Implementing the Four Principles of HyFlex Teaching: Evidence from a Qualitative Study of University Instructors

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***Abstract*—The growing adoption of HyFlex teaching in higher education has increased the need to understand how instructors manage the challenges associated with simultaneously teaching online and in-person students. Although Beatty's four principles of HyFlex designLearner Choice, Equivalency, Accessibility, and Reusabilityprovide a useful framework for course design, limited research has examined how instructors implement these principles in synchronous HyFlex classrooms.**

This study explores university instructors' experiences with synchronous HyFlex teaching through a qualitative focus group approach. Drawing upon Beatty's four principles as a theoretical lens, data were collected from six instructors with HyFlex teaching experience and analyzed using deductive thematic analysis.

The findings indicate that Learner Choice is the most valued aspect of HyFlex teaching, providing students with flexibility in how they participate in learning activities. Accessibility and Reusability were generally viewed as achievable through existing technological tools and instructional practices. In contrast, Equivalency emerged as the most difficult principle to implement. Instructors reported challenges providing equivalent levels of interaction, engagement, and instructional attention across participation modes due to divided attention, teaching complexity, and technological constraints. The findings further highlight the importance of institutional support, including technological infrastructure, faculty training, and instructional assistance, in facilitating successful HyFlex teaching.

This study contributes to the HyFlex literature by demonstrating that the four principles are not equally difficult to implement in synchronous learning environments and by identifying Equivalency as the primary implementation challenge. The findings offer practical insights for educators and institutions seeking to improve the effectiveness, accessibility, and sustainability of HyFlex education.

***Index Terms*—HyFlex teaching, educational technology, Synchronous learning, Instructor perceptions, Flexible learning environments, Qualitative research**

I. INTRODUCTION

Advances in digital technologies have transformed the delivery of higher education, creating opportunities for institutions to provide more flexible and accessible learning experiences. Over the past two decades, universities have increasingly adopted technology-enabled teaching approaches to accommodate diverse student needs, including fully online, blended, hybrid, and HyFlex learning environments. These approaches gained particular prominence during the COVID-19 pandemic, when educational institutions were required to rapidly adapt their teaching practices while maintaining instructional continuity and student engagement.

Although the terms blended, hybrid, and HyFlex learning are often used interchangeably, important distinctions exist among these approaches. Blended learning refers to courses in which a portion of traditional classroom instruction is replaced by online learning activities (Bernard et al., 2014; Vo et al., 2017). In contrast, HyFlex (hybrid-flexible) teaching provides students with the flexibility to choose between attending classes in person or online. In this study, HyFlex teaching is defined as a teaching mode in which some students participate in person while others participate online during the same class session. More specifically, this study focuses on synchronous HyFlex teaching, where online and in-person students participate simultaneously through video-conferencing technologies.

The growing adoption of HyFlex teaching has generated considerable interest among educators and researchers. Prior studies have highlighted several potential benefits of HyFlex environments, including increased flexibility, improved accessibility, greater learner autonomy, and expanded educational opportunities for students with geographical, professional, or personal constraints. These advantages have contributed to the growing popularity of HyFlex teaching across higher education institutions. However, despite its increasing implementation, the effectiveness of HyFlex teaching remains a subject of ongoing discussion. While students benefit from greater flexibility in choosing how to attend classes, instructors face the challenge of simultaneously supporting learners across two distinct participation modes.

Synchronous HyFlex teaching introduces a unique instructional environment that differs substantially from traditional face-to-face, online, or blended learning formats. Instructors must simultaneously manage classroom interactions, online participation, technological platforms, and learning activities while attempting to provide comparable educational experiences to all students. Because instructors possess limited cognitive and instructional resources, balancing the needs of online and in-person learners can be challenging. Consequently, questions remain regarding whether students participating through different modes receive equivalent learning opportunities and how instructors can effectively design and deliver successful HyFlex courses.

Beatty (2007, 2019) proposed four foundational principles for HyFlex course design: Learner Choice, Equivalency, Accessibility, and Reusability. Learner Choice emphasizes students' ability to select their preferred mode of participation. Equivalency focuses on providing comparable learning experiences and outcomes across participation modes. Accessibility requires learning resources and activities to be available to all students regardless of attendance mode, while Reusability encourages the sharing and reuse of learning artifacts across learning environments. Together, these principles provide a useful framework for understanding and evaluating HyFlex teaching practices.

Although the four HyFlex principles have been widely discussed conceptually, less is known about how instructors implement these principles in practice and the challenges they encounter in doing so. Existing studies have primarily focused on student outcomes, flexibility benefits, and course design considerations. Comparatively less attention has been devoted to understanding how instructors operationalize the four principles while simultaneously managing online and in-person learners in synchronous HyFlex classrooms. Examining instructors' experiences is important because they play a central role in translating HyFlex principles into effective teaching practices.

To address this gap, this study explores university instructors' experiences with synchronous HyFlex teaching through a qualitative focus group approach. Specifically, the study seeks to answer the following research questions:

RQ1: How do university instructors perceive the role of the four HyFlex principles in successful synchronous HyFlex teaching?

RQ2: What challenges do instructors encounter when implementing the four HyFlex principles in synchronous HyFlex classrooms?

