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Pedagogy Knowledge Forum

Pedagogical Technologies for Remote Learning in Counselor Education: HyFlex Course Design

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This article discusses a model of teaching called HyFlex, or 'hybrid' and 'flexible,' which is primarily for programs teaching both in-person and online. It discusses how the HyFlex model works, including initial development, with guidance on language to help students understand its application. During and after the COVID-19 pandemic, some programs were forced to provide online options, and then transition back to classrooms. This article discusses curricular design strategies for student engagement and technology options for facilitating HyFlex teaching in a way that allows people to attend in person and online still. Important descriptions of accessibility options are included, as well, to meet the needs to students with disabilities. Finally, discussions of potential value to institutions for the purposes of enrollment and faculty critiques of the model will also be included.

If *pedagogy* is the "conscious activity by one person designed to enhance learning in another" (Watkins & Mortimore, 1999, p. 5) and *innovations* are "new or significantly improved product (good or service), or process" (OECD, 2005, p. 46), then HyFlex course design is an innovative pedagogical opportunity to expand the possibilities of how counseling is taught. HyFlex combines the concepts of "hybrid" teaching, which has been around for several decades (Dowling et al., 2003), but uses new technological tools to embrace fully the potential of the hybrid model. The primary focus of this design is to meet the unique needs of all students, while not restricting them to either in-person learning, online learning, or the hybrid combination. In other words, it is '*hy*brid' and '*flex*ible.' It gives the student choice in how they want to engage in the course content, either on campus, virtually via web conferencing, or asynchronously at their own pace. From an instructional perspective, the course content is set up to deliver the same material, teach the same content, and practice the same skills regardless of the delivery mode students choose.

Although this course design is primarily focused on meeting student needs via pedagogy, accessibility, and universal design, another primary motivator is meeting institutional challenges of pressures to move more courses online, increase enrollments, and provide adaptability during mandated campus closures (e.g., snow days, global pandemics). While this article will provide the foundational principles of HyFlex design, a practical explanation of setup and facilitation of a counseling course, and technological considerations, it will also include institutional considerations that may be helpful in adapting these methods to individual circumstances.

At the time of this writing, the Council for the Accreditation of Counseling and Related Educational Programs (CACREP) accredits 91 rehabilitation counseling and clinical rehabilitation counseling programs (CACREP, 2022). Seven of those programs are listed as online programs; however, during the COVID-19 pandemic many programs were forced to move online. As programs now return to the campus classroom, some students remain unable for various reasons. While there is some evidence for using a flipped classroom design in general counseling (Mason et al., 2022), there is little evidence for the effectiveness of alternative teaching formats in counseling, especially HyFlex. This article serves as a foundation for learning those teaching methods and may provide some insight into the variables that determine effective teaching.

What is HyFlex Course Design?

Beatty (2019) coined the term 'HyFlex' after a San Francisco State University experiment to accommodate several institutional, faculty, and student-driven factors. What is likely to be a familiar experience to other programs—enrollment concerns, student demand for online options, and the need to maintain student success in various formats—prompted the need for new models of course development. After reviewing the literature on other hybrid or

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blended course formats, it became clear that, to meet student needs, their classes needed to be both entirely online and entirely in-person. In short, the format needed to have traditional-live components, synchronous online, and asynchronous online options all at the same time.

The terms used in this article to describe the various modes of content delivery will differ somewhat from the professional jargon of teaching, although the definitions remain generally the same (Chapman et al., 2011). The terms in-class, asynchronous online, and synchronous online are perhaps better at describing the curricular pedagogy; but in this article the terms used are: in-class, online, and streaming. The reason for this is to use language more familiar to learners so they may understand the HyFlex options available to them.

