogical training. They need training for hybrid teaching. Teachers need training and support to implement hybrid teaching with online and offline students simultaneously in one classroom.[8] The insufficient technological and pedagogical support or lack of experience makes hybrid teaching challenging.[11] Professional development in hybrid teaching for teachers must be planned and implemented fairly to all teachers. The continuous professional development of teachers is paramount.

Institutional support The results suggest strengthening institutional support. This includes the support for teachers who are less familiar with hybrid teaching; the school provision of resources and administrative support; the institutional support for technological infrastructure and equipment, and institutional support of resolving challenges in the implementation of hybrid teaching. Lack of institutional support hinders the adoption of hybrid teaching. Schools that fail to provide instructors with enough technical and pedagogical assistance result in a waste of resources and a reluctance to utilize online technologies.[13] Institutional support for faculty is therefore crucial for hybrid teaching, especially for instructors with little or no hybrid teaching experience. These include monitoring who is attending in-person and online and who is administrating large cohorts of students. If the students are self-isolated/ill, they call the office and inform the office that they are going to be in Zoom, and the office needs the process to be organized smoothly.

Both the change in teaching approaches and the use of technology need greater planning and organization.[14] This implies that the educational institution must provide enough training and support for instructors, both pedagogically and technologically [15,16,17] One possible answer to the various issues that instructors confront in this new setting is the deployment of a technological navigator or operator.[16] This individual should be present in every class session to assist in troubleshooting difficulties both in the classroom and online. The technology navigator or operator is also responsible for preparing the course and advising teachers for pedagogical questions.[18] Once the course has begun, students can communicate directly with the navigator or operator via a chat

room in the online platform.[18,19] Also, students can take on other tasks, such as conversation tracker and technical troubleshooter.[12] They discovered that this technique not only removes the instructor's need to manage everything but may also create a more student-centered learning atmosphere and allow for more student ownership of the learning environment. These approaches need institutional support.

Collaboration Although collaboration has high implementation, yet the results indicate that students are passive and reluctant to engage in collaborative activities. Students are not contributing much to collaborative activities, such as group projects, group presentations, knowledge sharing specially in group assignments. Over two decades ago, researchers demonstrated that success in an online course depended on the relationship between the student and the content, the student and the instructor, and the student and classmates.[19] In hybrid teaching, students have the opportunity to meet in-person and remote classmates in one classroom. In that manner, hybrid teaching requires in-person and remote students to participate in collaborative activities, such as group discussion, group projects, group presentation, group assignment and knowledge sharing. However, assigning projects involving collaboration among members may be harder to implement in hybrid learning. For instance, the difficulty occurs in the picking up of group members and the project objective which includes social activities within the group. The easiest way is to group the physical class against the online class. But this has the potential to become an "Us vs Them" scenario and further solidify any divides between the student groups.[19]

Likewise, the respondents of the interview noted that lack of students' cooperation in group activities and lack of offline students' participation are a challenge in facilitating collaboration in hybrid classrooms. When students are not collaborating with classmates, they miss out on new perspectives, new ideas, and new approaches to solve problems. They miss out on the opportunity to develop critical soft skills, such as communication, problem-solving, and creative thinking.[20] Collaborative skill has been one of the most fundamental skills necessary to overcome challenges in the 21st century apart from critical thinking, creativity, and communication skills. However, collaboration is more difficult to facilitate in a hybrid learning setting. In traditional classroom settings, learners can be physically placed into groups, but this is not viable when some students are learning remotely. Some solutions to this concern could be the use of collaborative documents like Wiki or Google Document. It is a joint document—or set of documents—that student can work on collaboratively. These documents can work well in class as students add outside materials to them, building a class-specific "library" of new materials. The documents also can be used for projects, i.e., for students to develop a working repository of knowledge as a deliverable. Collaborative documents are an easy-to-use tool and the flexibility to add anything students want can allow them to take the wiki in a direction of their choosing.[20] Another solution to several of these issues is the design of the learning environment around mobile devices, such as smartphones and a redesign of the

learning activities away from a reliance upon high-bandwidth teacher-centric pedagogies and technologies, such as video streaming to enable student-centered collaborative learning using student-owned devices. [21]

