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The Implementation Of The Hyflex Learning Model During The Pandemic: A Systematic Literature Review

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Keywords

Hyflex, Management Learning, SLR, Literature Review, Implementation, Pandemic.

ABSTRACT

This research aims to explore HyFlex implementation management during the pandemic to provide a broader picture of its implementation and impact. This qualitative study uses the Systematic Literature Review (SLR) method. The articles studied totaled fifty domestic and foreign articles from ten data sources regarding the HyFlex learning model. Data analysis was carried out using Miles and Huberman data analysis techniques. The research results found that 86% of the 50 research articles reviewed were the implementation of HyFlex at the higher education or university level. Apart from that, this research also analyzes the management of HyFlex implementation based on Terry's management function theory, namely the planning, organizing, actuating, and controlling (POAC) functions. The findings also discuss the challenges experienced during the implementation of HyFlex, which consisted of technology problems, lack of student involvement, increased teacher workload, difficulty dividing attention among students, lack of guidance, and stress. Of these six challenges, this study also discusses the solutions taken to overcome these problems. In addition, the impact and perceived effectiveness of HyFlex are also addressed in this study.

INTRODUCTION

During the COVID-19 pandemic, educational institutions have tried to adapt by implementing online learning to limit physical interactions within schools. Keshavarz (2020) stated that the main advantage of online education is that it makes it possible to reach students from various parts of the world so that knowledge can continue even though learning cannot be done physically. In online education, adequate technological resources, such as cell phones, laptops, or computers connected to the Internet, are needed. The teaching and learning process also uses various applications such as Zoom, WhatsApp, Google Meet, Google Drive, Google Form, Google Classroom, YouTube, etc. (Anugrahana, 2020) as communication and interaction tools, delivering learning, and giving assignments to students. However, during online learning, various problems were also discovered. At the end of April 2020, the Indonesian Child Protection Commission (KPAI) received 246 complaints regarding difficulties for students and parents during online learning (Mulyana et al., 2020). These complaints contain obstacles such as excessive workload, one-way learning, problems with learning hours, the exact education costs even though the burden of knowledge is deferred to parents, limited internet and device quotas, and difficulties in allocating parents' time to accompany their children to study. Parents experience these online learning obstacles and impact various educational parties.

Of the various problems that arise during online learning, many students and their parents hope that schools can return to face-to-face learning. This is also because students have different learning styles and personalities, so not all students can learn optimally through online learning (Keshavarz &

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Hulus, 2019). Educational institutions such as universities also need help determining whether students should participate in on-campus learning or continue learning online (Miller et al., 2021). Coupled with the decreasing number of COVID-19 cases, this provides space and opportunities for students and teachers to carry out face-to-face learning, which still needs to be improved (Fikrianoor et al., 2021). But on the other hand, online education has also provided various benefits and has become a new habit for several people. (Winandi, 2020). Keshavarz (2020) stated that the way out of this post-pandemic learning dilemma is to modify blended learning, which is carried out in hybrid form. Keshavarz (2020) also noted that the main advantage of this modified model for students is the diversity and versatility of face-to-face and online learning.

Similar to the description of the model proposed by Keshavarz, there is a learning model developed by Beatty (2019), namely HyFlex or Hybrid Flexible. HyFlex combines online and offline learning in one teaching class, allowing students to choose the mode of participation that best suits their needs (Beatty, 2019; Wilson & Alexander, 2021). Additionally, Detyna et al. (2023) predict that HyFlex can play an essential role in education after the COVID-19 pandemic, such as providing learning for students remotely while providing learning for face-to-face students. Birgili et al. (2021) also argue that HyFlex will become more widespread with the current development.

With the diverse learning needs of students, school management needs to obtain information about HyFlex, which can be the answer to these learning needs so that schools can plan better and more maturely. Moreover, HyFlex is currently still relatively new and rarely implemented (Kohnke & Moorhouse, 2021) and apart from that, HyFlex has not yet been explored much in research because there is still little research on HyFlex (Heilporn & Lakhal, 2021). Because there still needs to be more knowledge about HyFlex, we need an overview of how school management carries out its management functions in implementing the HyFlex learning model from various practices and scenarios carried out as references. Therefore, this research applies to a Systematic Literature Review.