This study contributes to the growing HyFlex literature in several ways. First, it extends current understanding of HyFlex teaching from the instructor perspective. Second, it examines how the four core HyFlex principles are interpreted and implemented in real teaching environments. Third, it identifies key challenges associated with achieving equivalent learning experiences across participation modes and highlights practical strategies that may improve HyFlex course design, technological support, and instructional effectiveness. By focusing on instructors' experiences, this study provides insights that can inform the future development and implementation of synchronous HyFlex teaching in higher education.

II. LITERATURE REVIEW

Hyflex Teaching

The increasing integration of digital technologies into higher education has led to the emergence of various flexible learning models designed to accommodate diverse student needs. Among these approaches, online learning, blended learning, hybrid learning, and HyFlex learning have gained considerable attention from both researchers and practitioners (Mulenga & Shilongo, 2025). Although these terms are frequently used interchangeably, they represent distinct

instructional approaches with different levels of flexibility and learner control.

Online learning refers to courses in which instruction, interaction, and assessment are delivered entirely through digital platforms without requiring students to attend physical classrooms (Palloff & Pratt, 2013). In contrast, blended learning combines face-to-face instruction with online learning activities, where a portion of classroom teaching is replaced by web-based learning experiences (Bernard et al., 2014; Vo et al., 2017). Hybrid learning generally refers to instructional approaches that integrate both online and in-person learning components; however, the degree of integration and flexibility varies considerably across implementations.

HyFlex (hybrid-flexible) teaching represents a unique form of hybrid education that emphasizes student choice and participation flexibility. Originally proposed by Beatty (2007), the HyFlex model allows students to choose how they participate in a course, whether through face-to-face attendance, online participation, or a combination of both. The fundamental objective of HyFlex teaching is to provide students with flexible participation options while maintaining comparable learning opportunities regardless of the mode selected (B. Beatty, 2007).

Different forms of HyFlex teaching have emerged as educational institutions adopted new technologies and teaching practices. These variations can be classified according to the timing of participation and the communication technologies used to support instruction. Some HyFlex implementations rely primarily on asynchronous technologies, such as learning management systems, discussion forums, recorded lectures, and digital learning materials, while others employ synchronous technologies that enable real-time interaction between instructors and students (Kohnke & Moorhouse, 2021). Communication technologies also differ in terms of media richness, ranging from text-based communication tools to video-conferencing platforms that support audio, visual, and interactive communication (Hampel & Baber, 2026).

This study focuses specifically on synchronous HyFlex teaching, in which students participate simultaneously through two instructional channels: a traditional classroom environment and an online video-conferencing environment. In this model, instructors teach both in-person and online students during the same class session. Synchronous HyFlex teaching became particularly prominent during and after the COVID-19 pandemic as educational institutions sought to maintain instructional continuity while accommodating students with diverse attendance needs and preferences.

Although synchronous HyFlex teaching offers significant flexibility and accessibility benefits, it also presents unique instructional challenges. Unlike traditional classroom teaching or fully online instruction, instructors must simultaneously manage interactions across two learning environments, coordinate multiple technologies, and ensure that both groups of students receive meaningful learning opportunities. These challenges raise important questions regarding the effectiveness of HyFlex teaching and the extent to which instructors can successfully support students across multiple participation modes. To better understand these issues, the next section introduces Beatty's four core principles of HyFlex design, which provide the theoretical foundation for this study.

The Four Principles of HyFlex Design

To guide the design and implementation of HyFlex courses, Beatty (2007, 2019) proposed four foundational principles: Learner Choice, Equivalency, Accessibility, and Reusability (B. Beatty, 2007, 2019). These principles have become widely recognized as the cornerstone of HyFlex course design and provide a framework for ensuring that students can participate through different learning modes while achieving comparable educational outcomes. Together, these principles seek to balance flexibility with instructional quality and student success.

Learner Choice

Learner Choice is the defining characteristic of the HyFlex model. This principle emphasizes students' ability to determine how they participate in a course by selecting either in-person or online attendance according to their individual needs, preferences, and circumstances (B. Beatty, 2019). Unlike traditional classroom instruction, where attendance mode is fixed, HyFlex courses provide students with the flexibility to choose their mode of participation on a class-by-class basis.

The principle of Learner Choice aligns with theories of learner autonomy and self-directed learning, which

suggest that students are more motivated and engaged when they have greater control over their learning experiences (Jeannette Littlemore, 2001). HyFlex teaching accommodates diverse student needs by allowing learners to balance educational responsibilities with employment, family commitments, health concerns, and geographical constraints. Previous studies have identified flexibility as one of the most valued features of HyFlex learning environments and a key factor contributing to student satisfaction and participation.

Equivalency

Equivalency refers to the provision of comparable learning experiences and learning outcomes across different participation modes. While HyFlex students may engage in different activities depending on whether they attend online or in person, the principle of Equivalency requires that these activities lead to similar educational outcomes (B. Beatty, 2007).