What is typically referred to as asynchronous online learning is self-paced, with all course content delivered using a learning management system (LMS; e.g., Canvas, Blackboard, Schoology, D2L Brightspace, Moodle). It allows students the highest amount of flexibility, but also requires higher degrees of time management and self-discipline to be successful. This delivery method is perhaps synonymous with the generic term "online classes." Although the term self-paced can be somewhat misleading, because instructors can use much discretion in scheduling and pacing student learning in certain time blocks (e.g., weekly, bimonthly), it provides the most flexibility for when students engage with the LMS and do their work. The important element for the purposes of a discussion of HyFlex course design is that it gives students the most flexibility to work around other obligations in their lives (e.g., kids, work, lifestyle).

Synchronous online learning refers to some period where class is held in a virtual environment, usually through a video conferencing software like Zoom, Webex, Google Hangouts, or Skype. The professor and students all gather 'in sync' as a class, but have the freedom to be in different geographical spaces. While students are not required to be on campus, it provides them the opportunity to interact with peers and the professor for lecture, activities, and discussions in one time block. While this reduces the flexibility to engage with learning in the way a student chooses, it provides some of the benefits of an on-campus classroom. The term 'streaming' is used because it has become a popular term akin to "over the internet." When the author has used the term 'live streaming' with students, they seemed to understand the delivery mode faster than when using terms like 'live online class' or 'live on the computer.'

The term 'in class' is used to represent when students physically show up on campus. While there may be some discussions that take place in an LMS system or students may log in to a video conferencing service to interact with streaming students (i.e, as in hyrbrid models), their physical presence is in the classroom. This is perhaps the least flexible option for students, but it allows them to be in physical proximity to other students and the professor. A discussion of the advantages and disadvantages of the delivery method is beyond the scope of this paper; however, the point is students can select these modalities choose the teaching and learning format that works best for them.

Choosing Course Components for HyFlex Teaching

Prior to an explanation of setting up a HyFlex course, it is important for educators to establish some intentional and strategic value statements to serve as guideposts in the decision-making process (Beatty, 2019). As mentioned earlier, it is important to consider things like technology, institutional resources, and scheduling when developing a course, but developing a course with a student-first perspective—one that considers their access to technology, their primary modes of engagement, and multicultural factors—ultimately makes the course more successful. The pedagogical choices should be driven by what will help students access and integrate the knowledge and skills of counselors, with a secondary consideration of what is practical or possible. The author of this article is formally trained as a rehabilitation counselor and places great value on accessibility and universal design. This means that just because a technological resource is available or a pedagogical choice is possible does not mean it is the best option. Others may value equity and consider that as a guiding principle in course design. The point here is there are many opportunities to meet student need, a wide variety of methods and technologies available, and many choices to make. Having guiding principles to assist in judging whether a choice meets an instructor's personal value criteria, which are driven by student learning, will be critical for successful courses.

Set Up

Setting up a HyFlex course from scratch is perhaps a more difficult option than adapting a course previously taught. Starting fresh can provide new perspectives on adapting activities, but will depend on the style of lecture or experiential activities involved. If the class is primarily lecture-style, then simply recording online lectures to be viewed later may be an option. However, if the course uses in-class discussions, group assignments, or reflection exercises, then more consideration of the technology will be required. Here are a few things to consider with initial design of the course.

Lecture

If the course was previously online and included video lectures, those lectures can simply be reused and offered to students as a backup if they cannot attend class, or as the sole delivery method for self-paced online students. A choice could be made to require all students to view the lecture prior to attending class, such as in a flipped classroom design (Herreid & Schiller, 2013). In other cases, it might be beneficial to leave the online lectures available to students and still provide live lectures.

An example of this would be posting recorded lectures on the LMS and offering live lectures streamed and

recorded using video-conferencing software. For the sake of time and efficiency, live lectures with in-class and streaming students can be recorded and posted to the LMS after class; however, these need to be screened for adequate audio and video quality. It is also important that the audio quality be good enough to provide captioning; if students needing audio accessibility accommodations are present in the class, the time to provide accurate captioning needs to be considered. The advantage to watching the lower-quality video is that students can feel engaged with other students in the class and the discussions.