Thus, this research applying Systematic Literature Review is deemed appropriate to achieve this research's objectives. It is hoped that this research can benefit school management by providing various practical descriptions of the HyFlex learning model from different educational institutions in various parts of the world.

METHODS

The type of research in this study is a Systematic Literature Review (SLR) with a qualitative research approach that discusses the application of the HyFlex learning model during the pandemic. Several steps need to be taken in conducting SLR research, namely planning, working, and reporting (Wahono, 2015).

1. Planning

   At the planning stage, researchers formulate research needs for systematic studies and formulate problems to discuss in this research. The components in planning are: (1) exploring the background of SLR research needs, (2) formulating research questions, (3) determining search terms according to the research topic, (3) creating article selection criteria, namely inclusion criteria, (4) carrying out a checklist quality and procedures, (5) planning data extraction strategies, and (6) planning data synthesis strategies.

2. Conducting

   At the conducting or implementation stage, the steps that will be taken are as follows: (1) identifying relevant literature according to the research topic, (2) selecting the primary research, namely data that best fits the inclusion criteria that have been created, (3) carry out data extraction by downloading articles, (4) assess the quality of research by looking at the journal index, and (5) carry out a synthesis of all the data that has been collected and adjust it to the research questions that have been determined.

3. Reporting

After carrying out the conducting stage, the researcher carries out the reporting stage, which consists of activities (1) writing SLR research from the data that has been collected and by the research questions and (2) choosing the right journal to publish the results of this research so that this research can be helpful for a wider audience.

RESULTS

Search results data shows that Google Scholar offers the highest number of articles, namely 1,736 articles, ERIC with 350 pieces, then Springer with 163 pieces, Francis & Taylor with 59 articles, ScienceDirect with 32 articles, SAGE Journal with 18 articles, Emerald with 16 articles. Articles: Wiley totals 16 articles, Mendeley totals 11 articles, and Oxford totals 6 articles. Apart from that, from search results using Indonesian keywords, only Google Scholar displays 16 national journal articles, while other data sources still need national journal articles on the topic of HyFlex. The articles that have been found are then filtered through 3 stages. The first stage was selection through research titles; 221 articles were screened at this stage. After that, the second selection stage was carried out by reading the research abstract. In the second stage, 100 papers were filtered. The third stage was carried out by reading the contents of the research articles, and at this stage, 50 articles were selected, which are displayed in Table 1.

Table 1. List of articles studied

No.	Data source	Research Title	Journal	Year	Scopus
1.	ERIC	Hyflex Challenges and Strategies for Matured Learners: Construction Engineering Higher Education in New Zealand during The Pandemic	Journal of Educators Online	2023	Q3
2.	Google Scholar	The Hyber-Flexible Course Design Model (HyFlex): A Pedagogical Strategy for Uncertain Times	International Journal of Technologies in Higher Education	2020	-
3.		Benefits Of Hyflex Learning In Creating A Positive Students' Experience	Mediaforum	2020	-
4.		Managing the Hyflex Scheduling Activity Using Excel Dynamic Arrays	INFORMS Transactions on Education	2021	Q3
5.		Investigation of Students' Educational Experience with HyFlex Instruction Model in Two Engineering Courses	2021 ASEE Virtual Annual Conference Content Access	2021	-
6.		Teaching Software Quality Assurance (SQA) During COVID-19 Using the HyFlex Approach – Course Design, Results, and Experiences	2021 ASEE Virtual Annual Conference Content Access	2021	-
7.		Improved HyFlex Course Design Utilizing Live Online and On-demand Courses	Proceedings of the 13th International Conference on Computer Supported Education (CSEDU 2021)	2021	
8.		Finding Our Voice: Highly Flexible ED for the HyFlex World	To Improve the Academy: A Journal of Educational Development	2021	-
9.		Hyflex: Learning In A Hybrid Context And Flexible With Technology	Technology and English Learning	2021	-
10.		Teaching During Covid: The Effectiveness of the HyFlex Classroom in a 300 Level Statistics Class	Journal of Education and Training Studies	2021	-
11.		Hybrid Flexible Instruction: Exploring Faculty Preparedness	Online Learning Journal	2021	Q1