Achieving equivalency is often considered one of the most challenging aspects of HyFlex teaching. Instructors must design learning activities, assessments, and interactions that provide meaningful opportunities for all students regardless of participation mode. Previous research has noted that online and in-person learners frequently experience different levels of interaction, engagement, and instructor attention (Hollister et al., 2022; Walker & Koralesky, 2021). Consequently, ensuring equivalent learning opportunities remains a persistent challenge for HyFlex educators and institutions.

Accessibility

The Accessibility principle emphasizes that all students should have equitable access to learning resources, instructional materials, learning activities, and support services regardless of how they participate in a course. (B. Beatty, 2019; Seale & Cooper, 2010) . In HyFlex environments, accessibility often involves providing digital access to instructional materials, recorded lectures, communication channels, assessments, and support resources. The principle is closely aligned with broader educational goals of inclusivity and universal access to learning. As student populations become increasingly diverse, accessibility has emerged as an important consideration in the design and delivery of flexible learning environments.

Reusability

Reusability refers to the ability to share and reuse learning artifacts across participation modes. Learning artifacts may include recorded lectures, discussion contributions, presentations, instructional materials, collaborative activities, and other educational resources generated during the learning process. According to Beatty (2019), materials created for one participation mode should be made available to students in other participation modes whenever possible (B. Beatty, 2019).

The principle of Reusability promotes efficiency and supports student learning by expanding access to educational resources beyond the immediate classroom experience. Recorded lectures, shared discussion materials, and archived learning resources enable students to review content at their own pace and revisit concepts when needed. Reusability also reduces the need for instructors to develop separate learning materials for different student groups, thereby supporting more sustainable course design practices (Onofrei & Ferry, 2020).

Collectively, these four principles provide a comprehensive framework for understanding successful HyFlex teaching. While the principles offer valuable guidance for course design, implementing them simultaneously within synchronous HyFlex environments may present significant challenges for instructors. In particular, balancing flexibility with equivalent learning experiences while supporting both online and in-person learners requires substantial pedagogical, technological, and organizational effort. The following section reviews the benefits and challenges associated with HyFlex teaching and highlights the research gap addressed by this study.

Benefits and Challenges of HyFlex Teaching

The growing adoption of HyFlex teaching has been driven largely by its potential to increase flexibility and accessibility in higher education. By allowing students to choose how they participate in learning activities, HyFlex environments can accommodate diverse learning preferences, personal circumstances, and scheduling constraints. Previous studies have consistently identified flexibility as one of the most important advantages of HyFlex learning, enabling students to balance educational commitments with employment, family responsibilities, health concerns,

and geographical limitations (Abdelmalak & Parra, 2016; Pereira & Silva, 2025; Stains et al., 2018).

In addition to flexibility, HyFlex teaching has been associated with increased educational accessibility (La Greca & Hanham, 2023). Students who may otherwise face barriers to classroom attendance can continue participating through online channels, thereby expanding opportunities for educational inclusion. HyFlex environments have also been shown to support learner autonomy by providing students with greater control over their learning experiences and participation choices. Furthermore, the availability of recorded lectures and reusable learning materials can enhance learning continuity and allow students to revisit course content as needed.

From an institutional perspective, HyFlex teaching offers a mechanism for maintaining instructional continuity during disruptions while simultaneously expanding educational reach. The COVID-19 pandemic demonstrated the value of flexible instructional models capable of accommodating rapidly changing circumstances. Consequently, many institutions have continued to explore HyFlex teaching as a long-term instructional strategy rather than merely an emergency response.

Despite these advantages, the implementation of HyFlex teaching presents numerous challenges. One of the most frequently cited concerns involves the increased complexity of teaching simultaneously to online and in-person students (Detyna et al., 2022). Unlike traditional instructional environments, synchronous HyFlex teaching requires instructors to manage multiple communication channels, monitor technological systems, facilitate interactions across different participation modes, and respond to the needs of geographically dispersed learners in real time (Shamir-Inbal & Blau, 2021; Zydney et al., 2020).

Achieving equivalency across participation modes represents another significant challenge(Zydney et al., 2020). Although HyFlex design principles advocate comparable learning experiences regardless of attendance mode, prior studies suggest that students participating online and in person often experience different levels of interaction, engagement, and instructor attention. Instructors may find it difficult to divide their attention equally between student groups, particularly during discussions, collaborative activities, and problem-solving exercises (Barkley et al., 2014). As a result, concerns remain regarding whether equivalent learning opportunities can be consistently achieved in synchronous HyFlex environments.

Technological challenges also play an important role in HyFlex teaching. Effective implementation depends upon reliable technological infrastructure, appropriate classroom equipment, stable internet connectivity, and instructors' ability to utilize multiple digital tools simultaneously. Previous studies have reported that technological difficulties can disrupt classroom interactions, increase instructor workload, and negatively affect student engagement (Bülow et al., 2022; Flynn-Wilson & Reynolds, 2021). Furthermore, many instructors receive limited training and institutional support when transitioning to HyFlex teaching environments.

Student engagement presents an additional challenge within HyFlex classrooms. Research has shown that online students may experience feelings of isolation, reduced participation, and weaker connections with instructors and classmates compared to their in-person counterparts (Fuller-Rowell et al., 2022; Hansen-Brown et al., 2022). Maintaining active participation across both learning modes requires instructors to carefully design learning activities that encourage interaction and collaboration among all students.