Teaching readiness The survey results suggest advancing teaching readiness. It includes the ease of implementing hybrid teaching model; the confidence of providing effective instruction; the confidence of motivating in-person and remote students; the assistance of students who need academic support and ensure that no one is left out in learning. The interview respondents noted that teachers are less ready to teach in hybrid teaching. They find it very difficult to divide work and attention to online and offline students simultaneously, how classes should be conducted, and how content material should be taught in efficient yet engaging ways. Teachers find it challenging to implement the differentiated instruction in hybrid teaching given that it will best enhance students' abilities. Another is how they will monitor those students who are studying at the comfort of their home. It is very easy for the students to say that their microphones or their cameras are broken, allowing them not to participate in the online class discussion. They also notice some online students are distracted to other apps and they pretend to listen. It is necessary to ensure all students are not missing out on contact time with teachers and continue to learn amid the Covid-19 pandemic. But teachers are slightly ready.

Readiness to teach online can be broadly defined as "the state of faculty preparation" to teach online.[22] Therefore, teachers' perceptions of their readiness and institution relate to their beliefs about their preparedness. Perceptions of online readiness will therefore include a mixture of attitudes and experiences, which are impacted by a range of individual characteristics, contextual, and cultural factors.[23] For individuals, such perceptions may specifically rely on their future-oriented projections of their knowledge and skills concerning online teaching and learning, which are manifested in their sense of self-efficacy and experiences, these aspects represent personal readiness.[24] For institutions, the context in which online teaching and learning is implemented is key to readiness and may include the support structures, resources, and professional development opportunities, these aspects represent contextual readiness.[25]

Student Engagement The survey results show that keeping both the in-person and the remote students engaged is a challenging aspect of hybrid learning. A possible explanation might be the methods used to motivate students in the classroom may not translate to the other group. Conversely, paying too much attention to online students might alienate those in the classroom. Similarly, the interview respondents highlighted that teachers find difficulty to keep students who are physically present in the classroom and students who are studying remotely as engaged as one another to give an equitable learning experience. Simultaneously, vigorous efforts to engage faraway learners may result in classroom disengagement. Although, hybrid teaching offers a fresh perspective on how classes should be run and what

information should be presented in engaging ways, it requires hybrid teaching pedagogy.

Engaging and motivating students in the learning process encourage students to be cognizant of what and how they learn, which leads to more involvement and better academic performance.[26] Since there is a lack of knowledge of teachers' perception of student engagement in hybrid teaching, the way teachers perceive instructional strategies may influence their instructional choices. Engagement reflects the process and product experienced on a continuum and results from the synergistic interaction between motivation and active learning.[27] Some scholars describe engagement differently as having multiple subtypes. Student engagement includes academic (e.g., time on task, projects, homework completion), behavioral (e.g., attendance, classroom participation, extracurricular participation, suspension), cognitive (e.g., self-regulation, relevance of school to future aspirations, value of learning, strategizing, autonomy), and psychological subtypes (e.g., belonging, relationship with teachers and peers).[28] Since student engagement is documented as a prerequisite for effective learning.[29] This concept needs serious concerns by teachers. Student engagement, thus, is an integral part of hybrid learning environment.

Technology The study results suggest revisiting technology. This includes the adequate access to hybrid teaching course; easy to use and understand navigation structure; simple to use and understand online course; adequate technical support for hybrid teaching course; technical support for parents/ guardians. Interview respondents pointed out that Wi-Fi connection remains a problem. Teachers encountered issues with WI-FI, with a delay in answers from students working at home. Access to the internet is crucial to a hybrid teaching.[30] Students and teachers need both Wi-Fi and hard connections to enable access to information, programs, and people. Connectivity also extends access to virtual locations where students can join educational communities and learn from remote experts. The hybrid teaching and learning environment includes technological tools for both students and staff. This means if the tools need to be working, there need to be enough to go around, and they need to be updated on a regular basis. Teachers also need training and modeling for the use of the tools.

