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In-Service Teacher Professional Development: Challenges and Opportunities for Innovating the Trichronous Modality of Delivery in Vietnam's EFL Education

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Abstract: The evolving landscape of educational technology has not only affected the design of teaching learning contents but also the employment of methods of delivery. In Vietnam's language education discipline, research indicates that the integration of educational technology has significantly expanded the range of delivery modalities available to educators. However, whether the existing modalities can effectively cater to the needs of diverse learning styles remains uncertain. To bridge the research gap, this study initially seeks to assess the effectiveness of commonly utilized delivery modalities in K-12 EFL education. Thirty volunteer EFL teachers from across Vietnam, representing the north, central, and south regions, participated in in-depth interviews. These teachers teach English at primary, secondary, and high schools. The main findings include their current ICT competence levels and preferences for instructional design regarding diverse modalities of delivery. Then, grounding on an in-depth analysis of their choices and perspectives, a trichronous model is proposed and innovated to accommodate diverse learning preferences and maximize learning potential. The research findings and proposal are significant for professional development trainers and teacher educators, providing valuable insights for decision-making regarding the increasing use of technology in current EFL research and practice. This study can contribute to shaping a forward-thinking approach to EFL education in an increasingly digitalized world by addressing challenges and identifying more practical practices in language teacher education.

Keywords: modality of delivery; online learning; blended learning; bichronous online learning; trichronous learning; ICT; language teacher education

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1. Introduction

Advances in information and communication technology (ICT) have significantly popularized new modalities of delivery. In the meantime, technology also enables more autonomous learning opportunities for students beyond the traditional classroom (Lai et al., 2016). In the late 1980s and 1990s, the first computer-based training program emerged, primarily delivered via CD-ROM, a cornerstone for e-learning today (Hubackova, 2015). Similarly, current synchronous online learning applications, such as Zoom, Microsoft (MS) Teams, and Google Meet, reflect this evolution. With new technological advancement, teachers and educators gain greater responsibility and tools to enhance their modality of delivery (MOD).

The recent literature discusses various MODs such as blended learning or bichronous online learning. The purpose of this study is to develop a model as a MOD specifically for training in-service teachers of English (ITE) in Vietnam and developing their ICT skills. Applying an effective MOD can scientifically improve learning outcomes (Connolly & Harms, 2011; Healy, 2014; Smith & Gillespie, 2007). A suitable model grounded in both practice and theory increases professional training effectiveness, making a research-based MOD for ICT skill development crucial for all educational stakeholders. Darling-Hammond et al. (2017) propose seven effective features of professional development (PD): (1) a focus on content; (2) active learning incorporation; (3) collaboration support; (4) applying an effective MOD in practice; (5) the provision of coaching and expert support; (6) offering feedback and reflection; and (7) sustainable duration. In other words, Darling-Hammond et al. (2017) mean that an appropriate MOD is essential for high-quality adult training. The context of ET training in Vietnam is not an exception. The optimal selection of MOD is important because it can significantly affect the learning outcomes of trainees. This paper seeks to propose an innovative MOD approach beyond the traditional face-to-face (F2F), blended learning (BL), and bichronous online learning models commonly employed in ICT-related teacher training. Current research shows a paucity of models that can expand the satisfaction of the needs of diverse learners' learning preferences simultaneously, especially in the context of in-service teacher training. Regarding synchronous sessions in BL, while some learners opt for synchronous online learning, many others still prefer traditional class attendance. Teacher trainers or program designers may find it difficult to meet the needs of almost every learner at the same time while they deliver their instruction. This paper is expected to solve such a problem.

2. Literature Review

In retrospect on the history of education, teachers have consistently played a central role in educational success (Frick, 2020; Smith & Gillespie, 2007; Trucano, 2005). While teaching methods have evolved to accommodate contemporary educational contexts, including (but not limited to) new technologies and the emergence of Generation Z as learners, teachers remain essential to the success of this process. Research demonstrates that different teaching methods yield varying levels of instructional or training quality (Michel et al., 2009; Morrison et al., 2019), making it pivotal to consider diverse MODs when developing effective teacher training models.

In addition to traditional F2F learning, distance learning has existed far longer than other MODs, such as web learning and synchronous online learning (e.g., via Zoom application). Moore et al. (2011) find that distance learning has been employed for nearly two centuries. For e-learning, many researchers agree that it should involve various technological affordances in education. While the internet has driven much of e-learning's growth, earlier formats, such as audio/videotapes and/or CD-ROMs, are also classified as part of e-learning (Moore et al., 2011). It is necessary to review how MODs have gained prominence amid educational globalization; reshaping learning occurs across diverse contexts.

2.1. Online Modalities of Delivery in Global Context

Recently, online delivery modalities have captured the attention of both educational practitioners and researchers. This entails the foundation of an organization called iNACOL, an International Association for K-12 Online Learning. Since 2004, this organization has focused on advancing online learning across multiple dimensions including policy, technology, and pedagogy, at both the course and program levels. Most of these domains are implemented with the guidance of standards which are periodically updated to reflect evolving practices. Online learning strongly supports instructors in creating learner-

centered environments that foster student engagement and learner autotomy (Herrington et al., 2003). Ma and Wang (2024) assert that technologies have significantly transformed education over recent decades.