Although prior research has identified both the benefits and challenges associated with HyFlex teaching, existing studies have largely focused on student outcomes, flexibility benefits, and course design considerations (Barr & Luo, 2025; Mahmud et al., 2026). Comparatively less attention has been devoted to understanding how instructors implement the four core HyFlex principles in synchronous HyFlex classrooms and how they navigate the challenges associated with doing so. In particular, limited research has examined how instructors balance learner choice, equivalency, accessibility, and reusability while simultaneously supporting online and in-person learners. Addressing this gap is important because instructors play a central role in translating HyFlex design principles into effective teaching practices.

Accordingly, this study investigates instructors' experiences with synchronous HyFlex teaching through the lens of the four core HyFlex principles. By examining how instructors perceive, implement, and adapt these principles in practice, this study seeks to

provide a deeper understanding of the factors that contribute to successful HyFlex teaching.

III. METHODOLOGY

Research Design

This study employed a qualitative research design using a focus group interview to explore university instructors' experiences with synchronous HyFlex teaching. A qualitative approach was selected because the study seeks to understand how instructors perceive and implement the four core principles of HyFlex design in practice and how they navigate the challenges associated with teaching students simultaneously in online and in-person learning environments. Given the exploratory nature of the research questions, qualitative inquiry was considered appropriate for capturing rich descriptions and diverse perspectives regarding HyFlex teaching experiences.

The study was guided by Beatty's (2007, 2019) four principles of HyFlex designLearner Choice, Equivalency, Accessibility, and Reusabilitywhich served as the theoretical foundation for the development of the interview protocol and subsequent interpretation of findings.

Participants

Participants were university professors with prior experience teaching synchronous HyFlex courses. Recruitment was conducted through email invitations distributed to faculty members who had previously taught courses using a HyFlex format. To maintain consistency in instructional context and reduce disciplinary variation, participants were recruited exclusively from the Faculty of Business at a Canadian university.

A total of six professors participated in the study. Five professors attended the focus group discussion, while one professor who was unable to attend contributed responses through a follow-up survey containing the same discussion questions. Participants represented a range of disciplinary backgrounds, including finance, accounting, strategy, and information systems. All participants held doctoral degrees and had previous experience teaching at least one HyFlex course. Table 1 presents a summary of participant characteristics.

Table 1. Participant Profile

Participant	Discipline	Degree	HyFlex Experience
P1	Finance	PhD	Yes
P2	Accounting	PhD	Yes
P3	Strategy	PhD	Yes
P4	Information Systems	PhD	Yes
P5	Human Resources	PhD	Yes
P6	Information Systems	PhD	Yes

The diversity of disciplinary backgrounds provided a range of perspectives regarding the implementation of HyFlex teaching within business education.

Data Collection

Data were collected through a semi-structured focus group interview conducted via Zoom. The session began with a brief overview of the purpose of the study and an introduction to the four principles of HyFlex design. Participants were then invited to discuss their experiences teaching HyFlex courses and respond to a series of open-ended questions related to Learner Choice, Equivalency, Accessibility, Reusability, perceived advantages, implementation challenges, and future use of HyFlex teaching.

The focus group format was selected because it allows participants to interact with one another, compare experiences, and build upon shared observations. This interaction often generates richer insights than individual surveys by facilitating discussion and reflection among participants.

The discussion was audio-recorded with participant consent and subsequently transcribed for analysis. Following the focus group, participants completed a brief survey that allowed them to prioritize key concepts and issues emerging from the discussion using elements of the Nominal Group Technique.

Data Analysis

The focus group transcript and survey responses were analyzed using deductive thematic analysis. Guided by Beatty's (2007, 2019) four principles of HyFlex design, initial coding focused on participants' experiences related to Learner Choice, Equivalency, Accessibility, and Reusability. Additional themes that emerged across these principles, such as technological challenges, instructor workload, and divided attention, were also identified and incorporated into the iterative

analysis. The analysis followed an iterative process in which the researchers first reviewed the transcript multiple times to develop familiarity with the data. Initial codes were then generated to identify recurring concepts, experiences, and challenges discussed by participants.

Subsequently, related codes were grouped into broader themes that reflected common patterns across participants' experiences. Particular attention was given to comments relating to the four HyFlex principles as well as emerging issues that extended beyond the original interview questions. Through repeated comparison and refinement, the themes were organized into higher-level categories representing key factors influencing the implementation and effectiveness of synchronous HyFlex teaching.

The final themes were reviewed against the original transcript to ensure that they accurately represented participants' perspectives and captured the most salient aspects of their experiences.

Trustworthiness

Several measures were employed to enhance the trustworthiness of the study. First, the use of open-ended questions encouraged participants to provide detailed accounts of their experiences and reduced restrictions on responses. Second, the focus group format enabled participants to clarify, challenge, and expand upon each other's comments, thereby strengthening the depth of the data collected. Third, the interview recording and verbatim transcription helped ensure the accuracy of the analysis.

Finally, the analysis process involved multiple rounds of review and comparison between the emerging themes and the original data, helping to ensure that the findings remained grounded in participants' experiences and perspectives.

