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Exploring Educators' Perception of and Readiness for Hybrid Flexible Learning in Technical and Vocational Education and Training (TVET) in Higher Education

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ABSTRACT

In Malaysia, technical and vocational education and training (TVET) focuses on equipping students with practical skills for specific careers, blending classroom instruction with hands-on training. Regarding hybrid flexible (HyFlex) learning, which integrates face-to-face and online instruction, TVET institutions face both opportunities and challenges in incorporating digital tools into practical training. This study explores educators' perceptions of and readiness for HyFlex learning in TVET higher education. A quantitative survey was conducted with 30 purposively selected educators to assess their attitudes, beliefs, and preparedness concerning HyFlex implementation. The data were collected through an online questionnaire and analyzed using the SPSS v25 software. The educators viewed HyFlex learning positively, with mean scores above 3.29 indicating approval of its benefits. They also felt confident about students' success (mean = 4.16) and their own technological skills (mean = 3.92). However, concerns were noted regarding increased workload (mean = 3.44) and the need for better training and resources, as reflected in the lower scores for instructional design (mean = 3.54) and access to resources (mean = 3.77). Therefore, enhancements in training and resources are necessary. This study recommends strategies to improve educators' readiness, including the provision of clear workload guidelines, support for instructional design, professional development, technological resources, and a supportive institutional culture. Addressing these areas will facilitate more effective and sustainable adoption of HyFlex learning models.

KEYWORDS

hybrid flexible learning, educator perception, readiness, TVET, higher education, instructional design

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1. Introduction

Technical and vocational education and training (TVET) at the higher education level is a type of education that focuses on the development of practical and technical skills that are necessary for a particular trade, occupation, or profession. Such programs are designed to prepare students for the workforce by providing them with the knowledge and skills required to succeed in specific technical or vocational fields (Aziz & Subramaniam, 2023). In Malaysia, TVET institutions offer a wide range of courses and qualifications, from certificates and diplomas to bachelor's degrees and postgraduate education in various disciplines, such as engineering, information technology, automotive studies, and many others. These programs often include a combination of theoretical instruction and hands-on training, with an emphasis on workplace skills, technical competencies, and sometimes apprenticeships or industry placements.

The goal of TVET higher education is to produce graduates who are ready for work and can contribute to the economy by filling skilled positions in industry, technology, and service sectors (Yaakob *et al.*, 2020). This is particularly important for countries seeking to develop their workforce and enhance their competitiveness in the global market. In the context of hybrid flexible (HyFlex) learning, TVET higher education institutions may face unique challenges and opportunities (Thompson & Thompson, 2022). Hybrid flexible learning combines traditional face-to-face instruction with online learning, allowing students to choose between in-person and remote participation in their courses. For TVET, this could mean integrating digital tools and platforms into practical training, ensuring that students have access to necessary equipment and resources both on campus and remotely, and adapting hands-on components of the curriculum to be compatible with flexible learning environments (Saharudin *et al.*, 2021). A preliminary study on educators' perception of and readiness for HyFlex learning in TVET higher education would likely explore how prepared they are to adopt and implement this mode of instruction, the challenges they anticipate, and the support they need to effectively teach technical and vocational skills in a hybrid setting. It is hoped that TVET lecturers will become a platform to ensure the quality of TVET education and improve the Malaysian national higher education and economic landscape in the long run (Amran *et al.*, 2020).

The outbreak of novel coronavirus 2019 (COVID-19) that occurred in December 2019 and then spread to various parts of the planet within a few months brought people's lives to a halt. Along with the extreme health crisis posed by the pandemic, the education sector was severely impacted (Mohd & Shahbodin, 2021). Hinsey (2023) has explored the impact of distance education during the COVID-19 pandemic, highlighting the flexibility that virtual learning offers students and the need for higher education institutions to explore innovative approaches in this domain. Kralj (2022) has further addressed the strategic digitalization of education, underscoring the importance of digital readiness and institutional resilience in adopting flexible learning models. These efforts align with the global trend toward making higher education more adaptable and inclusive.

Makonye and Ndlovu (2023) have provided insights into online teaching innovations in South Africa, particularly during the COVID-19 era, examining teachers' perceptions and exploring the knowledge and skills students and teachers need to succeed in online environments, with a specific focus on TVET. Additionally, Wu (2022) has discussed the HyFlex learning model, which offers students increased flexibility while helping build a future-ready talent pipeline.

