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People, Partnerships and Pedagogies

Experiences of learning and teaching in HyFlex spaces

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This report summarises findings from an ethics-approved research and evaluation project, *HyFlex Environments for Post-Covid Learning and Teaching*. This study adopted a mixed methods approach to investigate students' and teachers' experiences using HyFlex spaces for learning and teaching purposes in 2022. Data were collected for one year covering two semesters, three Trimesters and summer school. The data collection methods included an online student survey, class observations, and semi-structured interviews with students and teachers. This report presents what worked and did not work in the HyFlex spaces and suggests various logistical, technological and pedagogical recommendations that can contribute to the success of HyFlex learning and teaching.

Keywords: HyFlex, hybrid, flexible, teaching and learning, innovative, pedagogical model

Background

The global pandemic has challenged us to rethink how we teach and learn. Four years into the pandemic, tertiary institutions are still exploring ways to offer quality education to their students, particularly those in different geographical locations (Wong et al., 2023). These also include local students who are unable to attend face-to-face learning due to sickness, isolation, work, or family commitments. To provide a seamless and equitable learning experience to both remote and in-class students, we decided to build two HyFlex spaces at the city campus of Auckland University of Technology (AUT). Although higher education has been moving towards online learning, fully online courses are not meant for all students. HyFlex combines the terms 'hybrid' and 'flexible', integrating face-to-face, online synchronous and asynchronous modes of learning (Beatty, 2019). Flexibility is one of the significant merits of the HyFlex pedagogical model that provides learners with an opportunity for the much-needed study-work-life balance (Abdelmalak & Parra, 2016; Wright, 2016), which in turn could increase their chances of retention or completion of a course/programme (Hulene et al., 2023; Rosen, 2021). HyFlex provides students choice regarding "time, place, and space" to attend physical classes, participate in synchronous lessons via video conferencing or complete coursework online asynchronously (Koskinen, 2018, p. 8). This modality allows for breaking down barriers between the physical and virtual space, which can increase their engagement and motivation to learn. Improved accessibility is another benefit of HyFlex (Beatty, 2019) because an online learning option can make education more accessible to students unable to attend in-person classes due to distance, disability or any unforeseen circumstances. HyFlex mode can be more inclusive for students with mobility impairments for whom participating remotely might be easier. Despite the many benefits that HyFlex offers, it comes with several logistical and pedagogical challenges. Technological infrastructure requirements are one of the biggest challenges (Ashraf et al., 2021). A robust online learning platform and a substantial amount of funding are required not only to purchase but also for the maintenance of digital technology infrastructure. With new technologies, both teachers and students require additional training to make the best use of this mode (Nweke et al., 2022). The increased workload for teachers is another obstacle to HyFlex. Having to develop and teach a single course, both in-person and online modalities simultaneously, can be a significant workload increase. After conducting HyFlex classes during the Covid-19 pandemic, Gannon (2020, para. 8) concluded that "HyFlex courses are hard to build and even harder to teach." HyFlex physical classrooms must be equipped with movable furniture, such as adjustable tables and chairs and advanced technological infrastructure, including multiple screens to accommodate in-person and remote students. It is essential to use high-quality microphones and cameras in HyFlex spaces so that remote online students can hear and see the teacher and in-person students clearly. Many HyFlex spaces also feature interactive whiteboards or touchscreen displays, allowing teachers to write, draw or interact with digital content. For effective HyFlex delivery, various digital tools such as video conferencing software, learning management systems (LMS), and online collaboration tools (for example, Google Docs or OneDrive) are necessary. Video conferencing software such as Zoom and Microsoft Teams is highlighted in the literature as an effective and essential tool for synchronous online delivery (Kohnke & Moorhouse, 2021; Kohnke & Moorhouse, 2022; Logroño & Costello-Abrea, 2023). Through features of these platforms, such as "polling, word clouds, breakout rooms, and chats" (Kohnke & Moorhouse, 2021, p. 240), teachers can make the HyFlex lesson more engaging, interactive, and dialogic. Learning Management Systems (LMS), such as Canvas, Moodle or Blackboard, are vital in HyFlex delivery. All students, including those attending in-person and online, can be given access to the course content,

resources, assessments, and feedback through the LMS (Mentzer et al., 2023). In their study exploring student perception regarding HyFlex course design, Abdelmalak and Parra (2016) found that LMS was critical to creating opportunities for learner choice, equivalency, reusability, and accessibility, the four fundamental principles of HyFlex, as postulated by (Beatty, 2007).