Moreover, discussions on online learning have been well documented in the literature regarding both the synchronous and asynchronous modes (Martin et al., 2020). Synchronous online learning involves "a course where most of the content is delivered online and students can participate in courses from anywhere. There are real-time online meetings and students login from anywhere but at the same time to participate in the course" Martin et al. (2020, para. 5). Asynchronous online learning refers to "a course where most of the content is delivered online and students can participate in the online course from anywhere and anytime. There are no real time online or face-to-face meetings" (Martin et al., 2020, para. 5). In comparison to synchronous learning, asynchronous online modalities provide learners with a profound affordance to personalize their learning pace and schedule (Lee et al., 2024). However, each modality has its own benefits and limitations. Recognizing that these MODs can be blended to make a new approach, Martin et al. (2020) defined the inception of bichronous online learning as follows:

> The blending of both asynchronous and synchronous online learning, where students can participate in anytime, anywhere learning during the asynchronous parts of the course but then participate in real-time activities for the synchronous sessions. The amount of the online learning blend varies by the course and the activities included in the course. (para. 7)

Therefore, teachers recognize that students do not all learn at the same speed and that true learning is better measured by knowledge and skill mastery rather than time spent on tasks. In order for students to learn new knowledge, they must connect it to prior knowledge, making learning relevant to their own life experiences and worldviews (Powell et al., 2014). Similarly, Mayer (2002) states that meaningful learning can foster and improve learners' cognitive processes. Implicitly, this principle also applies to in-service teachers, who may encounter similar challenges as learners when participating in one-shot training sessions. Expanding on the discussion of online and asynchronous learning, research on BL modalities offers additional perspectives on combining traditional and digital approaches to enhance learning outcomes. With the employment of synchronous learning, teachers and students have better opportunities to communicate via multimedia to foster instant interaction such as using polls or chats or conferencing (Martin et al., 2021). A recent study by Nicolaou and Petrou (2023) shows that synchronous learning is comparable to traditional F2F learning. Their qualitative research findings indicate that synchronous learning can be an alternative to traditional F2F classrooms which allow students to develop 21st-century skills.

Bakken et al. (2011) conducted a study on online learning through their "National Standards for Quality Online Courses", identifying six essential domains including the following: (1) content, (2) instructional design, (3) student assessment, (4) technology, (5) course evaluation and support, and (6) 21st-century skills. This group of 31 researchers emphasized the rapid development of online learning at the K-12 level. The Standards for Quality Online Teaching and Learning claimed to provide regularly updated tools and resources based on current research and best practices on BL and online teaching, especially within the U.S., offering valuable benchmarks for schools, districts, and states (Bakken et al., 2011). This also helps to improve the quality control roadmap, within which the four stages of "plan", "do", "check", and "act" (MacLeod et al., 2019; Stensaasen, 1995) serve as a guiding framework across many areas of life.

However, another study by Barbour et al. (2011) about online and BL regarding the policies and practices of worldwide K-12 schools further reveals that quality standards for

online teaching are not widely adopted globally, as only seven countries including China, France, Australia, Slovenia, Egypt, Serbia, and Nigeria reported their use. Moreover, it is notable that Serbia's standards are targeted at higher education, while Slovenia's standards pertain to technology rather than teaching standards (Barbour et al., 2011). Despite the above fact, the online MOD has become an indispensable part of their educational system (Adedoyin & Soykan, 2023; Ally, 2004; Gayatri & Sit, 2024). This was not only a panacea in the time of the COVID-19 pandemic (Dhawan, 2020), but it was also important even prior to that time (Cheawjindakarn et al., 2013). By 2020, reports showed that 100% of students in the U.S. engaged in online learning environments (Digital Learning Collaborative, 2020). For this reason, the appearance of online teaching standards to ensure teaching and quality is crucial.

In the context of Vietnam, researchers also emphasize that it was necessary to prepare the readiness of in-service teachers from faculties in online teaching even before the outbreak of the COVID-19 pandemic (Pham & Phan, 2023; Phan & Dang, 2017).

2.2. Research on Blended Learning Modality of Delivery

The term BL can be used interchangeably with hybrid learning and/or mixed-mode learning. There are different definitions of BL, among which the one by Staker and Horn (2012) is commonly cited by other researchers as follows:

> Blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home. (p. 3)

Another definition is the brief one by C. Graham (2006) which is stated as the most cited one in the literature (Hrastinski, 2019). In comparison to the one defined by C. Graham (2006), Staker and Horn (2012) provide a more comprehensive definition of BL because it covers important elements such as the delivery of content, instruction, place, time, and learning pace. C. Graham (2006) briefly states that "blended learning systems combine face-to-face instruction with computer-mediated instruction" (p. 5).

By studying 87 articles on Web of Science, Wang et al. (2015) proposed a six dimensional framework entitled the Complex Adaptive Blended Learning System (CABLS), comprising the learner, teacher, technology, content, learning support, and institution. This framework aims to bridge the gap between BL research and practice. However, this study did not assign weights or rank the importance of each component, acknowledging that "the subsystems in the CABLS framework are not exclusive and exhaustive" (Wang et al., 2015, p. 5) and that complex adaptive systems operate "on the edge of chaos" (p. 3), influenced by continuous advancement in technology and emerging knowledge. Recent empirical research shows that the CABLS framework can be employed in different disciplines such as medical education (Rafi et al., 2022), GIS education (Yan et al., 2023), and general K-12 education (Ingram, 2024).