2. Hybrid Flexible Learning Model

Hybrid flexible learning is an educational approach that combines traditional face-to-face instruction with online learning, allowing

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students to attend classes either in person or remotely. This model offers flexibility and accessibility, which are becoming increasingly important in the evolving landscape of higher education (Garcia & Hernandez, 2021). Despite its potential benefits, the success of HyFlex largely depends on educators' perception of and readiness to adopt this model. This preliminary study aimed to explore these factors among a group of young educators in TVET higher education institutions. This section provides an overview of the HyFlex model, its implementation in TVET, and the potential benefits and challenges it presents for educators and students alike. Educators' perception of and readiness for HyFlex in higher education may be influenced by a variety of factors (Ling & Chua, 2023; Martinez & Garcia, 2021; Sedek & Hassan, 2019; Singh & Khan, 2023).

2.1. Technological Proficiency

Educators who are comfortable with technology and have experience with online teaching platforms are more likely to perceive HyFlex positively and be ready to implement it. Technological proficiency refers to the ability to effectively use digital tools and platforms to perform tasks, communicate, and solve problems in a technologically driven environment. In educational contexts, particularly with the rise of digital learning models such as HyFlex, educators' technological proficiency is becoming increasingly critical. It encompasses skills in using hardware and software, navigating online learning platforms, integrating digital tools into the curriculum, and troubleshooting technical issues (Guzman & Nussbaum, 2009).

For teachers in TVET, technological proficiency is vital, as they are preparing students for careers in technology-driven industries. Educators must not only understand the technologies their students will encounter in the workforce but also be adept at using digital tools to deliver hybrid or flexible learning models. Lack of technological proficiency can result in ineffective teaching and a poor student experience, especially in environments that rely on technology for blended learning (Beetham & Sharpe, 2013). Professional development programs focusing on digital literacy and continuous training are essential for educators to keep pace with technological advancements. As technology continues to evolve, so too must educators' skills and knowledge to ensure that they offer an enriched and effective learning experience (Hoffman & Novak, 2015).

2.2. Pedagogical Training

Training in pedagogical approaches that support hybrid learning could enhance educators' confidence and readiness. This includes understanding how to design engaging online content, facilitate discussions, and effectively assess students in a hybrid setting. Pedagogical training refers to the professional development of educators in understanding and applying effective teaching strategies and methods to enhance student learning. It is critical for ensuring that teachers possess not only subject matter knowledge but also the ability to deliver content in ways that are engaging, inclusive, and effective for diverse learners (Darling-Hammond, 2017). This training encompasses various aspects of instructional design, classroom management, assessment strategies, and integration of technology into teaching practices.

In the context of HyFlex learning, pedagogical training takes on additional significance. Educators must be equipped with skills to effectively design and implement learning experiences that can be simultaneously delivered to both in-person and remote students. This requires knowledge of both traditional pedagogies and digital teaching tools along with the ability to create adaptable lessons that can transition between different modes of delivery (Graham *et al.*, 2019). Pedagogical training also fosters critical reflection, allowing educators to continuously assess and refine their teaching strategies to meet the needs of students in dynamic learning environments. Ongoing training ensures that teachers remain current with emerging trends, such as personalized learning and digital collaboration, thus improving overall educational outcomes (Kali *et al.*, 2011).

2.3. Institutional Support

The level of support provided by the institution, including technical support, training opportunities, and clear policies, can greatly influence educators' perception and readiness regarding hybrid learning. Institutional support refers to the resources, policies, and infrastructure provided by educational institutions to facilitate effective teaching and learning. For educators implementing innovative models such as HyFlex learning, this support is crucial. It includes providing access to technology, professional development opportunities, and administrative backing to ensure successful adoption of new teaching methodologies (Reinhart *et al.*, 2019).

In the context of HyFlex learning, institutions must offer robust technological infrastructure, including reliable internet access, learning management systems, and the technical support to accommodate both in-person and remote learners simultaneously. Additionally, ongoing professional development is essential to help educators stay proficient in the use of digital tools and adaptive pedagogical strategies (O'Keefe *et al.*, 2020). Without adequate support, educators may face challenges in effectively engaging students or managing the complexities of multimodal instruction.