Methodology

This study adopted a mixed method design, where quantitative data was collected in the first phase and used to plan the second qualitative phase (Creswell, 2014). This approach allowed me to understand both teachers' and students' teaching and learning experiences in HyFlex spaces through quantitative data. The subsequent qualitative data and analysis helped explore participants' views in greater depth. Integrating quantitative and qualitative data in this study provided a richer understanding of teachers' and students' experiences and specific challenges when teaching and learning in HyFlex spaces. Ethical approval to undertake the study was gained before starting.

Participants

Staff teaching in the two HyFlex spaces in the Business School were invited to participate voluntarily in this study. The teacher participants included both males and females, mostly experienced teachers. All teachers were offered hands-on training before they started teaching in HyFlex spaces. The training covered both pedagogical and technological aspects. Students who participated in this study were enrolled in a business undergraduate degree programme and studying full-time, including both domestic and international students.

Data collection methods and analysis

Data were collected using an online student survey (anonymous), semi-structured interviews with students and teachers and class observations. There were seven valid student survey responses, 19 interviews with the students and teachers, and 4 class observations. The student survey was conducted online using Qualtrics. The first part of the survey comprised demographic questions, such as age, gender, programme of study, name of the course, usual mode of study and device accessibility. The second part of the survey asked students about what they appreciate most about learning in a HyFlex space, the challenges of learning in a HyFlex space, interactions with their peers, and suggestions to improve learning and teaching experiences in the HyFlex space. The second data collection phase included semi-structured interviews with students and teachers. During the interviews with students, they were asked to explain how they experienced HyFlex learning, how it differed from learning in a standard classroom, the benefits and challenges of learning in a HyFlex space, their experience of interacting with the peers, and how they used technology in this space. In addition, students provided suggestions to improve HyFlex teaching and learning experiences. Similarly, during the interviews with teachers, they were asked to comment on how they planned and experienced HyFlex teaching, the benefits and the challenges they faced, learner engagement and interaction in HyFlex spaces, HyFlex technologies and tools, what worked and what did not work and suggestions to improve HyFlex teaching and learning experiences. The key purpose of class observations was to understand how the technologies and equipment worked in the HyFlex spaces. Particularly, I wanted to see what worked and what did not work for facilitating teaching and learning activities. In class observations, I took notes on how the screens, cameras, microphones and other applications, such as Teams and Canvas LMS worked in HyFlex spaces. In analysing the quantitative data, the data were cleaned for invalid responses, and then frequency counts and percentages were generated. Once both phases were completed, all interview transcripts, observation notes and open-ended responses from the survey were imported into NVivo. At this stage, pseudonyms were given to qualitative data to protect participant confidentiality and anonymity. Qualitative data analysis involved reading and re-reading all textual data to determine the breadth of themes and sub-themes. Throughout the analysis process, the themes and sub-themes were refined, merged, or discarded based on their significance. Selected interview extracts from the survey and interviews are used to illustrate key points in the next section.

Findings

Based on the survey data, what students appreciated most about learning in a HyFlex space were (Table 1):

Table 1: The most appreciated aspect of HyFlex learning

Answer	Percentage	Frequency
flexibility (I can attend the sessions in-person or online)	21.74%	5
I can be an active learner	17.39%	4
I can interact with my peers both face-to-face and online	13.04%	3
I feel more in control of my studies	8.70%	2
I can communicate with my peers in a different way	13.04%	3
I can use technology	21.74%	5
Saving time (i.e., travelling)	4.35%	1
Total	100%	23

The key themes and sub-themes that emerged from the qualitative data were:

1. Pedagogical benefits of the HyFlex model– offering flexibility and choice; facilitating reciprocal communication; catering to diverse student needs, having appropriate technologies in one space
2. Challenges of HyFlex model– needing new skills and practice; managing two groups of audiences, distraction; use of the whiteboard
3. Student engagement and interaction– students’ use of audio and video, modes of engagement
4. Future learning and teaching practices and considerations– class size and time; future possibilities

The qualitative data analysis indicated that all student and teacher participants appreciated the flexibility of the HyFlex model. Being able to attend classes online or face-to-face, being an active learner regardless of the mode of study, being able to interact with peers online or face-to-face and the ability to use technology were seen as important factors.

the workshop allowed us to have hands–on experience. With online and f2f dual classes, I could stay home and attend classes when I wasn't feeling well (survey)

I was able to save time with travel to and from university and allocate more time to my studies and also allow myself to have a little more time to myself (survey)

In this situation, unlike the COVID-19 situation, people are working or studying abroad, like international students. So, this [HyFlex] is a very good solution for them (TP4)

Participants also thought having the option to join the class online catered to different student needs and saved time and money. Participants acknowledged that being able to see and hear each other was a benefit of the HyFlex learning and teaching model, which facilitated reciprocal communication.