Student-to-Student Engagement

The ways students engage with each other is perhaps the most challenging consideration and requires the most planning. This engagement largely depends on the types of technology available. If the physical classroom has the audio and video capabilities to hear and see both the professor and the students, then the class can most closely resemble a typical classroom experience, where the professor engages in discussion with online and in-class students. If the classroom is not set up with audio or video equipment, a choice could be made to have students bring a device with them to stream the class, so in-person students interact with online students via their device. A more thorough discussion of the capabilities of these technologies is presented below.

There are various strategies to encourage engagement of students across modes of attendance. One option is to preselect prompts for discussion with only the online students amongst themselves, using the same prompts for in-class discussion. Another option is to have the steaming and in-class students spend time writing to the online students using the LMS software. This can be done independently as a reflective exercise prior to group discussion or can be accomplished by assigning a 'scribe' in small groups to post the group conversation online for all students to see both live and asynchronously.

It is also worth noting here that consideration of the students' access to adequate technology and connectivity should be a consideration. However, the ubiquitous nature of devices with access and the inherent flexibility of the HyFlex method provide multiple avenues to engage with the class. For those who teach in rural areas, periods of poor internet connection can create a barrier to engagement with the course. However, pre-recording lectures or recording the stream means is that, if the internet was down near a student, they have the option to catch up in the course after reconnection is made. HyFlex teaching reduces the need to maintain internet connectivity throughout the class.

Material Sharing

Material sharing also depends largely on the technology available, but occasionally students and faculty wish to share some sort of content. Examples of this would be collectively writing on a single document or sharing recorded video content of counseling sessions. At the time of this writing, the technologies available to write collectively on a single document are many and beyond the technological scope of this paper. Google Docs is one such technology, however, as will be discussed, the choice to use these also requires careful consideration of university contracts with certain technologies, data privacy consideration, paywall access, and the student's comfort with using these technologies.

Sharing video content is also something that, at the time of this writing, is not easily accomplished, requiring more advanced technical skills. There are several options including: having students screen share their video, uploading a video to YouTube and sharing a link in the chat of the streamed class to be watched independently, and having students share videos in advance of the class via email. The technology at this time seems not to support live audio and video content sharing in a way that is simple, such as sharing recorded client counseling sessions while in an online classroom environment like Zoom or Webex. In the case of video sharing and collectively writing, by the time anyone is reading this, the technology will likely have advanced to provide new possibilities and potential solutions to these problems.

Technology

Hardware

Determining the best hardware to use for classroom teaching is one often best done with the help of campus IT and audio/visual professionals. However, there are a few basic needs discussed here.

Camera

There are many camera options available, including webcams, camcorders, internal features of laptops and phones, and more expensive options that track speakers as they move around a room. The need and resource availability will depend on the school and faculty teaching, but there is no requirement to spend a lot of money. A webcam on a flexible mount provides adequate video quality and can easily be directed toward whomever is speaking. A phone or tablet device mounted on a stand can also work as an adequate camera, however it does not allow as many options to change audio inputs or screen capture. It is preferable to plug a camera into the same computer where the content of the class is being offered.

Microphone

Getting good quality audio is probably the biggest challenge and most important tool to ensure everyone has access to the content of the course. Again, this does not mean large expenditures on audio equipment. Lapel microphones, plug-in microphones that sit on a desktop, handheld microphones carried around the classroom, whole-room audio-capture devices, and internal microphones that come with various devices like phones are all options that can provide adequate sound quality. From the perspective of accessibility, it is not only important for students to be able to hear the speaker, but it is as important for transcrip-

tion to be possible. The availability of live transcription has reduced some of the need for post-course transcription and increased the potential for all students to access course content, but it does require good quality audio. From this perspective, choosing the right audio is perhaps the most important hardware consideration to offering this course design.