Another issue is teachers' lack of expertise with technology and software. Teachers' digital abilities and digital literacy are put to the test in hybrid teaching. The effectiveness of teaching is determined by whether instructors have the requisite competences to use technology successfully. Thus, it must be addressed to identify which competences exist and how they are supported by the current software and hardware. The difficulty is that there is little to no institutional support or formal expectations. Building with many opportunities for using technology encourage a positive attitude toward hybrid teaching and learning. Positive attitudes will stem from a confidence that teachers are supported in learning how to use technology and will have the tools they need to work with the students. Support might include ongoing training, onsite technical support, time to plan and develop instruction that

includes digital learning, and infrastructure that facilitates the effective development of the digital age learning environment.

Students experience the same thing. It is typical for students involved in classroom instruction to relay classroom activities via webcam to students who are isolated at home. In like manner, students must also be taught how to utilize technology correctly. Students and instructors both benefit from the flexibility and space to actively interact with technology and explore new possibilities by testing and assessing new technological frameworks. The biggest downside of hybrid teaching is that it requires technology. And often technology is what causes there to be a gap in accessible education for students. Knowing what is required and what is extra is great because it allows you to format a learning environment that is accessible to all students.

Communication The results of the study disclose that a continued communication to parents/ guardians and students using the existing methods of communication and consistently communicate with online and offline students through one-to-one, messages or email need to be strengthened. On remote teaching, communication is purely online with no direct contact with students; hybrid teaching transforms this scenario. As a result, instructors should prepare adequately and recognize the need to communicate to both online and offline students during the class recitation and after class. They should provide help and support to all students especially those who are passive and detached. Students look to their teachers more than simply academics; they want stability, comfort, and support. Using technology for communication makes the preceding more difficult, but not impossible. The relationship is changing, and instructors and schools must work hard to communicate effectively with their students and parents/ guardians.

When a teacher decides to use the synchronous hybrid learning environment, a clear vision and expectations must be communicated to the students.[31] For instance, it is a good idea to prepare alternative resolutions in advance and agree with students about what they should work on when a connection cannot be established.[32] Next is about the technical requirements. It is a crucial pedagogical practice to be explicit to students about how the hybrid synchronous sessions support the overall course learning objectives.[12] It is also necessary to express very clearly what students may anticipate while teaching in a synchronous hybrid learning environment, so that they are prepared for the numerous challenges they will face, and the various stakeholders can work together.[33]

Sharing files and materials The results of the study suggest revisiting sharing files and materials. It includes carefully designed learning materials; organized course notes, handouts, PowerPoint for student's accessibility; students from different locations shared files, learning materials, etc. using different software smoothly; assignment and learning activities shared via Google classroom, LMS or Email. To give all students with a comparable participation experience, a successful hybrid encourages contact across groups; online forums, shared papers, surveys, and Q&A serve to bridge geographical boundaries between participating groups.[34] Furthermore,

shared virtual spaces and activities guarantee that the aforementioned 'hybrid closeness' is maintained outside of the classroom. Hybrid allows for the exchange of material in virtual environments that are equally available to all students. A school-issued learning management system can make distributing educational resources (LMS) easier. To gain access to course materials and activity sites, students just need to log in. When an online class utilizes a Bring-Your-Own-Device (BYOD) system, there is a possible security flaw. Some students may have difficulty connecting to the system if the LMS does not support all operating systems and devices. Moreover, file exchange is frequently required for group cooperation. Unless all members use the same device brand or operating system, compatibility concerns with file sharing and reading formats. On the other hand, Google Drive, Microsoft OneDrive, and Dropbox are all accessible and user-friendly cloud sharing platforms that allow shared file access. This can be a simple way to centralize shared resources, and particularly useful for visible resource management and class timetabling.