I prefer the HyFlex classroom. We have those facilities. I really enjoy the sessions... we have materials, and we can see the screens also with the teacher's face (Student Participant (SP4))

Teachers also used the HyFlex space to bring business and industry partners based overseas or out of Auckland to the class. These partners joined via Teams and presented to students the issues and opportunities in the relevant industry. Students then shaped projects based on authentic case studies and presented their work back to the industry partners. In this case, the HyFlex model facilitated reciprocal interaction between two parties located in different geographical and virtual locations.

The delivery face-to-face in the HyFlex room was successful, especially as we had many interactions with our client companies online. Students engaged well with the companies. It gave them a unique opportunity to work on a practical and real consultancy project. From the feedback received the students appreciated and enjoyed the course and its format (TP8).

Most teachers appreciated having the right technologies in the HyFlex spaces to facilitate learning. The ceiling mic, multiple screens to display remote students and multiple cameras to capture the classroom and in-person participants were seen as useful facilities in the classroom. Most student participants shared similar views:

The HyFlex class has got a really nice microphone for the whole class, but in other classrooms, we have only one microphone in the front, so if the lecturer moves away a little bit and then students don't hear (SP3)

It was evident from the students' and teachers' views and class observations that the nature of engagement and interaction in HyFlex may differ from a normal classroom. Having various modes of engagement, depending on the student, they may choose the mode they feel comfortable with.

Especially with undergrads, they don't turn their cameras on. Some people may feel their presence as much ...but I'm getting used to it, When I teach, I engage with them through the chat. So that seems to work quite well (Teacher Participant (TP)1)

Some teachers were challenged by the demand of managing two groups of students simultaneously. Teachers reported that having different groups of students, multiple screens, and multiple modes of engagement in the class was overwhelming and distracting. This was also evident in-class observations. As a teacher participant said, 'you need to always keep in your head that you have two sets of audiences' (TP1). The other challenge was teachers generally have a habit of writing on the whiteboard and pointing at things in the classroom. This brought challenges to both teachers and students:

At times I cannot see very clearly where the lecturer is pointing on the screen/board in the room when she's teaching since I'm studying online (survey)

Teachers' views indicated that the success of the HyFlex model can also be dependent on the size of the in-person and virtual classes:

I was lucky because the class was very small this time. So, in a way, because it's a new technology, the small number of students helps (TP5)

When students were asked what we could do to improve the HyFlex learning experiences, the key suggestions were to improve teacher capabilities in terms of the use of technology in the classroom:

maybe train the lecturers who are not good at using the facilities or IT devices. Yeah, especially for some older lecturers... maybe they are not good at computer things (SP3)

Maybe, lecturers/tutors using the devices correctly (i.e., mic)? I have encountered some lecturers/tutors who can't use the mic correctly in online sessions, which makes us uninterested and results in us leaving the online class, as we can't hear/understand anything (survey)

Discussion and key conclusions

The lessons learnt from our experiences during the pandemic force us to plan for and accommodate increased flexibility and adaptability in our approach to learning and teaching (Brown et al., 2021). With the HyFlex model, students in this study had flexibility and choice, catering to their various needs (Abdelmalak & Parra, 2016; Wright, 2016). The findings demonstrated that both teachers and students had a positive learning and teaching experience in HyFlex spaces at AUT. We all know that simply having high-tech solutions in a classroom does not automatically result in positive learning experiences or outcomes (Flavin, 2020; Gogia, 2020). It is crucial that teachers plan, prepare and practice ways to facilitate 'active learning' for both in-person and remote learners, providing equitable opportunities to both groups. This study demonstrated that, given the complex nature of dual-mode teaching, teachers needed a different set of skills to make the best use of HyFlex spaces. To build these new skills and knowledge, teachers needed extensive hands-on training (Ashraf et al., 2021), covering both pedagogical and technological aspects of HyFlex and ongoing support. Designing good quality HyFlex experiences also depends on the experience, expertise, and resources we have at hand at institutions. Effective implementation of HyFlex learning experiences requires an advanced technology infrastructure, which includes high-quality audiovisual equipment and video conferencing software (Ashraf et al., 2021). Our experience suggests that these technologies are costly. A HyFlex course should also ensure that students who wish to join online are equipped with the technological skills (Nweke et al., 2022), devices and a stable Internet connection needed to access the choice of participation. Class size can be a barrier to effective

learner interaction in HyFlex spaces. If the HyFlex model is widely adopted, class size, duration, and schedule also need to be modified to suit both in-person and remote learners and their geographical locations.

In conclusion, if done correctly, the HyFlex model has the potential to attract a broader diversity of students and offer more participation options for current students. However, adopting this model requires budget allocation, careful planning, extensive staff training and support, and ways to manage student attendance and create meaningful social interaction for both in-person and remote learners. It is also important to note that implementing the HyFlex model should follow a holistic approach with technology paired with appropriate pedagogy. Further research is needed on how the HyFlex model impacts student outcomes, engagement, and attendance in the long run.