Regarding audio devices, it is possible to have one device that captures all the students in the classroom; however, this method can tend to capture a lot of background noise. It can also require more classroom management on the part of the faculty, like keeping side conversations to a minimum. This can also complicate transcription processes and be cost prohibitive for some. Many cameras and computers have internal microphones; however, these may be the least reliable for capturing good sound. Lapel microphones can be useful if the class is largely lecture based, but the drawback of those is that they cannot be shared with others if questions are encouraged. Turning them off and on to avoid feedback loops also requires another layer of attention by faculty. The most versatile option is a traditional wand/stick microphone, which be held close to any speaker who wishes to share with peers. Another option is to have everyone in the class log in with a device of their choice and unmute themselves in the videoconference software if they wish to speak. In this case, each student and instructor has their own microphone. The drawback of this method is that it can be clumsy to mute and unmute at each transition from speaker to speaker, and leads to echo that is distracting from the discussions.

Computer and Monitors

Second in importance to the audio is the visual space for the instructor to navigate the class. A computer is an obvious necessity, but quality does not matter much. Any model made within the past 5 years will likely work fine. The screen size is more important because it should be large enough to manage several windows, including presentation slides, videoconferencing, other course documents, document cameras, and other helpful tools. A laptop with several external devices plugged into it can be used, but it can be difficult to navigate on a small screen. Two monitors are very helpful so that the instructor can screen share on one monitor and have other documents up on the other. A large single monitor will also work fine, but it is helpful to have enough space to open several windows with adequate viewing space.

Projectors

Projectors are included in this list, but they are not necessary. Some students prefer to view the lecture content on a screen in front of them even if they are in the class. If available, a single large touchscreen TV to present lectures slides can serve as projector, computer monitor, and streaming device. These devices serve as a monitor, whiteboard, and projector all in one device. The traditional presentation of PowerPoint slides, a separate white/chalkboard, and the use of handouts may all be combined in the online platform making projectors unnecessary, but in terms of transitioning to the use of these newer tools, a traditional projector can reduce the learning curve to new technology.

Tablet Writing Device

Some instructors may also wish to use a tablet writing device to annotate on a screen. These are external devices plugged into a USB jack and can simulate writing on a whiteboard for the purposes of drawing diagrams or note-taking. With appropriate setup, tablets with the requisite applications (apps) can serve this function, as well. As will be discussed below, Microsoft Whiteboard, Google Docs, and other tools can serve this function better.

Document Cameras

Document cameras, such as an Elmo, can be useful to show information from a textbook or on a written piece of paper. Since they are somewhat common in the current classroom environment in conjunction with a projector screen, it can also ease transition into the use of tablet writing devices or touchscreen TVs for those who are less comfortable with those technologies. Scanning and screen sharing can be used for those that prefer more 'paperless' options, however it can be challenging to make notations on documents with this method. For those that prefer electronic copies of documents, want the ability to make notations, and are comfortable with implementing more technology, Microsoft Whiteboard (described below) is another option. These three options described depend on access to these tools, as well as the degree of comfort a faculty has with their use. A final option is to use a webcam on a flexible mount that can be directed at the faculty during lecture and at the class during discussion, as well as down onto a desktop to show documents that may not be available in electronic format. Having one camera with the capacity to move means there is less frequent changing of available cameras as inputs in the videoconferencing software.

Software

Video Conferencing

There are several programs available for videoconferencing and most have increased their functionality considerably following the post-2020 pandemic that required many people to learn from distance. Tools like Zoom, Webex, Microsoft Teams, GoToMeeting, and Google Meet are some of the more notable examples. Several things can be particularly helpful when choosing how to use these tools to their fullest potential. First, the tools should have a web version, a desktop version, and a mobile version so students are able to log in from whatever device they have available. This also includes support for Microsoft, Macintosh, and Linux operating systems. Second, it can be helpful for the tools to have breakout rooms, so instructors can plan various learning activities. This is not a necessity, but greatly expands the ability to use a variety of teaching activities. Third, some of

these tools can be integrated with calendars for easy scheduling.