IV. FINDINGS

The findings are organized around Beatty's four principles of HyFlex design: Learner Choice, Equivalency, Accessibility, and Reusability. Across all four principles, participants emphasized the importance of flexibility and accessibility while simultaneously highlighting the challenges of providing comparable learning experiences to students participating through different learning modes. Several cross-cutting themes also emerged, including divided instructor attention, increased teaching complexity, and the need for institutional and technological support.

Learner Choice: Flexibility as the Primary Value Proposition

Among the four principles, Learner Choice emerged as the most positively perceived aspect of HyFlex teaching. Participants consistently emphasized the value of providing students with flexibility in how they engage with course activities. Professors viewed flexibility as one of the primary advantages of HyFlex teaching, allowing students to adapt their mode of participation according to personal circumstances, work commitments, health concerns, or geographical constraints.

The majority of participants believed that providing students with participation choices promotes autonomy and allows learners to take greater responsibility for managing their educational experiences. Several professors noted that the flexibility offered through HyFlex teaching aligns well with the increasingly complex lives of contemporary students, many of whom balance academic responsibilities with employment and family obligations. “Today’s students have work, family responsibilities, and many other commitments. Giving them options helps them stay engaged with the course”, one professor said.

However, participants also acknowledged that learner choice does not guarantee student success. While flexibility provides students with greater control over their learning experiences, successful outcomes still depend upon students' motivation, self-discipline, and engagement. One participant expressed concern that students may not always “make participation choices that best support their learning outcomes”. Nevertheless, most professors viewed learner choice as a “fundamental strength” of the HyFlex model and an important contributor to student accessibility and educational inclusion.

Overall, the findings suggest that Learner Choice is the most successfully implemented of the four HyFlex principles. Participants consistently identified flexibility as the primary value proposition of HyFlex teaching and a major reason for its continued adoption in higher education.

Equivalency: The Most Difficult Principle to Achieve

Among the four HyFlex principles, Equivalency emerged as the most challenging to implement. While participants generally supported the goal of providing comparable learning experiences across participation modes, they consistently expressed concerns regarding their ability to offer "equivalent levels of interaction, engagement, and instructional support" to both online and in-person students.

A recurring theme throughout the discussion was the difficulty of simultaneously managing two learning environments. Participants reported that their attention was often drawn toward students physically present in the classroom, making it challenging to engage online students to the same extent. One professor explained, "Most of the time, my attention is usually grabbed by students in the classroom," while another acknowledged that addressing questions and concerns from online students during class was often difficult. As a result, some instructors encouraged online students to contact them outside of class to seek clarification or discuss course-related issues. "I'd recommend the online students to reach me after class and clear their doubts as it is quite difficult to do the same during class hours", added by one instructor.

Participants also noted that their existing HyFlex courses were largely designed around traditional classroom instruction rather than intentionally developed to support two concurrent learning environments. "I normally focus more on in-classroom students when I prepare for classes", one professor stated. Consequently, learning activities were often more naturally suited to in-person participation, while online students experienced fewer opportunities for spontaneous interaction and engagement. Several participants acknowledged that they had not developed separate learning activities specifically tailored to remote learners.

The challenge of facilitating meaningful interaction across participation modes was particularly evident during discussions and collaborative activities. Instructors reported that online students were less likely to participate actively in classroom conversations and often experienced reduced visibility during group interactions. This created concerns regarding whether online students were receiving learning experiences comparable to those of their in-person counterparts.

The findings suggest that achieving equivalency involves more than simply providing access to the same instructional content. Although online and in-person students may receive identical materials, the quality and nature of their learning experiences can differ substantially. Participants indicated that factors such as interaction opportunities, instructor attention, and classroom engagement play important roles in shaping learning experiences and may be difficult to equalize across participation modes.

Overall, Equivalency emerged as the most problematic of the four HyFlex principles. While participants recognized its importance, they consistently identified significant practical barriers to achieving comparable learning experiences for online and in-person students. These findings suggest that equivalency remains a central challenge in synchronous HyFlex teaching and may require additional instructional, technological, and organizational support to be effectively realized.

Accessibility: Providing Access Beyond Attendance

Accessibility emerged as an important component of successful HyFlex teaching. Participants generally agreed that students should be able to access course materials, learning activities, and instructional resources regardless of their chosen mode of participation. Most instructors reported making course materials available through the learning management system and ensuring that online students had access to the same resources as students attending classes in person, as one stated, "I post all materials online and make sure students know where to find them so everyone has access regardless of how they attend class."

Participants viewed accessibility as one of the more achievable HyFlex principles because technological tools and institutional learning platforms already provide mechanisms for distributing course materials to all students. Common practices included uploading lecture slides, sharing instructional resources electronically, recording class sessions, and providing online access to announcements and course-related information. These practices helped reduce barriers associated with physical attendance and allowed students to engage with course content regardless of location.

However, participants also emphasized that accessibility extends beyond simply making resources available. Several instructors noted that students differ

in their technological capabilities, learning preferences, and communication needs. As a result, ensuring that resources are available does not necessarily guarantee that they are equally usable or beneficial for all students. Participants highlighted the importance of providing clear instructions, maintaining consistent communication channels, and ensuring that online students can effectively engage with course materials. “Accessibility is not just about uploading resources. Students need to understand how to use them and where to find them”, a professor emphasized.