Barriers of hybrid teaching

The interview respondents identified the barriers of hybrid teaching implementation. These barriers include teacher's readiness; technology, Wi-Fi issues, IT support; lack of administrative support; lack of skills to keep students engaged and focused; lack of students' cooperation in group activities, unsure of remote students' participation; lack of offline students' participation; sharing files and materials; and lack of school budget to fully equip the schools with technological devices. Hybrid teaching requires laptops, devices, microphones, webcams, among others; this is a significant cost for schools that have not been accounted for.

Since hybrid teaching is a new approach to teaching, teachers are challenged; they need professional training in pedagogy, technology, assessment, and psychology to implement quality teaching. They need to deeply understand their diverse students to be ready to implement hybrid teaching. On a similar note, the respondents articulated their concern on the shortage of computers, laptops, computer rooms, and other technological infrastructure and equipment that may hamper the implementation of hybrid teaching. Students have a busy schedule, so assigning extra online learning, which must be completed at home due to a shortage of digital resources, is unjust and ultimately stressful for the majority. Another worry is the use of LMS. Some respondents claimed that transitioning from live activities and print material to internet is difficult. Students need training. The strain of dealing with two audiences is mentioned. Teachers have difficulties when assessing students' performance from home since it is difficult to verify that the students actually complete the assignment and, thus, to determine whether the data they received are trustworthy and solid. Student learning assessment remains a challenge.

Significantly, respondents stated that teachers require more time to prepare hybrid lessons in order to avoid higher levels of stress, such as student engagement and motivation of both in-person and remote students concurrently during class sessions. Although there are technical barriers during communication faced by learners and teachers, the interview respondents declared that effective communication is possible. This is possible with the online platform using learning management system to make documents or other outputs organized. The use of virtual apps and online materials makes it more interesting for students to easily comprehend. [35] Some teachers find hybrid learning quite fun, for it is something new and interesting for students and teachers and brought some light relief and humor into the classroom. The success of students requires time and trusting relationships. It is beneficial to develop a relationship of trust with students by listening to them and demonstrating that teachers are merely a click away. Many students agree that being available through social media channels or more modern ways of communication help a lot. While online learning proves to harm the communication between students and teachers, building opportunities to keep communication alive makes the difference.

On the plus side, several respondents said they like hybrid teaching. Instructors are eager to accommodate students. Some teachers are relieved to be back with their students and coping with the circumstances, and others are excited about the novelty of hybrid teaching. Yet, some instructors believe it is too demanding for them given the lack of training and preparation in such situations.

Merits of hybrid teaching

The interview respondents pointed out the merits of hybrid teaching. These include accessibility, flexibility, using technology to learn, use of resources effectively, personalization, better learning, and deeper resources usage.

Accessibility Hybrid teaching allows the school to continue with the teaching and learning process even in the midst of the pandemic, so students will not be left out. With hybrid teaching, students may quickly access courses regardless of location, and the spread of Covid-19 infection is minimized. Hybrid teaching provides students and instructors with accessibility.

Flexibility Hybrid classrooms provide the flexibility and safe option for teachers and students to stay home when they are sick, reducing the spread of Covid-19 infection. It allows students to keep learning at their own speed at their own time. With the help of technology, they can learn even if they miss a class because they can watch videos of online classes that were held. Online meeting tools like MS-Teams and Zoom give schools the option to record sessions. Students are glad to have flexibility because of the pandemic. Hybrid teaching allows them the ability to keep on top of their studies. Flexibility is the biggest benefit of hybrid learning.

Using Technology to Learn Using technology to learn has many benefits, such as making learning programs more uniform and giving students with special needs technology like text-to-speech. Teachers also use online polls from sites like mentimeter.com, interesting crosswords from wordwall.com, and other things to keep students interested in their lessons. Students are more exposed to use technology responsibly.

Use of Resources Effectively Hybrid teaching has proven beneficial for teachers and students. Most teachers have turned to online resources and used them in different ways to teach students who are stuck at home. Videos, live demonstrations, home-based experiments, and other things are some examples.

Personalization With hybrid learning, students can set up their own learning environment. It is also better for getting information than sitting at a desk. Students are more motivated when they can take charge of their learning. It helps relieve stress and anxiety caused by things like bullies, teachers picking favorites, teasing, and so on. Hybrid teaching also lets students learn in a way that fits their needs. It is made for learners who learn at different speeds and have different needs. Students can make the screen bigger, pause the video, analyze it, and figure out what it all means.