These tools can provide more options to the instructor. However, an instructor's proficiency with these tools will determine their usefulness. Greater complexity of assignments and functionality of the tools means there is more setup and 'clicks' to be attended to. For example, if breakout rooms are going to be used, an instructor should be comfortable with how to navigate the various groups and the ease to bring them back as a whole class. It can take a considerable amount of attention by the instructor to monitor engagement with all students, both streaming and in-person, as well as remembering that some students may be watching the lesson after it is recorded. This is part of the learning curve of 'performing' class well. However, if instructors are not proficient in all parts of a piece of software, that does not mean they cannot use it. Instructors should use only as much technology as they can reasonable manage without distracting from the content of their lessons.

A few other considerations include the cost of the tools and the labor to maintain them. This is largely done by other university staff, but it is worth considering. Some low-cost or free versions may be available, but it is up to the instructor to ensure (a) the tools have the capability to facilitate student learning and (b) the instructor knows how to use them. There is cost involved in paying for the tool and service, but also in training and practice. A final consideration is confidentiality. Although many instructors are probably already familiar with the challenges of confidentiality in counseling, it is important to question the technological capacity of the tool to be secure. Although it is outside of the scope of this paper to discuss security, instructors may want to ask their IT teams about HIPAA compliance, Family Educational Rights and Privacy Act (FERPA) compliance, file encryption of intellectual property, server location of course content, or end-to-end encryption for sensitive course topics.

Microsoft Whiteboard

While it is possible to capture a chalkboard or whiteboard content on camera, it is not the most ideal in terms of readability and reproducibility. If cameras are set up properly, students can watch an instructor and translate those notes to their own page or device. However, other tools have made it possible for notation to be made directly on screen. One notable example is Microsoft Whiteboard, which not only allows an instructor to upload lecture content and other course documents to a screen, but it can also be written on with unlimited space. In other words, it combines software like Microsoft PowerPoint and a physical whiteboard together so notes can be made directly on the slides. It also has the capability to allow students to log in from a tablet or phone so they can also interact with the whiteboard from a distance in real time. In addition to that, the whole whiteboard space can be downloaded, slides and notes combined, and placed in the LMS for future review. What this means is and instructor can pre-load slides into a whiteboard space, take notes during class on the side of the slides, then upload the whole of the session to the LMS after class. These do require special format to read properly, but most modern web browsers can read the file format (.svg) of Microsoft Whiteboards. This does require an Office365 account to appreciate its functions fully.

Institutional Value and Cost

Beatty (2019) listed several potential benefits to the HyFlex format including: (a) increased overall course enrollment potential, (b) individual section over-enrollment potential, (c) the potential to create greater student success with various learning methods, and (d) innovations in teaching to market to new students. The bottom line is that if students have more convenient access to instruction, they are more likely to be successful. This may be true theoretically, but successful implementation of the HyFlex course design requires faculty be adequately trained and have access to the technology necessary. It would be presumptuous here to imply that a thorough cost-benefit analysis would always favor HyFlex implementation, but the potential is there if faculty choose to learn the necessary skills. Implementation of HyFlex format can be seen as challenging due to the perceived learning curve involved in the technology and perceived time commitment to offering a course in multiple formats. While these may not be true hurdles if creative solutions can be found to reduce the burden on faculty time, part of the cost to the institution is providing enough support to build the confidence of faculty. This can mean formal trainings in developing HyFlex courses, but also supporting the technology needed to facilitate them. In addition, discussions from an administrative perspective regarding course caps, over-enrollments, or other perceived financial pressures are sometimes met with resistance, in favor of small class sizes or adequate attention being paid to the cognitive and emotional welfare of individual students. This is an important consideration in counseling programs. Faculty need to be able to facilitate class with enough ease to attend to the students and not to the various technologies. This means not only proper training in course design strategies, but also practice with the equipment necessary may be needed. This may require support from IT departments and curriculum specialists.