Accessibility was also discussed in relation to inclusivity. Participants recognized that HyFlex teaching has the potential to support students facing various barriers to classroom attendance, including health concerns, employment obligations, family responsibilities, and geographical constraints. The flexibility of HyFlex participation was viewed as an important mechanism for increasing educational access and supporting a broader range of learners.

Despite these benefits, participants acknowledged that accessibility alone does not ensure meaningful participation. Students may have full access to course materials and learning resources while still experiencing reduced interaction with instructors and classmates. Several participants observed that online students occasionally appeared less engaged in classroom discussions and collaborative activities despite having access to the same learning materials as their in-person peers.

The findings therefore suggest that accessibility should be viewed as a necessary but insufficient condition for successful HyFlex teaching. While providing access to learning resources is essential, meaningful participation and engagement require additional instructional strategies that extend beyond resource availability. Consequently, achieving accessibility is an important first step toward inclusive HyFlex teaching, but it does not fully address broader concerns related to interaction, engagement, and equivalency.

Reusability: Extending Learning Beyond the Classroom

Participants generally viewed Reusability as a practical and valuable component of HyFlex teaching. Consistent with Beatty’s principle of Reusability, instructors emphasized the importance of making learning resources generated during class available to all students regardless of their mode of participation. Common examples included recorded lectures, presentation slides, classroom demonstrations, discussion materials, and supplementary resources shared through the learning management system. “Recording classes gives students an opportunity to review difficult concepts and catch up if they miss a session”, a professor added.

Many participants reported routinely recording HyFlex sessions and providing students with access to these recordings after class. Instructors believed that recorded lectures allowed students to review difficult concepts, revisit classroom discussions, and catch up on missed material when attendance was not possible. This flexibility was viewed as particularly beneficial for students balancing academic responsibilities with employment, family commitments, or other personal obligations.

Participants also noted that reusability contributes to instructional efficiency. Rather than creating separate resources for online and in-person students, instructors could develop a common set of learning materials that supported both groups. “It would not be practical to create separate resources for each group, so sharing materials across both modes is the most efficient approach”, as one professor stated.

Despite these advantages, participants recognized that reusable resources cannot fully replicate the learning experiences that occur during live interactions. While recorded lectures and shared materials provide access to instructional content, they cannot completely replace opportunities for spontaneous discussion, immediate feedback, and real-time engagement with instructors and classmates. Consequently, participants viewed reusable resources as a valuable supplement to learning rather than a substitute for active participation.

Overall, the findings suggest that Reusability is one of the more successfully implemented HyFlex principles. Advances in learning management systems and video-conferencing technologies have made it relatively straightforward for instructors to share and archive learning materials. However, while reusable resources enhance flexibility and support accessibility, they do not fully address the challenges associated with student engagement and equivalent learning experiences across participation modes.

Cross-Cutting Challenges in Synchronous HyFlex Teaching

Although participants discussed each of the four HyFlex principles separately, several challenges emerged consistently across all aspects of synchronous HyFlex teaching. These challenges influenced instructors' ability to implement Learner Choice, Equivalency, Accessibility, and Reusability effectively and were viewed as important factors affecting the overall success of HyFlex courses.

Divided Instructor Attention

The most frequently discussed challenge was the difficulty of simultaneously supporting online and in-person students. Participants consistently reported that managing two learning environments at the same time required significant cognitive effort. Instructors were expected to monitor classroom interactions, respond to online questions, manage technological tools, and facilitate discussions across participation modes concurrently.

Many participants acknowledged that their attention naturally gravitated toward students physically present in the classroom. Because classroom interactions are often more immediate and visible, instructors found it easier to identify questions, confusion, and participation opportunities among in-person students. Consequently, online students occasionally received less spontaneous interaction and support. This challenge directly influenced instructors' ability to achieve equivalent learning experiences across participation modes.

Increased Teaching Complexity

Participants unanimously agreed that HyFlex teaching is substantially more complex than either traditional face-to-face instruction or fully online teaching. Rather than teaching a single group of students, instructors effectively manage two parallel learning environments with different participation dynamics and communication patterns.

The complexity of HyFlex teaching extended beyond instructional delivery. Participants described additional responsibilities related to planning activities suitable for multiple participation modes, managing classroom technologies, coordinating communication channels, and ensuring that resources were available to all students. Several instructors noted that teaching a HyFlex course often required greater preparation and adaptability than conventional teaching formats. One instructor specifically said that "the challenge is not the technology itself but having to coordinate everything while teaching students in two different environments simultaneously."

Dependence on Technology

Technology was viewed as both an enabler and a challenge within HyFlex teaching. Participants acknowledged that video-conferencing platforms, learning management systems, and digital communication tools made HyFlex teaching possible. At the same time, the effectiveness of HyFlex instruction depended heavily on the reliability of these technologies.