The literature shows that BL is an eclectic teaching approach, valued for its capacity to merge the benefits of traditional F2F learning with synchronous/asynchronous online learning. Although several studies find no significant differences in learning outcomes between BL and F2F learning (Berga et al., 2021; Mueller & Wulf, 2022), a greater number of researchers (e.g., Ampartzaki et al., 2024; Francis & Shannon, 2013; Means et al., 2013; Min & Yu, 2023) conclude that BL generally fosters better learning outcomes for students. Means et al. (2013) assert that the employment of BL leads to better learning outcomes because it tends to provide more learning time, instructional resources, and activities that foster learners' interactions. In addition, Min and Yu (2023) find that the outcomes of BL can be affected by teachers and learners' characteristics, institutional strategies, and ICT

infrastructure. Given its important role in contemporary education, BL has been discussed widely in the literature among educators, school board members, reporters, researchers, policy makers, and learners. Today, BL is increasingly recognized as the new normal in education (Kaban et al., 2024).

However, BL can be interpreted differently by various researchers, depending on the aspects that they focus on (Hrastinski, 2019). In alignment with the aforementioned findings in the literature, it is evident that various teaching and learning modes possess distinct advantages and disadvantages. Consequently, an eclectic approach has been identified as being significantly beneficial in the context of teaching and learning (Larsen-Freeman, 2000; Li, 2012; Longo, 2016; Şentürk, 2021; Valledor et al., 2023). Şentürk (2021) agrees that the BL environment provides "an eclectic approach that aims to minimize the weaknesses of different learning methods and maximize their strengths to provide the most effective learning environment" (p. 36). This is a testament as to why "blended courses allow students and faculties to take great advantage of the flexibility and convenience of an online course while retaining the benefits of the F2F classroom experience" (Moskal & Cavanagh, 2014, p. 35). In other words, Moskal and Cavanagh (2014) imply that BL can be seen as one of the eclectic teaching methods. BL combines the strengths of both classroom-based learning and e-learning (Bonk et al., 2005, 2012), creating a balanced educational experience. Similarly, Carliner (2004) contends that a learning program that blends traditional classroom components with online components and instruction can facilitate the transfer of newly acquired skills to learners.

Picciano (2009) adds that learners vary by generations, personality types, and learning styles, so teachers and instructional designers should use multiple approaches, including F2F methods and online technologies, to meet diverse learning needs. A key benefit of multiple learning modalities is that they allow students to experience learning in ways that suit them best while also encouraging them to develop through the use of other less familiar modes.

2.3. Problems of BL in Teachers' Implementation

Picciano et al. (2013) further suggest that "at many European universities, the teachers today must develop the digital versions of their courses themselves in their preparation time, while teachers at American universities more frequently receive help from professional instructional, pedagogical, and graphic designers" (p. 262). They also highlight the limited government funding and/or policies that promote online learning, contrasting it with traditional brick-and-mortar schools. The suggestions by Picciano et al. (2013) show that the implementation of BL in education in countries cannot be conducted successfully without national strategic policies that support infrastructure and teachers' on-going PD.

A global report on online learning and BL by Barbour et al. (2011), covering over 60 countries around the world, identifies five worldwide challenges, including (1) the lack of knowledge about online learning, (2) sporadic interest in online learning, (3) illiteracy and access to technology, (4) funding shortages, and (5) the absence of governmental vision and leadership. Although the report does not specifically refer to Vietnam, these common challenges exist within the contexts of similar surveyed countries in South-East Asia including Thailand, Indonesia, Malaysia, and the Philippines. No recent global survey has been found in the literature to provide further comparative insights since then. The first three above-identified problems can be solved through continuing in-service training (Le, 2020a, 2020b). Similarly, in the context of Vietnam, in-service teacher training is an indispensable solution to achieve national education goals (Nguyen et al., 2022). One emerging method for the teacher training of ICT skills in ELT is adopting an innovative MOD, as it is noted that "root causes for improved learning outcomes in BL contexts

are not yet apparent" (C. R. Graham, 2019, p. 23). This indicates a methodological gap in understanding the andragogy of in-service teacher agency for ICT literacy training in Vietnam.