12.		Practical Tips for HyFlex Undergraduate Teaching During a Pandemic	Communications of the Association for Information Systems	2021	Q2
13.		Transforming Instructional Strategies for Student Engagement In A Hyflex Information Literacy Course	LOEX 2021	2021	-
14.		A Case Study of MHA Faculty and Student Experiences in Adapting Learning Modality Options to Hybrid Flexible (HyFlex) During the COVID-19 Pandemic	The Journal of Health Administration Education	2021	Q3
15.		Improving Students' Critical Thinking Abilities Using Hyflex Learning Assisted by Wordwall	Scholaria: Journal of Education and Culture	2022	S3
16.		Room and Zoom®: Perceptions from a K-5 HyFlex Model	Journal of Online Learning Research	2022	-
17.		Hyflex for Successful Student Veteran Engineering Education: Say it Like You Mean It	2022 ASEE Annual Conference & Exposition	2022	-
18.		A HyFlex teaching method in Academic English education Practice and proposal of innovative lecture format in the COVID-19 era	coreteachEducation minutes	2022	-
19.		Hyflex Collaboration In Cross-Sectoral Stem Education: Survey Analysis	Current Issues of Business and Law	2022	-
20.		Trialing HyFlex at TU Dublin – stakeholders' voices and experiences	Irish Journal of Academic Practice	2022	-
21.		Using a Hyflex Learning Format in a Second-year Mechatronics Course	2022 ASEE Annual Conference & Exposition	2022	-
22.		Reevaluating Learner–Mentor Connections in HyFlex Medical Student Learning Communities	Academic Medicine	2022	Q1
23.		Student Engagement in HyFlex Courses During the COVID-19 Pandemic	Journal of College Student Development	2022	Q1
24.		HyFlex courses: a "flex" or a flop?	Journal of Instructional Pedagogies	2022	-
25.		Challenges in Hyflex Learning in Zambales, Philippines	International Journal of Multidisciplinary: Applied Business And Education Research	2022	-
26.		Board 102: Design and Development HyFlex Courses for Undergraduate Students	2023 ASEE Annual Conference & Exposition	2023	-
27.		The Effects of the HyFlex Learning Model on Undergraduate College Student Activity Levels	Fortune Journal	2023	-
28.	Mendeley	Development of a HyFlex Defensive Security Course	2021 ASEE Virtual Annual Conference Content Access	2021	-
29.		Hyflex Teaching and Learning: An Alternative Modality for Meaningful Engagement and Epistemological Access in South African Higher Education	E-Journal of Humanities, Arts and Social Sciences (EHASS)	2022	-
30.		Designing Online Discussion for HyFlex Learning	International Journal of Educational Methodology	2022	Q4
31.		An Overview of Student Perceptions of Hybrid Flexible Learning at a London HEI	Journal of Interactive Media in Education	2023	Q2
32.	Oxford	Teaching Implicit Bias and Its Management in the Pain Care of Sickle	Pain Medicine	2022	Q2

		Cell Anemia Patients in a Hyflex Pre-Professional Classroom During COVID-19			
33.	Science Direct	Hyflex Simulation: A Case Study of a Creative Approach to Unprecedented Circumstances	Clinical Simulation in Nursing	2021	Q1
34.		Converting a graduate-level course into a HyFlex modality: What are effective engagement strategies?	International Journal of Management Education	2021	Q1
35.		HyFlex Teaching Process Evaluation During COVID Pandemic for a Baccalaureate Core Course About Issues in Nutrition & Health	Journal of Nutrition Education and Behavior	2022	Q2
36.		Using the HyFlex model to deliver a capstone seminar course	Currents in Pharmacy Teaching and Learning	2022	Q1
37.		Hybrid flexible (HyFlex) seminar delivery – A technical overview of the implementation	Building and Environment	2022	Q1
38.		Academic integrity in the HyFlex learning environment	Hellion	2023	Q1
39.	Springer	HyFlex environment: addressing students' basic psychological needs	Learning Environments Research	2021	Q1
40.		Hybrid flexible (HyFlex) teaching and learning: climbing the mountain of implementation challenges for synchronous online and face-to-face seminars during a pandemic	Learning Environments Research	2022	Q1
41.		Investigating the effectiveness of a HyFlex cyber security training in a developing country: A case study	Education and Information Technologies	2022	Q1
42.		The Rise and Fall of the HyFlex Approach in Mexico	TechTrends	2022	Q1
43.		Satisfaction with HyFlex Teaching and Law-abiding Leadership Education in Hong Kong University Students Under COVID-19	Applied Research in Quality of Life	2022	Q2
44.		Towards HyFlex (Hybrid-Flexible) Implementation: The Optimal Synchronous and Asynchronous Ratio Under the Pandemic	International Conference on Blended Learning	2022	-
45.		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	2023	Q1
46.		Self-regulation, motivation, and outcomes in HyFlex classrooms	Educational technology research and development	2023	Q1
47.		Classroom Management Strategies for Hyfex Instruction: Setting Students Up for Success in the Hybrid Environment	Early Childhood Education Journal	2021	Q2
48.	Taylor & Francis	Student perceptions on the benefits of Flipgrid in a HyFlex learning environment	Journal of Education for Business	2020	Q2
49.		Adopting HyFlex in higher education in response to COVID-19: Students' perspectives	Open Learning	2021	Q2
50.	Wiley	Teamwork facilitation and conflict resolution training in a HyFlex course during the COVID-19 pandemic	Journal of Engineering Education	2021	Q1