Technical difficulties such as connectivity issues, audio problems, and equipment limitations occasionally disrupted teaching and learning activities. Participants also noted that instructors must possess a certain level of technological competence to successfully manage multiple platforms and communication channels simultaneously. "…, when something goes wrong, I need to call the classroom support", one professor said. As a result, technological readiness was perceived as an important prerequisite for successful HyFlex implementation.

Need for Institutional Support

Participants emphasized the importance of institutional support in facilitating successful HyFlex teaching. Although individual instructors can adapt their teaching practices, participants believed that many challenges associated with HyFlex teaching require organizational solutions. Suggested forms of support included faculty training, technical assistance, classroom technology upgrades, and additional personnel such as teaching assistants or moderators.

Several participants indicated that support personnel could be particularly valuable in helping monitor online interactions and addressing technical issues during class sessions. Such assistance would allow instructors to focus more effectively on teaching and student engagement while reducing the burden of managing multiple learning environments simultaneously. "It would help to have a moderator or TA monitoring online students and addressing questions in real time", an instructor summarized.

Overall, the findings (see table 2) suggest that the successful implementation of the four HyFlex

principles depends not only on course design but also on broader technological and organizational factors. While instructors generally supported the goals of HyFlex teaching, they recognized that achieving these goals requires substantial instructional effort and institutional support.

Table 2. Summary of Findings

HyFlex Principle	Key Finding
Learner Choice	Most positively perceived principle; flexibility is the primary value proposition
Equivalency	Most difficult principle to implement; divided instructor attention is a major barrier
Accessibility	Necessary but insufficient for meaningful participation
Reusability	Valuable and efficient but cannot replace live interaction
Cross-cutting Challenges	Teaching complexity, technological dependence, and need for institutional support

V. DISCUSSION

This study examined university instructors' experiences implementing Beatty's four principles of HyFlex design within synchronous HyFlex classrooms. The findings suggest that while the four principles provide a useful framework for designing flexible learning environments, their implementation presents varying levels of difficulty in practice. In particular, instructors viewed Learner Choice, Accessibility, and Reusability as relatively achievable components of HyFlex teaching, whereas Equivalency emerged as the most challenging principle to implement effectively. The findings further indicate that successful implementation of the four principles depends not only on course design but also on technological and institutional support.

Learner Choice as the Foundation of HyFlex Teaching

Consistent with previous HyFlex literature (B. Beatty, 2007, 2019), participants identified flexibility as the primary advantage of synchronous HyFlex teaching. Instructors strongly supported providing students with the ability to choose how they participate in learning activities and viewed this flexibility as an important mechanism for accommodating diverse student needs and circumstances. The findings suggest that Learner Choice remains the defining characteristic of HyFlex teaching and the principal reason for its continued adoption in higher education.

Participants emphasized that flexible participation options allow students to balance academic responsibilities with employment, family commitments, health concerns, and other personal obligations. These findings support previous research suggesting that learner autonomy and flexibility contribute positively to educational access and participation. From the instructors' perspective, Learner Choice appears to be the most successfully implemented of the four HyFlex principles and serves as the foundation upon which other aspects of HyFlex teaching are built.

Equivalency as the Central Challenge of Synchronous HyFlex Teaching

A key finding of this study is that Equivalency represents the most difficult principle to implement in practice. Although participants agreed that online and in-person students should receive comparable learning opportunities, they consistently reported challenges in providing equivalent levels of interaction, engagement, and instructional attention across participation modes.

The findings suggest that equivalency involves more than ensuring access to identical course materials. Rather, equivalent learning experiences require comparable opportunities for participation, discussion, collaboration, and instructor interaction. Instructors reported that their attention frequently gravitated toward students physically present in the classroom, making it difficult to provide the same level of support to remote learners during live instructional activities.

This finding highlights a potential tension within the HyFlex framework. While Learner Choice increases flexibility by allowing students to select their preferred participation mode, it simultaneously increases the complexity of achieving Equivalency. As instructors divide their attention across multiple learning environments, maintaining comparable learning experiences becomes increasingly difficult. Consequently, the findings suggest that the four HyFlex principles are interconnected rather than independent and that improvements in one principle may create additional challenges for another.

This finding suggests that the four HyFlex principles should not be viewed solely as independent design

objectives. In practice, instructors may face trade-offs when attempting to implement all four principles simultaneously. For example, increasing Learner Choice by allowing students to freely move between participation modes can create additional demands on instructors' attention and instructional management, thereby making Equivalency more difficult to achieve. Consequently, successful HyFlex implementation may require instructors and institutions to balance competing design priorities while providing sufficient support to mitigate these challenges.

Accessibility and Reusability as Necessary but Insufficient Conditions

Participants generally viewed Accessibility and Reusability as important strengths of synchronous HyFlex teaching. The widespread availability of learning management systems, video-conferencing platforms, and digital learning resources has made it easier for instructors to provide students with access to course materials regardless of attendance mode. Similarly, reusable learning artifacts such as recorded lectures and shared instructional resources support learning continuity and allow students to review content at their own pace.

However, the findings also indicate that accessibility should not be equated with engagement. Students may have full access to learning resources while still experiencing reduced opportunities for interaction and participation. Likewise, recorded lectures and reusable materials can supplement learning but cannot fully replace real-time engagement with instructors and peers. These findings suggest that Accessibility and Reusability support HyFlex teaching by facilitating access to learning resources, but they are insufficient on their own to guarantee meaningful learning experiences.