Accessibility

One of the challenges of using new technologies is the potential to alienate some students who may not have the skill to navigate it or because the technology is not inclusive for people with disabilities. The HyFlex format makes more options available for students if one mode does not work for them, and new advances in technology may increase accessibility. This is particularly true with the addition of online and streamed classes. Students who could not otherwise travel to in-person classes can attend online; however, the in-person class has sometimes been the only alternative, which may be particularly true for Deaf and hard-of-hearing students. New advances in captioning increase the potential for students to access content through all these modes of teaching. The following is not be a com-

plete review of accessibility options, but it will provide a foundation for future research.

Captioning

Before reviewing captioning options for educators, it is important to note that reviews of quality in captioning services are mixed (Bokhovey & Downey, 2018). Parton (2016) studied YouTube's auto-captioning (also known as subtitles) and found "auto-generated captions are too inaccurate to be used exclusively" (p. 8). The National Deaf Center on Post-Secondary Outcomes (2020) stated that automated captioning "is a sub-standard option in educational settings and can have costly repercussions for institutions." While Automated Speech Recognition (ASR) software has yet to attain high enough accuracy rates for equitable access, advances in this technology are improving (Xiong et al., 2018), with the increased use of artificial intelligence technologies. The following is not a replacement for human correction of transcribed captions or live interpreters, but can add value to online education. It is also important to mention that the accuracy of captions is not only an issue of the technology, but of the clarity of the speech of the speaker and quality of the audio hardware to capture clean audio. Better use of hardware can produce better captioning outcomes.

There are two types of video content that can be captioned, live streaming and pre-recorded. Many of the video conferencing platforms have some kind of captioning option; however, they operate somewhat differently. It is also notable that for accuracy of captioning or multiple language options, third-party services may be required. For pre-recorded content, there are both paid and free services (see below) and, while free services may be a good starting point for adding captions to videos, it is incumbent on the instructor to assess for accuracy. In other words, educators must review the captions for accuracy, or pay someone to do it. The following descriptions will be relatively brief due to the rapidly changing products and available services.

Webex (Webex Help Center, 2021) has the potential to provide live captioning through the microphone, as well as the option to download a transcript of the content with the recording of the video. This means that if the stream content is visible to the streaming students and the in-person students, then the captioning is visible by the students. If the video conferencing software is not visible in-person via a projector, then students can log in to the stream via a personal device for easier viewing. To enable live captioning, Cisco Webex Assistant must be enabled by the Webex administer on campus. Once this is done, a button can be toggled to turn captions on or off. If a faculty is recording a session, a link can be sent to the faculty's email box after the recording has been processed and the session can be downloaded. Along with the video download, the transcript can be downloaded as well; however, the captions that appeared during the live event will not show up in the recording. If the lecture recording is used as an offering to other students, the downloaded transcript, which is separate from the video file, should also be included. One thing to note, if an instructor is using breakout rooms, live transcription will not be present in the breakout rooms, only for the main session.

Zoom (Zoom Help Center, 2021) also has options for live captioning and the transcript can be downloaded following the recorded presentation. Once the host of the meeting has enabled closed captioning, students can then decide whether they want to see it or not. Transcripts can also be downloaded if the meeting is recorded, similar to Webex described above. Also like Webex, breakout rooms cannot provide live transcriptions and the recorded video will not show the captions that are present during the live session.

Both Webex and Zoom are video conferencing products that can be used for live streaming classes and have live captioning services, as described previously. There are a few other options for captioning live events. Much like having a sign language interpreter to provide accurate real-time translation, closed caption transcriptionist can be invited to the class or meeting to type real-time captions. This can improve the accuracy of transcription and is the best option if a student with a disability requires hearing accommodation. Faculty should consult with their Disability Services office in this case; however, a simple internet search will provide many options of companies that provide this type of service.