2.4. Flexibility of the Curriculum

Educators may feel readier to adopt HyFlex if the curriculum is flexible and can be easily adapted to both in-person and online delivery. Curriculum flexibility refers to the adaptability of educational programs to accommodate diverse learner needs, preferences, and learning environments. In the context of modern education, particularly with models like HyFlex learning, curriculum flexibility is essential to offer students various pathways to achieve learning outcomes (Gordon, 2014). A flexible curriculum allows students to choose between in-person, online, and hybrid learning formats, providing them with greater control over their learning experiences and schedules. Such flexibility also supports differentiated instruction, whereby educators can modify teaching strategies, content delivery, and assessments to cater to individual learning styles and paces (Tomlinson, 2014). This adaptability is especially important in TVET, where students need practical, hands-on learning that can be supplemented by digital resources. A flexible curriculum ensures that learning remains continuous and accessible, even in changing circumstances, such as during the COVID-19 pandemic (Kaur, 2020).

2.5. Access to Resources

Access to necessary resources, such as reliable internet and appropriate software and hardware, can impact an educator's ability to successfully implement HyFlex. Access to resources refers to the availability of educational materials, technology, and support services that facilitate effective teaching and learning. In HyFlex learning environments, it is critical for both educators and students to have access to digital tools, learning management systems, and technical support to engage fully in both in-person and online modalities (Means *et al.*, 2014). Insufficient access to resources can create barriers to participation and limit educational outcomes, particularly in underserved populations, highlighting the need for equitable resource distribution (Warschauer & Matuchniak, 2010).

2.6. Student Readiness and Support

Educators' perception of HyFlex may also be influenced by their students' readiness for this type of learning and the level of support available to the students. Student readiness refers to learners' preparedness to engage effectively in a learning environment, encompassing their skills, motivation, and access to necessary resources. In HyFlex learning models, this factor is crucial, as students must navigate both face-to-face and online modalities. Providing support through orientation sessions, technical assistance, and continuous academic advising helps students adapt to the HyFlex format (Zimmerman, 2012). Enhancing digital literacy and self-regulated learning skills may also improve student engagement and success in such flexible learning environments (Broadbent & Poon, 2015).

3. Aim and Objectives of the Study

This study aimed to explore the perception, preparedness, and readiness of TVET educators to adopt and implement HyFlex learning modes, with a focus on their skills, support needs, and instructional challenges. The specific objectives of the study were as follows:

- To determine the level of preparedness among TVET educators, including assessing their confidence in applying essential technological skills (e.g., using online learning platforms) and their instructional design abilities to create engaging and effective learning experiences in a HyFlex environment
- To identify the types of support and professional development required to explore the resources, training, and institutional support needed to enhance educators' capability to teach effectively in HyFlex settings, ensuring continuous improvement and adoption
- To assess the perception and overall readiness of TVET educators toward HyFlex learning environments, comprising evaluating educators' attitudes toward, acceptance of, and challenges in adapting to HyFlex instruction and understanding how prepared they feel to meet the demands of flexible, student-centered learning

4. Methodology

4.1. Survey Development and Measures

A survey was designed to assess the various factors that contribute to educators' perceptions, readiness, and competency regarding HyFlex learning. The development processes involved were as follows:

- Questionnaire Design Process

The survey items were developed based on a review of relevant literature, focusing on key areas associated with HyFlex adoption, including technological competency, familiarity with HyFlex, instructional design skills, internet accessibility, and teaching flexibility. The content validity of the questionnaire was ensured by consulting three experts in education and instructional design, who provided feedback on the relevance and clarity of the items.

- Likert Scale

The questionnaire utilized a five-point Likert scale, with options ranging from "strongly agree" (5) to "strongly disagree" (1). This scale was chosen to capture the degree of agreement or disagreement with statements regarding the participants' confidence, preparedness, and perceptions.

- Survey Sections and Constructs

The survey was divided into the following five sections:

- Demographic Information: Age, teaching discipline, years of teaching experience, and prior experience with HyFlex or online teaching
- Technological Competency: Items related to educators' confidence in using educational technologies (e.g., Learning Management System(LMS) platforms and video conferencing tools)
- Familiarity with HyFlex Model: Questions exploring awareness and understanding of HyFlex principles
- Internet Access and Infrastructure: Questions assessing the reliability and sufficiency of internet access to support HyFlex learning
- Support and Training Needs: Items identifying areas where further support or professional development is required

- Pilot Testing and Refinement

The survey was pilot tested with a small group of 10 educators to evaluate its reliability, clarity, and overall usability. Feedback from the pilot phase was used to modify ambiguous or redundant items, ensuring the final version accurately captured the intended constructs.