Based on the data above, the study articles consist of 43 journal articles and seven conference articles. The data above also shows that the data consists of 2 national and 48 international articles. The percentage of national articles is only 4% of the total, and the rate of international articles is 96%. This finding shows that more research still needs to be conducted on the HyFlex learning model in Indonesia.

Number of Research Based on Educational Level

Based on the article data studied, data was found regarding the number of educational units implementing the HyFlex learning model during the pandemic.

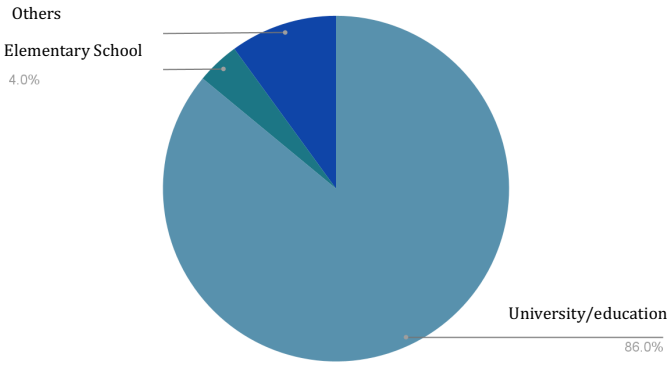

Figure 1. Percentage of education levels using HyFlex

The data findings above show thatusingf the HyFlex learning model is more common at higher education or university levels, with data from 43 research journals or 86%. Next is the level of others or not specifically mentioned at 4% or 5 articles. The percentage of articles at the elementary school level is only 4% or two articles. Meanwhile, more was needed for middle and high school levels.

Discussion

The analysis of the number of articles based on educational level found that the HyFlex learning model was applied chiefly at the university or higher education level. Rosen (2021) states that HyFlex is a learning model that utilizes digital technology to help adult learners to help students meet the demands of their lives by providing greater control over their learning. Imran (2023) also added that in the HyFlex context, students must understand what must be done to achieve learning objectives, so independence is needed to participate in learning. Apart from that, students must be able to manage themselves. As stated by Beatty (2019), students who take part in the HyFlex learning model must have good self-management because they must make decisions regarding the mode of participation they choose to participate in the learning. Because university students are considered mature enough, independent, and responsible, many universities apply the HyFlex learning model.

Based on research results, planning is one of the keys to successfully implementing HyFlex. According to Nelson et al. (2022), HyFlex learning offers flexibility for students, and with careful planning, students from any mode can be well involved in learning. Athens (2023) also stated that teacher preparation before implementing HyFlex is essential, especially in managing learning materials, providing a suitable place, developing active learning, and mastering technology. At the planning stage, institutions need to decide what modes of participation will be offered. Schools also consider students' learning needs, teacher skills, learning media, what technological tools will be used, teaching methods, etc., to support all modes of participation that will be followed relatively per the HyFlex concept. As stated by Beatty (2019), one of the things done in implementing HyFlex is designing and developing learning that supports multiple student modes of simultaneous participation. With good planning, learning can create an active, innovative, creative, effective, and enjoyable teaching and learning process as one of the goals of learning management (Saifulloh & Darwis, 2020). For all modes of participation. However, Baker (2022) argues that HyFlex is perhaps one of the most challenging learning models

because it requires careful planning before implementation so that students in the three different participation modes can be involved equally, teachers are familiar with the technology and are always aware and remember to always focus on students' learning experiences. HyFlex requires a significant investment of time, especially for designing learning activities (Rutledge et al., 2021). Rosen (2021) even believes that planning may need to be done for a year so that HyFlex learning runs smoothly. Therefore, after deciding to implement HyFlex, the planning stage needs to be carried out as thoroughly as possible, and the entire series of technological tools, software, materials, and activities in the HyFlex learning system before implementation so that the benefits and learning objectives can be achieved optimally.