The above review proves that despite the rapid development of educational technology, BL remains a core focus in studies alongside CALL in language education. However, the existing literature remains insufficient regarding teacher PD, as indicated by Halverson et al. (2014) and Philipsen et al. (2019). Darling-Hammond et al. (2017) emphasize the importance of needs assessments to identify areas of professional learning. More relevant studies should be conducted to help ensure that professional learning is not disconnected from practice and align PD with practical needs, supporting the areas of knowledge, skills, and teaching learning modes that language educators wish to develop. Vietnam is not an exception within this research filed. Le and Barnard (2020) agree with other researchers that there is a "call for radical changes in teachers' professional development by moving beyond the concept of learning in one-off workshops, lectures, or seminars towards collaborative and needs-based learning" (p. 190). Regarding meeting in-service teachers' needs for MODs, while the current literature covers various delivery modalities, there is a notable gap in finding a modality that can simultaneously help meet diverse needs. In other words, it is necessary to conduct more research on how current different MODs can be implemented to enhance learning outcomes. Similarly, in the educational context of ICT-related teacher PD in Vietnam, this challenge remains unexplored in the literature, warranting the need for research on effectively combining different MODs to address learners' varied needs within a professional training program. Given these insights, recognizing the challenges discussed in the literature, and identifying the existing gaps in meeting varied learning needs within ICT-related teacher training, a central question emerges to be explored:

> *What modality of delivery best accommodates learners' diverse needs in an ICT-related teacher training program in Vietnam?*

3. Methods

This qualitative study explored teacher's needs and perspectives on MODs through interviews with schoolteachers across Vietnam. Thirty teachers from three educational levels including primary, secondary (junior high), and high school participated in one-on-one interviews to provide an in-depth understanding of their needs, preferences, and perspectives. Both Burns (1995) and Bryman (2012) advocate that representativeness outweighs sample size. For this reason, teachers from different regions and teaching levels were recruited for the interviews. Marshall et al. (2013) and Vasileiou et al. (2018) suggest that saturation occurs when 30 or fewer interviews are conducted, which can be also found in the vast majority of studies.

Kvale (2007, p. 18) defines an interview as an inter-view where knowledge is constructed through the interviewer–interviewee interaction. Interviews are employed because they provide in-depth evidence for understanding the central phenomenon (Burns, 1995; Creswell, 2012), offering detailed insights into a research topic and uncovering the narrative behind a participant's experiences (Quad, 2016). This method of data collection also allows researchers to clarify the issues raised by interviewees and ask probing questions (Bhattacherjee, 2012, p. 78). Kvale (2007) introduces seven important stages of an interview inquiry, including thematizing, designing, interviewing, transcribing, analyzing, verifying, and reporting. Kvale (2007) further explains that thematizing involves formulating research questions and clarifying the theoretical basis of the topic/theme under investigation. To ensure the high quality of interviews, we followed the principles suggested by Quad (2016), indicating that an effective interviewer must possess a comprehensive understanding of the topic, adopt a structured approach/protocol, and outline the procedures clearly to

facilitate a smooth interview process. The questions posed should be simple, concise, and articulated distinctly to enhance understanding. Additionally, the interviewer should exhibit gentleness, tolerance, sensitivity, and patience, especially when facing provocative or unconventional opinions. It is also crucial for the interviewer to maintain focus and avoid digressions. A critical assessment of the reliability and validity of the information provided is necessary, alongside the retention of key insights shared by the interviewee. Finally, the interviewer should possess the ability to accurately interpret the interviewee's responses, ensuring effective communication and understanding throughout the interaction.

After ethical approval was received, the authors contacted professional organizations for teacher PD in Vietnam for initial consent. These organizations helped to contact potential interviewees across the north, central, and south of Vietnam via email with a link to our registration form. The first 30 registered teachers were recruited, with the time and date provided in the form of selecting tickets. These teachers were contacted via the email they had provided. Then, written consent forms were signed before the semi-structured interviews were conducted. They were also informed that participation in the interview was entirely voluntary, and they could withdraw from participation at any time without having to give any reasons. In the interview protocol, there were three main parts, including (1) their previous training experiences (if any), (2) their current experiences and skills of using ICT-related activities in teaching–learning, and (3) their future needs of ICT-related professional training. Part one and part two helped us identify their background, examining their ICT skill competence. In part three, we asked the following important question: "For future training programs, which mode of delivery do you prefer, online, face-to-face or blended? Why?"

After the interviews were completed, we transcribed them verbatim and imported the transcripts into Nvivo 12 software for coding and data analysis. A deductive coding method was applied to identify the interviewee' needs and preferences regarding MODs. There were five main steps in the procedure, based on the suggestion by (Toye et al., 2014) including (1) Identification, (2) Criteria and screening, (3) Inclusion/Exclusion based on a priori codes, (4) Reviewing, and (5) Analysis and Findings.

To ensure privacy, no names were used during interviews. Participants and transcripts were identified by a code number e.g., Ru-ELE-T001, Ur-ELE-T001, Ru-LOW-T001, Ru-UPP-T001… A 'coding key' document included coded identifiers for participants, detailing region and level of school. This document was stored on the password-protected computers of the research team. De-identified data were also stored on password-protected computers as per ethical requirements.

4. Results and Discussion

The interviews included EFL teachers from primary schools, lower secondary schools, and upper secondary schools, with six participants from the north, thirteen from the central region, and eleven from the south. Of these teachers, seven teach at the primary level, eleven at the lower secondary, and twelve at the upper secondary. Most of them had participated in in-service ICT training prior to the interviews. Their ICT competence levels were assessed based on the levels of the SAMR model (see Table 1).

Table 1. Infographics of participants in detail.