An alternative option mentioned earlier is creating recorded content, either through web conferencing recordings or traditionally recorded content using a camera. Once this is done, there are a few options for free online transcription services. Videos can be uploaded to sites such as Amara.org, DotSub.com, or Subtitle Horse for free (University of Washington, 2021). These are subject to accuracy issues similar to live transcriptions and need to be reviewed by faculty for accuracy. Another option is to pay someone to watch the recording and transcribe its contents. Rev, GoTranscript, Scribie, Transcription Panda, and GMR Transcription are all examples of transcription services that guarantee accuracy between 95% and 100%, depending on the service. GMR Transcription also offers Spanish-language transcription. The consideration between using an automated service versus a human service is largely about speed of turnaround and accuracy. The faster the transcription is done, the lower the accuracy. A final option for captioning recorded videos is to use video editing software like Camtasia or Adobe Premier, in addition to other video editing products that can do this function.

Faculty Critiques

Development Time

The time it takes to develop a HyFlex class will likely be greater in the beginning due to the need to attend to multiple types of learners and modes of instruction. Faculty who teach in-person have a set of skills for facilitating learning in that environment, which is not the same as those who teach online. Not only do these different skillsets need to be developed, but also they need to act in unison to accommodate both sets of learners at the same time. It can seem like having to build two separate courses: one online and one for the people attending synchronously. However,

when done successfully, the development process brings together students in any of the learning modes.

The development of curriculum design described above is only the first part of the process of course development. Eventually, assignments, projects, discussion, and lectures must also be developed in a way that makes sense for students attending in the various modes. Although this process can take time, some strategies exist to reduce development time. For example, lectures can be given to the streaming and in-person students, which are then uploaded following the class period for the online students to watch. Discussion can be posted to the LMS and used as class material for students to reference. Here again, even though it can seem like two separate classes, much of the student experience comes from engagement with other students. Planning engagement across platforms can reduce both faculty development time and increase student success.

Mental Bandwidth

One of the more significant challenges with facilitating HyFlex learning is successfully giving attention to students in all modes of instruction. While holding class discussion, it can be difficult to remember that streaming students are quietly attending on the computer. It can also be easy to forget that online students who will be watching recordings later may miss contextual cues present in live experiences. It is important that faculty remain aware of the learning experience of all students, which does take mental energy. A practical example of this is when a student in the back of a physical space asks a question that is not heard by online students, not to mention those watching recordings. It can be a disorienting experience for those not hearing. This requires the instructor to be conscious of the need to repeat questions into a microphone.

Outside of class, the instructor's time is broken up into office hours in-person and responding to online student communications. When a course is entirely online, a faculty can plan to respond to all students in one focused period at their computer. When a course is completely live, support time might exist after class and during office hours. HyFlex challenges the faculty to address the support needs of all students. This is no small challenge and can be taxing on the faculty's attention span.

Cost of Personal Technology

Given the reliance on technologies to make HyFlex options possible, some institutions may not have access to all the tools a faculty may need or want. In these cases, faculty may choose to purchase their own tools. It can be easier just to buy equipment than to formally request money from the institution. Arguably, some of the best tools are those that cost the least amount of money, such as a flexible webcam mount, a quality webcam, and a tabletop microphone. On the other hand, some equipment can cost thousands of dollars, but make the HyFlex experience much more valuable. The choices of what technologies are available to the faculty are so individualized to the teaching style, faculty skill level, and institutional resources that it must be a consideration by faculty and administrations. However, if faculty do choose to engage in HyFlex options, the cost of resources is worth careful deliberation.