All resources, especially the learning management component, which consists of classroom management, learning materials, activities, time, students, learning resources, and behavior Muslich, 2007 in Rukajat, (2018), must be managed well so that learning runs conductively. In implementing HyFlex, organizing technology in the classroom is crucial. Imran et al. (2023) stated that technological support is essential for teachers and students in carrying out HyFlex learning because it can reduce disturbances that may occur when education is carried out. Baker (2022) also reveals that the technology used in HyFlex must be as reliable and straightforward as possible to be easy to use. Baker (2022) added that the technology used must be able to facilitate collaboration and interaction between online and offline students, so it must be ensured that students can clearly hear and see offline and online mode participants. Therefore, it is unsurprising that technical issues regarding video and audio quality are crucial for students. Beatty (2019) states that one of the roles of institutions is to provide a place for learning equipped with the technology needed to support learning activities such as lectures, discussions, and other activities. Thus, the technology that will be used must be ensured to function correctly and meet learning needs so students can digest the material presented well.

Based on the research results, implementation was done by opening two to three modes of participation: face-to-face and online, or face-to-face, synchronous online, and asynchronous online using various media. With the different participation modes offered, students, especially adult students, can choose according to their circumstances, needs, and preferences (Stewart & Bishop, 2022). Through HyFlex, obstacles to class attendance, such as transportation, time conflicts, and the need for assistance in learning, can still be facilitated (Beatty, 2019). Synchronous offline and online learning is carried out through video conferencing applications. In contrast, asynchronous activities are carried out using LSM, recorded videos or live broadcasts, discussion pages, etc., which are also participated in by offline and online synchronous students. Sowell et al. (2019) stated that using an LMS platform consistently provides or delivers class content for all participation modes. He added that learning recordings could help students remember and understand the material better because they can be watched repeatedly. Apart from LMS and recorded videos, many other media used in HyFlex can still be explored to create effective and efficient learning.

The implementation of the supervisory management function is rare. However, from research data, the teacher's aim in conducting evaluations is to improve the performance of HyFlex in the next class and to see the extent to which students understand the material that has been presented. This evaluation includes homework, quizzes, projects, midterm, and final exams. The frequency and form of student evaluation also influence the implementation of learning. Chen et al. (2023), in their research on HyFlex, added that students prefer small but frequent assessments, such as quizzes, because they can reduce stress and better prepare themselves for more extensive reviews. Apart from the material, self-evaluation and peer evaluation are also carried out as a form of supervision.

The research results concluded six challenges in implementing the HyFlex learning model. First, technological problems are caused by inadequate devices, low audio, and video quality problems, etc. By Beatty's (2019) opinion, it is a challenge that institutions and students will face. Beatty (2019) stated that the challenge for technology-related institutions is to provide classes that are equipped with adequate technology so that it is possible to require additional financial resources to meet technological facilities. However, not only do institutions need to invest; students, especially those who choose online

participation modes, need to have appropriate devices for online learning with good internet networks and digital skills (Beatty, 2019). So that obstacles related to this technology can be prevented and overcome.

Second, related to student participation, Beatty (2019) has also mentioned that one of the challenges for HyFlex teachers is managing student participation in several participation modes simultaneously, coupled with quite complex multi-modal learning techniques and the use of technology. Bettinger et al. (2017) also argue that the lack of participation between teachers, students, and fellow participants is one of the reasons for dissatisfaction with learning outcomes. However, Cheng (2023) stated that one of the benefits of HyFlex is interaction with fellow students because it provides an opportunity to discuss and share ideas. Therefore, this participation problem can be overcome by collaborative learning, where students will come together in one team to discuss or work on tasks or projects. Apart from that, participation can be helped by the interaction built between teachers and students and fellow students by utilizing the media used in class, such as discussion boards, LMS, or other media.