Participant ID	Teaching Level	Regions	Urban/Rural	Latest Year(s) of In-Service Training	SAMR Level
Interviewee ID01	Low	South	Rural	2	3
Interviewee ID02	Low	South	Urban	6	4
Interviewee ID03	Prim	North	Rural	1	3

Table 1. *Cont.*

Participant ID	Teaching Level	Regions	Urban/Rural	Latest Year(s) of In-Service Training	SAMR Level
Interviewee ID04	Prim	North	Rural	1	2
Interviewee ID05	Prim	North	Rural	1	3
Interviewee ID06	Low	Central	Urban	1	3
Interviewee ID07	Low	Central	Urban	2	1
Interviewee ID08	Low	Central	Urban	3	1
Interviewee ID09	Prim	North	Rural	1	1
Interviewee ID10	Low	South	Rural	1	2
Interviewee ID11	Low	South	Rural	3	2
Interviewee ID12	Low	Central	Rural	3	1
Interviewee ID13	Upper	Central	Rural	2	3
Interviewee ID14	Prim	South	Rural	1	1
Interviewee ID15	Upper	South	Urban	1	1
Interviewee ID16	Low	Central	Urban	5	1
Interviewee ID17	Upper	Central	Rural	1	4
Interviewee ID18	Upper	Central	Urban	1	3
Interviewee ID19	Upper	South	Urban	1	2
Interviewee ID20	Upper	Central	Rural	3	3
Interviewee ID21	Low	South	Urban	7	2
Interviewee ID22	Upper	North	Rural	1	3
Interviewee ID23	Upper	Central	Urban	1	2
Interviewee ID24	Upper	Central	Rural	1	1
Interviewee ID25	Prim	Central	Rural	1	2
Interviewee ID26	High	South	Urban	1	1
Interviewee ID27	High	South	Urban	2	1
Interviewee ID28	Low	North	Rural	1	2
Interviewee ID29	Prim	Central	Rural	2	1
Interviewee ID30	High	South	Urban	1	4

Note: Elem = elementary school; Low = lower secondary school; Upper = upper secondary school. SAMR level: Substitution (1), Augmentation (2), Modification (3), and Redefinition (4).

In general, the results revealed that in in-service PD training programs, the teachers as adult trainees had varied preferences for MODs. As shown in Figure 1, the majority of teacher participants were interested in BL (36.67%), followed by F2F learning only (26.67%). These interviewees revealed that the major reason for their choice was that BL provided them with more proactive learning activities and access to learning resources for practice. This finding aligns with the conclusion by Means et al. (2013) about the potential advantages of BL. In this regard, those who opted for F2F learning sessions in BL showed their interest in receiving in-person interactions, direct support, and instant feedback from instructors. Other groups indicated equal preferences for these three identified MODs (10.00% by each), namely, synchronous online learning, asynchronous online learning only, and any synchronous learning (F2F or live online). Only a smaller portion (6.67%) of the interviewees showed interest in bichronous online learning. The nature of this MOD is grounded on internet-based learning, which is often pertinent to attrition or dropout rates, especially in adult learners, as concluded by many other researchers (e.g., J.-H. Park & Choi, 2009; Shaikh & Asif, 2022). Although most in-service teachers opted for BL and F2F MODs, the other groups' preferences should not be overlooked. This is aligned with the idea that promoting inclusion and equity in education is of great importance (Ainscow, 2020).

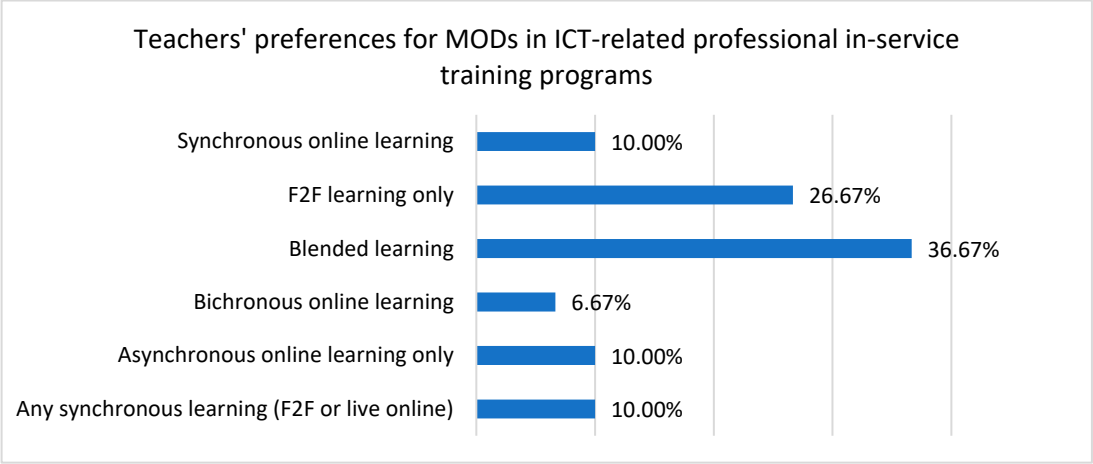

Figure 1. Teachers' preferences for MODs in ICT-related professional in-service training.