References

- Abdelmalak, M. M. M., & Parra, J. L. (2016). Expanding learning opportunities for graduate students with HyFlex course design. *International Journal of Online Pedagogy and Course Design (IJOPCD)*, 6(4), 19–37.
- Ashraf, M. A., Yang, M., Zhang, Y., Denden, M., Tlili, A., Liu, J., Huang, R., & Burgos, D. (2021). A systematic review of systematic reviews on blended learning: Trends, gaps and future directions. *Psychology Research and Behavior Management*, 14, 1525–1541.
- Beatty, B. J. (2007, October). *Hybrid classes with flexible participation options: If you build it, how will they come?* [Paper presentation]. 2007 Annual Proceedings-Anaheim: Volume, 15. Anaheim, CA. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=9e2c7fbad748116101a72b9271ac3835fd232f50>
- Beatty, B. J. (2019). *Hybrid-flexible course design: Implementing student-directed hybrid classes*. EdTech Books.
- Brown, C., Datt, A., Forbes, D., Gedera, D., & Hartnett, M. (2021). Report: University students' online learning experiences in COVID-times. Retrieved from: <https://bit.ly/3FJ3OQN>
- Creswell, J. W. (2014). *A concise introduction to mixed methods research*: SAGE publications.
- Flavin, M. (2020). Virtual library environment? VLEs in practice. In M. Flavin (Ed.), *Re-imagining technology enhanced learning Digital education and learning* (pp. 43–58). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-55785-0_3
- Gannon, K. (2020, October 26). *Our HyFlex experiment: What's worked and what Hasn't*. [Our HyFlex Experiment: What's Worked and What Hasn't \(chronicle.com\)](https://www.chronicle.com/article/our-hyflex-experiment-what-s-worked-and-what-hasn-t)
- Gogia, L. (2020, November 23). *HyFlex byeFlex: Rethinking the way forward*. [HyFlex ByeFlex: Rethinking the Way Forward \(thetambellinigroup.com\)](https://www.thetambellinigroup.com/hyflex-bye-flex-rethinking-the-way-forward)
- Hulene, G., Cronshaw, S., Davies, E., de Main, L., Holmes, H., Hope, A., ... & Wolstencroft, P. (2023). Student Engagement Guidelines: Learning from innovative practices introduced in response to COVID-19.
- Kohnke, L., & Moorhouse, B. L. (2021). Adopting HyFlex in higher education in response to COVID-19: students' perspectives. *Open Learning: The Journal of Open, Distance and e-Learning*, 36(3), 231–244.
- Kohnke, L., & Moorhouse, B. L. (2022). Facilitating synchronous online language learning through Zoom. *RELC Journal*, 53(1), 296–301.
- Koskinen, M. (2018). *Understanding the needs of adult graduate students: An exploratory case study of a HyFlex learning environment* [Doctoral dissertation, Northeastern University].
- Logroño, O. C., & Costelo-Abrea, A. M. (2023). ESL Teachers' and Students' Experience of Online Learning via Microsoft Teams. *East Asian Journal of Multidisciplinary Research*, 2(7), 2983–2998.
- Mentzer, N. J., Isabell, T. M., & Mohandas, L. (2023). The impact of interactive synchronous HyFlex model on student academic performance in a large active learning introductory college design course. *Journal of Computing in Higher Education*, 1–28.
- Nweke, L. O., Bokolo, A. J., Mba, G., & Nwigwe, E. (2022). Investigating the effectiveness of a HyFlex cyber security training in a developing country: A case study. *Education and Information Technologies*, 27(7), 10107–10133.
- Rosen, D. J. (2021). BlendFlex and HyFlex Models to Increase Student Engagement and Retention. *Adult Literacy Education*, 3(2), 73–78.
- Wright, D. (2016). The HyFlex course design: A case study on adult and career education courses. *National Social Science Journal*, 48(2), 88–93.
- Wong, B. T., Li, K. C., Chan, H. T., & Cheung, S. K. (2023). HyFlex Learning Research and Practice: A Longitudinal Analysis. *Sustainability*, 15(12), 9699.

Gedera, D. (2023). A journey through course development: The design process for a new early childhood education course. In T. Cochrane, V. Narayan, C. Brown, K. MacCallum, E. Bone, C. Deneen, R. Vanderburg, & B. Hurren (Eds.), *People, partnerships and pedagogies*. Proceedings ASCILITE 2023. Christchurch (pp. 404–409). DOI: <https://doi.org/10.14742/apubs.2023.608>

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