Third, the workload increases. This problem is caused by teachers needing to create learning for different participant modes (Boehm & Boerboom, 2023). In addition, teachers must note that offline participation mode learning designs may only work for some participation modes. This challenge was also mentioned by Beatty (2019) regarding planning and developing learning with different participation modes but with the same material. This is a challenging thing. To design learning for different participation modes, researchers suggest planning learning for asynchronous online mode first. After that, the design is adjusted to synchronous offline and online modes (Imran & Shen, 2023; Kakeshita, 2021; Rutledge et al., 2021). However, for Baker (2023), the asynchronous online mode is the most challenging mode to implement because it requires time and effort coupled with creativity, commitment, and cultural change for this mode to be successful. Thus, the planning stage for this participation mode needs to be carried out as thoroughly as possible so that its implementation can be successful. As described in the research results, this burden can also be reduced by involving students or teaching assistants in supervision or other tasks.

Fourth, it is difficult to pay attention to students with different modes of participation. Online students feel more ignored by teachers during learning. However, this difficulty can also be reduced with similar efforts for the third problem, involving students or teaching assistants to help respond to online student questions. This was also expressed by McCue (2021), who said that having a teaching assistant is one of the keys to an effective HyFlex so that online students are still paid attention to during learning.

Fifth, teachers need more guidance in implementing the HyFlex learning model. Implementing HyFlex at the beginning of its implementation must be confusing for teachers and students. For teachers, implementing HyFlex has become a challenge, so that guidance and guidance becomes a basic need because HyFlex is something new and rarely explored. Baker (2022) stated that teachers need to receive direct training and practice to have an idea and experience of how HyFlex learning works. Another strategy proposed by Baker (2022) is to create a HyFlex teaching community with regular meetings and sharing experiences. Understanding the implementation of HyFlex is also a challenge for students. Baker (2022) also stated that teachers must clearly explain how to learn and interact in the HyFlex environment and what students expect. Another method Central Georgia Technical College uses is implementing HyFlex during student orientation and training student advisors to explain how to use HyFlex (Rosen, 2021). With this, teachers and students can be helped to understand HyFlex.

Sixth, stress and anxiety arise in students. Beatty should mention this challenge, but it is an issue worth paying attention to by educators and institutions. However, Bergantz found different results and Curtis (2022) found that the stress level of students in HyFlex needed to be categorized as a problem for students. Besides that, Mentzer et al. (2023) believe that using HyFlex helps students reduce stress

levels because of HyFlex's flexibility. However, teachers and institutions still need to pay attention to the level of stress experienced by students due to stress, which can reduce students' motivation to learn so that learning outcomes also decrease. As in the research results, the solution is to create a comfortable learning atmosphere for students, create a learning community as a place for students to connect, and provide constructive and inspiring feedback.

These data conclude that the HyFlex learning model is proven to help students learn, and the students feel the benefits. Chen et al. (2022) revealed that students and teachers still want face-to-face learning but are flexible and provide online and asynchronous learning, so HyFlex can be the right mediator for this need. Moreover, HyFlexis is viewed positively, and students feel satisfied with this innovative learning model, so the HyFlex learning model is worthy of being recommended as an alternative learning model that can continue to be applied during this endemic period and beyond.

Education during the pandemic has shown that learning can be done anywhere. It cannot be limited by space or time zone. Gulliksen et al. (2022) argue that after the pandemic ends, education can return to the old way it was before the Covid-19 pandemic occurred. However, another option is accepting the changed circumstances and realizing that there is a more significant opportunity to innovate with technology with hybrid learning. There is a quote that summarizes the need for education after the pandemic. “There are two such aspirations that I believe have become urgent: first, a student, staff, or faculty member should be able to be anywhere in the world participating in a learning or discovery community and continue to be fully involved with the university; and secondly, wealth, income and the postal code should not be predictive factors in student access and success.” [There are two aspirations that I believe have become urgent: first, a student, staff, or faculty member should be able to be anywhere in the world participating in a community of learning or discovery and remaining fully engaged with the university; and second, wealth, income, and zip code should not be predictive factors in student access and success] (Sands & Shushok Jr., 2022:2, in (Ștefănescu, 2022). This quote clarifies that education today is no longer limited by place or distance. Education has evolved with the development of technology, which removes distance barriers to learning. Baker (2022) argues that the Hyflex model enables and supports learners’ rights and choices and provides flexibility in time and space. However, it also helps the development of critical digital skills by simulating the future work environment that many of our students will face—faced by many of our students when they leave us. Therefore, HyFlex can not only remove educational boundaries but also prepare students to face a future world that continues to change and develop.