Through the use of a matrix coding query in Nvivo software, the findings show that BL most benefits learners with lower ICT skill levels. The matrix coding query is a feature that "maximizes NVivo utilities in an analysis of open-ended responses and highlights differences across and within participants' groups" (Feng & Behar-Horenstein, 2019, p. 564). A total of 10 out of 11 interviewees who showed preference for BL were at the substitution and augmentation level. Their choices revealed that while asynchronous learning helped them with self-pace and personalized learning, synchronous or F2F learning was still important to them. When they were at lower levels of ICT skills, direct, instant support in the F2F classroom was more effective in comparison to other delayed responses in asynchronous online learning. Our findings also indicated that participants with higher ICT competence were more likely to opt for synchronous online learning than those with lower competence. Previous studies found that there is a linear relationship between learners' online learning acceptance and their ICT competence (Sharif-Nia et al., 2024) or ICT self-efficacy (S. Y. Park, 2009). Interestingly, the choice of F2F learning only was not dependent on the level of SAMR. A total of 50% of those at ICT levels 1 and 2 opted for F2F learning only, and the same percentage of interviewees with higher ICT skill levels (3-4) still showed interest in F2F learning (see Table 2).

Table 2. MODs and teachers' ICT competence.

	Levels of SAMR				
Preferences for MODs	**1**	**2**	**3**	**4**	**Sum of Interviewees**
1: Any synchronous modes	0	1	2	0	3
2: Asynchronous online learning only	2	0	0	1	3
3: Bichronous online learning	1	0	0	1	2
4: Blended learning	6	4	0	1	11
5: F2F learning only	1	3	4	0	8
6: Synchronous online learning	1	0	2	0	3

With the same query method, we found that the choice of MOD should not be determined by the level of teaching (see Table 3). For example, teachers from all three teaching levels opted for BL. Similarly, the group that preferred F2F learning only also belonged to different levels of teaching.

Table 3. MODs and teachers' ICT competence.

	Level of Teaching			
Preferences for MODs	**Elem**	**Low**	**Upper**	**Sum of Interviewees**
1: Any synchronous modes	2	0	1	3
2: Asynchronous online learning only	1	0	2	3
3: Bichronous online learning	0	1	1	2
4: Blended learning	1	7	3	11
5: F2F learning only	3	2	3	8
6: Synchronous online learning	0	1	2	3

The findings in Table 3 show that policy makers, organizers, trainers, and program designers should not decide on the choice of a certain MOD based on the teaching levels of in-service teachers. For example, it should not be inferred that those who teach in elementary schools should be preferably trained with the F2F mode. The findings show that F2F training is appropriate for teachers at higher levels. The six MODs can be opted for by those of dispersed teaching levels (see Table 3).

Similarly, the choice of the MOD is influenced by various factors, including the expertise and pedagogical skills of trainers, conditions of infrastructures, and, more importantly, the satisfaction of trainees in meeting their needs and preferences. When the trainees' selection of the MOD is satisfied, it promotes their motivation, engagement, retention, and expected learning outcomes. Engagement enhances the cognitive process of learners, regardless of the age of students (Kearsley & Shneiderman, 1998). Research also indicates the relationship between engagement and satisfaction. These are two important factors that contribute to the effectiveness and success of an educational program (Howson & Matos, 2021). Prioritizing trainee satisfaction can give impetus to the creation of a positive and supportive learning environment that foster trainees' positive learning experiences, knowledge, skills, and attitude.

The findings from the literature and data analysis show that each MOD has its own pros and cons. There have been numerous studies focusing on online teaching and learning, especially in the context of MOOCs over the years and the recent COVID-19 pandemic situation. However, many participants in this study expressed their preferences for other different MODs apart from the BL mode. Although the majority rule usually guides decision-making, promoting egalitarianism and inclusion is equally important. In other words, the choice of modality delivery should aim to accommodate as many in-service trainees as possible.

The following representative excerpts illustrate the diverse needs of teacher trainees and the rationales of their choices.

4.1. Online (a)synchronous Learning Versus F2F Learning

> In my opinion, now, for modern times, online is the best, because it reduces costs, saves travel. I can be flexible. I can study anywhere, as long as there is an internet connection there. Then actually, in my opinion, online is optimal and for the time being…through Zoom. (Interviewee ID01)

This interviewee supported online learning because of its flexibility and cost effectiveness. Another interviewee had a similar opinion, as below:

> "I like the training via Zoom.… I do not need to travel. I can follow their screen to practice". (Interviewee ID27)

The above interviewees expressed their preference for synchronous online learning because of the benefits of time and learning expense. It is also noticeable that they both

showed their interest in the affordance of the Zoom application. This finding is aligned with a study by Alfadda and Mahdi (2021) who found a significant relationship between the Zoom application and technology acceptance model (TAM) introduced by Davis (1989). However, others had an ambivalent idea about online learning and F2F learning, as below:

> Face-to-face learning allows me to instantly interact with my instructor as well as many of my colleagues, where I can discuss face-to-face. Besides, at the present time, learning online also has many advantages. If the learners really care, the training efficiency is still very high as the face-to-face learning method. In addition, online learning also saves time and money. (Interviewee ID10)

Another participant shared the same idea as below:

> I think face-to-face learning is a good choice. But in case we cannot have the opportunity to participate in, I think synchronous online learning on Zoom can be acceptable as well. (Interviewee ID25)