Beyond Course Design: The Importance of Institutional Support

Another important finding is that successful HyFlex teaching depends on more than effective course design. Participants repeatedly identified divided instructor attention, technological complexity, and increased workload as major challenges associated with teaching simultaneously in online and in-person environments. These challenges extend beyond the individual instructor and highlight the importance of broader organizational support.

The findings suggest that institutional resources such as faculty training, technical support, classroom technology, and teaching assistants can play an important role in facilitating successful HyFlex implementation. Participants frequently discussed the potential value of additional support personnel who could assist with monitoring online interactions, addressing technical issues, and facilitating communication with remote learners. Such support mechanisms may help instructors overcome some of the barriers associated with achieving Equivalency and improve the overall quality of HyFlex teaching.

Figure 1 summarizes these relationships and presents a conceptual model of successful synchronous HyFlex teaching. The model suggests that Learner Choice, Accessibility, and Reusability are generally achievable through existing instructional and technological practices. In contrast, Equivalency is constrained by divided instructor attention, teaching complexity, and technological challenges. Institutional support functions as an enabling condition that strengthens instructors' ability to implement all four principles effectively.

Overall, the findings indicate that the success of synchronous HyFlex teaching depends on both pedagogical design and organizational support. While Beatty's four principles provide valuable guidance for creating flexible learning environments, their successful implementation requires instructors to navigate competing demands across multiple learning environments while receiving adequate technological and institutional support.

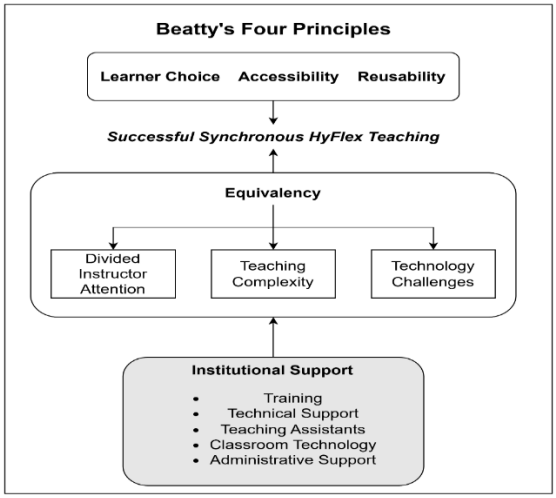

Figure 1. Proposed Model of Successful Synchronous HyFlex Teaching

VI. CONCLUSION

This study explored university instructors' experiences implementing Beatty's four principles of HyFlex designLearner Choice, Equivalency, Accessibility, and Reusabilityin synchronous HyFlex classrooms. Drawing on focus group data from instructors with HyFlex teaching experience, the study examined how these principles are implemented in practice and the challenges associated with teaching students simultaneously in online and in-person environments.

The findings indicate that Learner Choice remains the most valued aspect of HyFlex teaching, providing students with flexibility in how they participate in learning activities. Accessibility and Reusability were also viewed positively, as digital technologies and learning management systems make it relatively straightforward to provide students with access to instructional materials regardless of attendance mode.

In contrast, Equivalency emerged as the most challenging principle to implement. Instructors consistently reported difficulties providing equivalent levels of interaction, engagement, and instructional attention across participation modes due to divided attention, increased teaching complexity, and technological constraints.

These findings contribute to the HyFlex literature by extending Beatty's framework from the perspective of instructors. While the four principles remain useful for guiding HyFlex course design, the study suggests that they are not equally difficult to implement in practice. In particular, the findings reveal a tension between Learner Choice and Equivalency. Although increased flexibility allows students to choose their preferred mode of participation, it simultaneously increases the complexity of providing comparable learning experiences across participation modes. The proposed model extends Beatty's framework by identifying organizational and technological conditions that influence the successful implementation of the four principles in synchronous HyFlex environments.

The findings also offer several practical implications for higher education institutions. Successful HyFlex teaching requires more than simply providing students with access to online participation. Instructors need adequate technological infrastructure, technical support, professional development opportunities, and, where possible, additional instructional support such as teaching assistants or moderators. Such resources may help reduce the burden associated with managing multiple learning environments and improve instructors' ability to provide meaningful learning experiences for all students.

Several limitations should be considered when interpreting the findings. The study was conducted at a single Canadian university and involved a relatively small sample of instructors from business-related disciplines. In addition, the study focused exclusively on instructors' perspectives and did not include direct input from students. Future research could examine student experiences with synchronous HyFlex teaching, explore HyFlex implementation across different disciplines and institutions, and quantitatively test the conceptual model proposed in this study. Longitudinal studies may also provide valuable insights into how HyFlex teaching practices evolve as instructors gain experience and institutions continue to invest in flexible learning environments.

As higher education continues to embrace flexible forms of learning, understanding how instructors implement and experience HyFlex teaching remains increasingly important. By examining the practical realities of implementing the four principles of HyFlex design, this study contributes to a growing body of knowledge aimed at improving the effectiveness, accessibility, and sustainability of synchronous HyFlex teaching in higher education.

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