CONCLUSION

Research shows that most HyFlex research is conducted by higher education institutions (86%). Implementation management follows Terry's (1968) four functions: planning, organizing, implementing, and monitoring, which involves setting goals, managing space and technology, and staff training. Challenges during implementation included technology issues, learner engagement, additional workload, difficulty dividing attention, lack of guidance, and stress, which were overcome with technology management, collaborative learning, and a supportive atmosphere. Despite the challenges, HyFlex was seen as positive and satisfying, giving complete control to students, and allowing teachers to explore new learning media. Recommendations emerged to implement the HyFlex model after the pandemic, recognizing its flexibility in creating responsive and innovative learning.

REFERENCES

Anugrahana, A. (2020). Hambatan, solusi dan harapan: pembelajaran daring selama masa pandemi covid-19 oleh guru sekolah dasar. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *10*(3), 282–289. https://doi.org/10.24246/j.js.2020.v10.i3.p282-289

Athens, W. (2023). Self-regulation, motivation, and outcomes in HyFlex classrooms. *Educational Technology Research and Development*, 1–19. https://doi.org/10.1007/s11423-023-10243-y

Baker, M., & Clegg, S. (2023). Policies and practices of gender-based equality and diversity in Australian project-based organizations. *Project Leadership and Society*, *4*. https://doi.org/10.1016/J.PLAS.2023.100087

Baker, N. (2022). Hyflex pedagogies: From pandemic panacea to a permanent fixture on the higher education landscape. *Educational Developments*, *23*.

Beatty, B. J. (2019). *Hybrid-flexible course design*.

Bergantz, L., & Curtis, C. E. (2022). COVID Anxiety and Stress in Higher Ed (CASH). *Journal on Empowering Teaching Excellence*, *5*(3), 7.

Bettinger, E. P., Fox, L., Loeb, S., & Taylor, E. S. (2017). Virtual classrooms: How online college courses affect student success. *American Economic Review*, *107*(9), 2855–2875. https://doi.org/10.1257/aer.20151193

Birgili, B., Seggie, F. N., & Oğuz, E. (2021). The trends and outcomes of flipped learning research between 2012 and 2018: A descriptive content analysis. *Journal of Computers in Education*, *8*, 365–394. https://doi.org/10.1007/s40692-021-00183-y

Boehm, M., & Boerboom, S. (2023). Faculty Experiences of HyFlex: An Exploratory Study. *Educational Research: Theory and Practice*, *34*(2), 43–47.

Chen, L.-L. (2022). Designing Online Discussion for HyFlex Learning. *International Journal of Educational Methodology*, *8*(1), 191–198. https://doi.org/10.12973/IJEM.8.1.191

Cheng, K. Y. (2023). HYFLEX CHALLENGES AND STRATEGIES FOR MATURED LEARNERS: CONSTRUCTION ENGINEERING HIGHER EDUCATION IN NEW ZEALAND DURING THE PANDEMIC. *Journal of Educators Online*, *20*(2). https://doi.org/10.9743/JEO.2023.20.2.3

Detyna, M., Sanchez-Pizani, R., Giampietro, V., Dommett, E. J., & Dyer, K. (2023). Hybrid flexible (HyFlex) teaching and learning: climbing the mountain of implementation challenges for synchronous online and face-to-face seminars during a pandemic. *Learning Environments Research*, *26*(1), 145–159. https://doi.org/10.1007/s10984-022-09408-y

Fikrianoor, K., Nugroho, A. D., Ganinda, F. P., & Hidayatulloh, A. (2021). Determinants of Student Interest to Become Entrepreneurs. *Jurnal Reviu Akuntansi Dan Keuangan*, *11*(2), 321–331.