The participants like interviewee ID10 expressed a strong preference for F2F learning as their top choice because of its direct interaction and immediate feedback benefits. Some participants like interviewee ID25 also accepted both F2F learning and synchronous online learning via the Zoom application. In this situation, if the learners are too busy to attend the F2F class, they can participate in training sessions via Zoom. However, others also acknowledged the effectiveness of asynchronous online learning that accommodates more proactive autonomy. Based on this perspective, online learning is equally beneficial for learners to take initiative, manage their time, and actively engage with contents. Such a perspective can be seen from the following excerpt:

> I prefer the 24/7 online learning as designed in Coursera. Such courses include instructional clips, exercises, and progress reports. I can personalize my timetable for learning. One of its disadvantages is the high rate of drop or delay due to the lack of someone to remind the learners. (Interviewee ID24)

Notably, the above participant meant that asynchronous online learning could afford more personalized learning.

4.2. BL and Bichronous Online Learning

Many participants expressed their preferences for BL for common reasons such as its affordances of flexibility, proactive autonomy, and personalized selections of contents offered in the online learning environment. However, they also agreed that F2F sessions were indispensable. For example, interviewee ID17 opined that "the important content should be done directly. The parts that teachers are already relatively confident in or they need less will be included in the self-study section under the modality of delivery for online learning". In addition, the participants also needed on-site and instant technical support from instructors and their peers. Their opinions on BL can be found in the excerpts below as further examples.

> I like the blended learning method. This method both supports direct interaction, and it also supports learners to learn by themselves in a 24/7 method. Training content should not be designed too much in the classroom. For a training program on IT application skills, learners need to practice. Otherwise they will forget all skills very quickly if they don't use those skills in practice. (Interviewee ID19)

For reciprocal support in the F2F sessions of the BL MOD, interviewee ID21 stated that "students with better skills often re-instruct those who can't keep up with the instructor's instructions. In case their problems could not be solved by surrounding people, the instructor used to reach out to help".

The opinions from the above excerpts indicate that both high-tech and low-tech learners can benefit from BL. While the former can benefit from autonomous learning, the latter has more opportunities to receive support from both instructor(s) and learners in both learning environments of BL. The last interviewee was one of the two learners who supported the bichronous online learning mode because they found that it not necessary to organize F2F classes. They would like to opt for both synchronous and asynchronous online learning.

> For me, nowadays, the training of ICT skills is not necessarily conducted face-to-face because almost every task can be done online, if someone is really willing and capable of using ICT. So I prefer working on Google Meet, then the follow-up practice activities can be designed on an LMS. (Interviewee ID30)

Again, the statement of the above interviewee indicates that the learner's selection of online learning can be affected by their capacity of ICT use.

5. Recommendation of an Innovative Model

Grounding on the literature review and empirical data regarding teachers' preferences and satisfaction with various MODs, we propose a practical solution that integrates the most preferred options. By combining F2F learning with bichronous online learning and BL, a new modality of delivery, termed trichronous learning (see Figure 2), can emerge. We define trichronous learning as a model of learning that combines blended learning and bichronous online learning so that learners can access the same asynchronous online learning content through a learning platform, but they can also flexibly opt for either F2F learning or synchronous online learning in live, instructor-led sessions of a teaching program. This model seeks to enhance adaptability and meet diverse learner needs in the Vietnamese educational context.

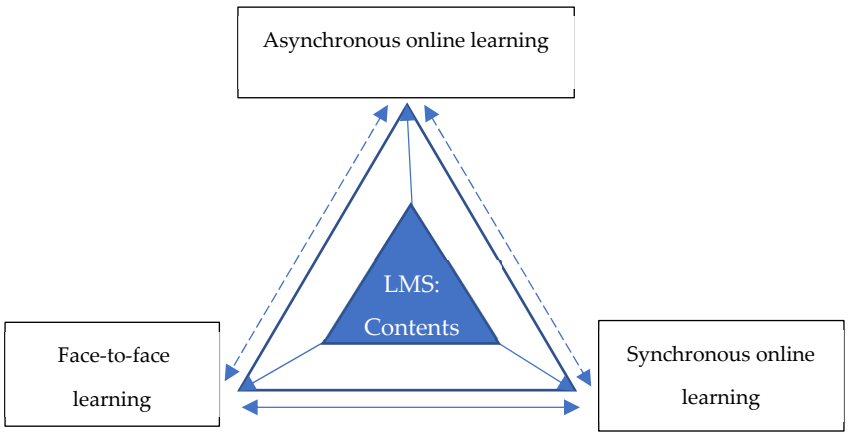

Figure 2. Trichronous modality of delivery for in-service teacher training.

In this model, contents are readily taught online within an LMS, allowing learners who prefer asynchronous study to work independently and at their own pace. In the meantime, synchronous delivery occurs both in person through traditional F2F classrooms and online via video conferencing. This hybrid synchronous learning is possible when teacher trainers join their online classroom (e.g., via Zoom) and share their screen displaying learning contents, activities, and resources with online participants. At the same time, teacher trainers show the same computer screen to participants in the physical classroom via a projector. In this way, both groups of online and F2F learners interact with the same learning contents. This dual approach enables learners who opt to study synchronously (whether in-person F2F or online) to seamlessly engage with LMS-provided contents.