Better Learning When students are absent for a lengthy period, they miss a substantial amount of class time. However, hybrid teaching guarantees that students will not miss out on anything. They have easy online access to lecture materials, assignment explanations, and other essential course components. They are able to quickly catch up, remain current, and completely absorb the coursework.

Better Usage of Resources Many students can be taught in a smaller space by combining online and offline methods. Such a feature saves money on rent for larger rooms and allows for the purchase of the most up-to-date technology. Hybrid teaching alleviates teacher shortage. There are fewer teaching personnel since one teacher may teach many batches at the same time, resulting in uniformity, reduced salaries, and savings in power use. Virtual instruction is a viable choice for live learning when there are not enough in-person teachers. Hybrid teaching helps school districts maintain budget.

Not only is hybrid learning more adaptable for students and teachers, but it will also aid some very particular categories of people who struggle with traditional in-person learning. For example, hybrid learning will assist students who must work part-time to help pay their education by allowing them to learn on their own time when necessary. It will also assist students with more ad hoc commitments such as family obligations that must be worked around. Perhaps more crucially, the remote feature of hybrid learning will assist to break through geographical barriers. It implies that educational institutions may now reach students all over the world, allowing students in rural parts of the world to receive the same education as those in large cities. They might be students on abroad postings or students who live permanently in these other parts of the world and have not had access to great education materials until now.

It is worth mentioning that school leader respondents during the interview consider hybrid teaching implementation the biggest achievement. They realize how quick they are to roll out the idea of hybrid teaching and how quick and effective teachers are at giving it a go and trying to involve all students in the lessons and the discussions. They are amazed of how they manage the timescale to set up this huge change, which takes place within a week enabling most classes to run hybrid teaching and the school is able to provide links, Canvas, LMS, and quick communication. The school owned

Learning Management System helps not only the students but also teachers to monitor the progress of every student easily.

In general, a hybrid teaching approach is one in which conventional on-campus study and online learning coexists. Students who are uncomfortable with online learning may choose to learn in a classroom setting. On the other hand, those who want to study while also working can opt for hybrid learning. Hybrid teaching works in varying circumstances.

V. IMPLICATIONS

Hybrid teaching in secondary schools in Vietnam amid Covid19 has high implementation, yet professional development requires special attention. On that note, the qualitative findings provide the barriers of hybrid teaching implementation. These are detrimental to quality hybrid teaching when not address appropriately and timely. In a similar note, these barriers lead to a negative attitude of teachers towards hybrid teaching and its merits are challenged. Notably, the findings imply that hybrid teaching is challenged by its components that define the conditions and determine the level of implementation in the hybrid classroom. With that in mind, schools need to be aware of the components of hybrid teaching affecting its implementation.

Most importantly:

1. *Professional development:* School systems and leaders need to invest significant time in listening to the concerns of teachers and working jointly with them to create solutions. School systems can invest in training teachers in pedagogy and technology to provide hybrid teaching effectively. Schools must encourage teachers to reflect to build a model of best hybrid teaching practice.

2. *Teaching readiness:* School must secure the readiness of the teachers to embrace students of different needs and circumstance both onsite and offsite in the hybrid classroom.

3. *Institutional support:* The school must provide technology infrastructure, equipment, resources, and administrative support to run effective hybrid teaching.

4. *Technology:* School must provide digital infrastructure to allow remote and in-person students to collaborate in the virtual learning spaces. Provide technical support for teachers, parents/ guardians and students by creating a unit to handle this matter

5. *Student engagement.* It is tough to engage students online and offline in hybrid classrooms. Engage students with variety and reduced complexity. Pop quizzes, emphasizing conversations over lectures, and cold-calling students for responses can help. Single-sign-on software can reduce complexity and the strain of managing passwords.

6. Lastly, a research to find out the relationship between knowledge and confidence of teachers teaching learners in hybrid classrooms is recommended.

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