Gulliksen, J., Lilliesköld, J., & Stenbom, S. (2022). The 'New'New Normal—Digitalization and Hybridization of Work and Education Before, during and after the Covid-19 Pandemic. *Interacting with Computers*, iwac034. https://doi.org/10.1093/iwc/iwac034

Heilporn, G., & Lakhal, S. (2021). Converting a graduate-level course into a HyFlex modality: What are effective engagement strategies? *The International Journal of Management Education*, *19*(1), 100454. https://doi.org/10.1016/j.ijme.2021.100454

Imran, K., & Shen, J. (2023). Board 102: Design and Development HyFlex Courses for Undergraduate Students. *2023 ASEE Annual Conference & Exposition*.

Kakeshita, T. (2021). Improved HyFlex Course Design Utilizing Live Online and On-demand Courses. *CSEDU (2)*, 104–113. https://doi.org/10.5220/0010470901040113

Keshavarz, M. H. (2020). A proposed model for post-pandemic higher education. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, *3*(3), 1384–1391. https://doi.org/10.33258/birle.v3i3.1193

Keshavarz, M. H., & Hulus, A. (2019). The effect of students' personality and learning styles on their motivation for using blended learning. *Advances in Language and Literary Studies*, *10*(6), 78–88. https://doi.org/10.7575/aiac.alls.v.10n.6p.78

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. https://doi.org/10.1080/02680513.2021.1906641

McCue, R. (2021). *HyFlex Instruction: The Leatherman Tool of Makerspace Learning-Active, Engaging, and Adaptable*.

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. https://doi.org/10.1007/s12528-023-09369-y

Miller, A. N., Sellnow, D. D., & Strawser, M. G. (2021). Pandemic pedagogy challenges and opportunities: Instruction communication in remote, HyFlex, and BlendFlex courses. *Communication Education*, *70*(2), 202–204. https://doi.org/10.1080/03634523.2020.1857418

Mulyana, D., Musfah, J., Siagian, N., Basid, A., Saimroh, S., Sovitriana, R., & Oktavian, C. N. (2020). *Pembelajaran Jarak Jauh Era Covid-19*. Jakarta: Litbangdiklat Press.

Nelson, T. A., Berg, E. A., Wood, N., & Hill, B. (2022). Student engagement in HyFlex courses during the COVID-19 pandemic. *Journal of College Student Development*, *63*(1), 101–105. https://doi.org/10.1353/csd.2022.0001

Rosen, D. J. (2021). BlendFlex and HyFlex Models to Increase Student Engagement and Retention. *Adult Literacy Education*, *3*(2), 73–78. https://doi.org/10.35847/drosen.3.2.73

Rukajat, A. (2018). *Manajemen pembelajaran*. Deepublish.

Rutledge, L., Casucci, T., Mowdood, A., & Ziegenfuss, D. (2021). *Hyflexing library instructional materials: Getting at the heart of designing flexible instruction*.

Saifulloh, A. M., & Darwis, M. (2020). Manajemen pembelajaran dalam meningkatkan efektivitas proses belajar mengajar di masa pandemi covid-19. *Bidayatuna Jurnal Pendidikan Guru Mandrasah Ibtidaiyah*, *3*(2), 285–312. https://doi.org/10.36835/bidayatuna.v3i2.638

Sowell, K., Saichaie, K., Bergman, J., & Applegate, E. (2019). High enrollment and HyFlex: The case for an alternative course model. *Journal on Excellence in College Teaching*, *30*(2), 5–28.

Ştefănescu, A. A. (2022). Education in the post COVID period. *Redefining Community in Intercultural Context*, *10*(1), 53–58.

Stewart, M. N., & Bishop, C. (2022). Pathways to learning: Preliminary findings of a HyFlex pilot implementation. *The North Carolina Community College Journal of Teaching Innovation*, *1*(1), 18–79. https://doi.org/10.53841/bpscpr.2016.31.1.67

Wahono, R. S. (2015). A systematic literature review of software defect prediction. *Journal of Software Engineering*, *1*(1), 1–16.

Wilson, T. J., & Alexander, M. (2021). HyFlex course delivery: Addressing the change in course modality brought on by the pandemic. *Journal of the International Society for Teacher Education*, *25*(2), 41–58. https://doi.org/10.26522/jiste.v25i2.3668

Winandi, G. T. (2020). Perencanaan Pendidikan Pada Masa Pasca Pandemi Covid-19. *Prosiding Seminar Nasional Pascasarjana (PROSNAMPAS)*, *3*(1), 315–317.