Centralizing materials in the LMS maintains consistency, ensuring that different types of learners choosing different MODs can access the same study content. Additionally, interactive, video-based instructions within the LMS support all learner types, making the model adaptable to diverse preferences and maximizing satisfaction. In other words, the primary advantage of this trichronous learning model is its capacity to meet a wide range of participant preferences by combining F2F learning, BL, and bichronous online learning to promote inclusivity. By integrating these modalities, the model leverages the strengths of each to foster an inclusive approach to education (Sit, 2017).

Trichronous learning can expand the learning experience of learners because it merges conventional BL with emerging bichronous online learning. In this way, the possibilities of meeting diverse learning styles and needs within a training program for learners can be increased. In andragogy, meeting learners' needs is crucial because they are more proactive and their time is more critical in comparison to young students in primary and/or high school. The literature often discusses personalized learning in terms of content and teaching–learning styles. However, it is necessary to consider utilizing more personalized learning based on learners' preferred MODs. As an example of how important it is to meet diverse needs, giant technology companies like Alphabet customize their search suggestions of trends on Google.com according to users' locations and their previously searched keywords. In other words, the better the à la carte options offered for users are, the more possible it is to satisfy their needs.

Trichronous learning is designed to empower engagement and reduce the possibility of attrition by offering flexible teaching options. As illustrated in Figure 2, trichronous learning combines BL and bichronous online learning in a single training program, allowing learners to participate in real-time class instruction and discussion while adapting to their own schedules. For instance, in real teaching situations, learners may need to study from home due to time constraints or travel limitations. In such cases, synchronous online learning (e.g., via Zoom) provides a practical alternative that enables learners to stay engaged without missing a session. Research also suggests that the use of autonomous learning increases with age (Sheldon et al., 2006), highlighting the importance of flexible MODs for adult learners. Therefore, trichronous learning is expected to provide EFL teachers with the opportunity to tailor their learning experience, making it more sustainable and conducive to their professional growth.

Nevertheless, another noteworthy point to consider is the challenge of trichronous learning that might be related to instructional design and the role of teacher trainers rather than the trainees themselves. With trichronous learning, teachers or instructors need to log in to an online teaching tool such as Zoom in their F2F classroom to streamline content and interact with online learners. This involves managing different groups of learners simultaneously, with some attending the on-campus class and others participating online (e.g., via Zoom). To ensure equitable learning experiences for all learners, trainers must possess strong andragogical skills to effectively balance engagement and instruction across these groups. This dual focus demands not only technical competency but also advanced strategies in classroom management. In addition, institutional support is indispensable. Organizers can take actions to provide better internet access, while in-service teacher trainees can bring their own devices to the classroom.

Recommendations in brief: Policy makers can focus more on infrastructure development, financially supporting in-service teachers with long-term policies. They can also recruit high-quality trainers who may work as trainers of trainers so that cascading training can be implemented nationwide. For educators and trainers, continuing professional development for themselves is of great importance. They should both improve their technological pedagogical content knowledge (TPACK), as suggested in the framework by

Mishra and Koehler (2006), and their 21st-century skills (Trilling & Fadel, 2009). In addition, not only learners but also educators and trainers need to be aware of the four pillars of education as stated by UNESCO: learning to know, learning to work, learning to live together, and learning to be (Delors, 1998). It is apparent that the first three pillars are related to life-long learning. In other words, to implement a trichronous learning model, educators need up-to-date, continuing professionalism.

6. Limitations and Conclusions

This study has certain limitations. The sample size of teacher trainee interviews is relatively small, so generalizations should be approached with caution. Future research could include teacher trainers to provide a more comprehensive data set. While trichronous learning offers flexibility, its success may depend on infrastructure quality, such as stable internet connectivity and access to reliable online tools, which may vary across different regions in Vietnam. To mitigate these challenges, more governmental investments in education need to be made. At the same time, program organizers or designers can decide on the ratio between synchronous and asynchronous learning depending on the quality of infrastructure, especially internet connection. These limitations also suggest the need for further research on the implementation challenges and practical feasibility of trichronous learning in diverse educational settings. Alternatively, piloting the model or further experimental research on evaluation on learning outcomes with the employment of trichronous learning compared to other MODs is suggested. Addressing these constraints will be essential for maximizing the effectiveness of this model in supporting EFL teachers' professional development.

Despite the limitations, this research reveals that in-service EFL teachers in Vietnam have diverse needs and preferences for MODs in ICT-related teachers' PD. To better meet these needs and enhance satisfaction, we proposed an innovative MOD that incorporates trichronous learning that integrates existing delivery approaches. The key innovation of the trichronous learning model lies in its flexibility, allowing learners to alternate between F2F attendance and synchronous online participation. Teachers display instructional content on-screen via a Zoom account (or other synchronous online platforms) within their F2F classroom, enabling online learners to engage with content and activities in real time almost as effectively as those physically present. The research findings are significant for EFL professional trainers and teacher educators, offering valuable insights for decision-making regarding the growing integration of educational technology in contemporary EFL research and practice. In this era of technological globalization, many countries share similar technological educational contexts, especially among developing countries. Therefore, this model is worth further discussion or attempts to test and/or apply it in other similar (inter-)national educational contexts.

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