Conclusion

Overall, the HyFlex format can be challenging for many reasons; however, the need to address the changing demands of students makes it an option for educators to consider. Careful attention to curricular design, technology, and accessibility are all factors that should be considered when addressing its potential. It can be tempting to dismiss teaching options like this, given their complexity, but it may also be missed opportunities for programs to meet the needs of students. Regardless of personal opinions, it remains an option for educators to consider as a way to teach more people in new ways.

References

Beatty, B. J. (2019). Values and principles of hybrid-flexible course design. In B. J. Beatty (Ed.), *Hybrid-flexible course design*. EdTech Books. https://edtechbooks.org/HyFlex/HyFlex_values

Bokhovey, C., & Downey, C. (2018). Automated generation of 'good enough' transcripts as a first step to transcription of audio-recorded data. *Methodological Innovations*, *11*(2). https://doi.org/10.1177/2059799118790743

Chapman, R. A., Baker, S. B., Nassar-McMillan, S. C., & Gerler, E. R., Jr. (2011). Cybersupervision: Further examination of synchronous and asynchronous modalities in counseling practicum supervision. *Counselor Education and Supervision*, *50*(5), 298–313. https://doi.org/10.1002/j.1556-6978.2011.tb01917.x

Council for the Accreditation of Counseling and Related Educational Programs. (2022, October). *Program directory*. https://www.cacrep.org/directory/

Dowling, C., Godfrey, J. M., & Gyles, N. (2003). Do hybrid flexible delivery teaching methods improve accounting students' learning outcomes? *Accounting Education*, *12*(4), 373–391. https://doi.org/10.1080/0963928032000154512

Herreid, C. F., & Schiller, N. A. (2013). Case studies and the flipped classroom. *Journal of College Science Teaching*, *42*(5), 62–66.

Mason, E. C. M., Dispenza, F., Placeres, V., Grad, R., Ray, M., Robertson, A., Dosal-Terminel, D., & Metzler, M. (2022). Student engagement and counseling skill self-efficacy: Comparing two course formats. *Counselor Education and Supervision*, *61*(3), 206–216. https://doi.org/10.1002/ceas.12243

National Deaf Center on Post-Secondary Outcomes. (2020, October 27). *Auto captions and deaf students: Why automatic speech recognition technology is not the answer (yet)*. National Deaf Center. https://www.nationaldeafcenter.org/news/auto-captions-and-deaf-students-why-automatic-speech-recognition-technology-not-answer-yet

OECD, Development (OECD) Staff, Development (Paris), Development, Development Centre, Organisation de coopération et de développement économiques (Paris), Statistical Office of the European Communities, & Society for International Development. (2005). *Oslo manual: Guidelines for collecting and interpreting innovation data (No. 4)*. Org. for Economic Cooperation & Development.

Parton, B. (2016). Video captions for online courses: Do YouTube's auto-generated captions meet deaf students' needs? *Journal of Open, Flexible, and Distance Learning*, *20*(1), 8–18.

University of Washington. (2021). *Captioning your own video for free*. Accessible Technology. https://www.washington.edu/accessibility/videos/free-captioning/

Watkins, C., & Mortimore, P. (1999). Pedagogy: What do we know? In P. Mortimore (Ed.), *Understanding pedagogy and its impact on learning* (pp. 1–19). Paul Chapman Publishing Ltd. https://doi.org/10.4135/9781446219454.n1

Webex Help Center. (2021). *How do I enable closed captions?* https://help.webex.com/en-us/WBX47352/How-Do-I-Enable-Closed-Captions

Xiong, W., Wu, L., Alleva, F., Droppo, J., Huang, X., & Stolcke, A. (2018). The Microsoft 2017 conversational speech recognition system. *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 5934–5938. https://doi.org/10.1109/icassp.2018.8461870

Zoom Help Center. (2021). *Enabling and managing closed captioning and live transcription*. Zoom Help Center. https://support.zoom.us/hc/en-us/articles/207279736-Closed-captioning-and-live-transcription