- Reliability and Validity Measures

To ensure internal consistency, Cronbach's alpha was calculated for each section of the questionnaire during the pilot test phase. A value of 0.7 or higher was considered acceptable. Inter-rater reliability was employed to code responses during the data analysis stage to confirm consistency across multiple researchers' interpretations of qualitative data, if applicable.

4.2. Participants

The study focused on a select group of participants, comprising a total of 30 young educators employed in various disciplines across one TVET higher education institution. The rationale behind this specific selection was to target the perceptions and readiness levels of young educators within this academic setting. This demographic was of particular interest, as such teachers are often at the forefront of adopting new educational technologies and methodologies and their insights could provide valuable information on the potential to implement HyFlex learning in higher education.

4.3. Data Analysis

The study employed a quantitative approach to systematically analyze the survey responses. The analysis focused on identifying trends, patterns, correlations, and significant differences among participants' perceptions of and readiness for HyFlex learning. The steps below describe how the data were analyzed.

- Data Cleaning and Preparation

The survey responses were reviewed to identify any incomplete or inconsistent data. Missing values were handled using listwise deletion (removing incomplete cases) to ensure the integrity of the dataset. Responses were coded numerically, with Likert scale values ranging from 1 (strongly disagree) to 5 (strongly agree), facilitating statistical analysis.

- Descriptive Statistics

Descriptive statistics were calculated to summarize the key findings, as follows:

- Mean (M): To measure the average response for each survey item and construct (e.g., technological competency and familiarity with HyFlex)
- Standard Deviation (SD): To understand the variability or consistency in participants' responses
- Frequency Distribution: To assess how often participants selected each Likert scale option, providing insights into agreement or disagreement trends

- Inferential Statistics

Next, T-tests or analyses of variance were conducted to explore significant differences in perceptions or readiness levels between subgroups (e.g., based on teaching discipline or years of experience). Correlation analysis (e.g., Pearson's correlation) was used to examine the relationships between variables, such as technological competency and readiness for HyFlex. A significance level of $p < 0.05$ was used to determine statistical significance.

- Reliability Analysis

Cronbach's alpha was calculated to assess the internal consistency of the survey constructs (e.g., technological competency and support needs). A threshold of 0.7 or above was considered acceptable, indicating that the items reliably measured the same underlying concept.

- Factor Analysis (if applicable)

Exploratory factor analysis was considered to identify latent constructs within the survey and ensure that items were grouped meaningfully under each construct (e.g., technological competency and instructional design may have loaded onto the same factor).

4.4. Ethics

The study adhered to ethical research standards, such as by obtaining informed consent from participants, ensuring confidentiality, and allowing participants to withdraw from the study at any time without consequence.

4.5. Limitations

The methodology section acknowledged potential limitations, such as the subjectivity inherent in qualitative data, the possibility of non-response bias in the survey, and the challenge of generalizing findings to all teachers in higher education. The research also concentrated on young educators, as the study aimed to capture the perspectives of individuals who are closer to the beginning of their academic careers and who may have received more recent training in educational techniques. These educators were expected to be more adaptable to changes in educational practices and more open to integrating innovative teaching methods into their curriculum.

5. Results

This section presents the data collected from the survey, including the reliability test and descriptive analysis results.

Table 1: Reliability test.

Variable	Number of Items	Cronbach's Alpha	Reliability Level
Perception of HyFlex among Educators	10	0.0801	Reliable
Readiness to Use HyFlex among Educators	10	0.0822	Reliable

Table 1 shows the reliability test of both variables, that is, perception of and readiness to use HyFlex among educators. The results would be considered reliable to measure these factors indicating a coherent and consistent understanding of these two dimensions.

Table 2: Demographic data of the respondents.

Demographic Variable |	Category	Number of Educators	Percentage (%)
Gender	Female	20	66.7
	Male	10	33.3
Age Range	26–30 years	12	40.0
	31–35 years	10	33.3
	36–40 years	8	26.7
Faculty	A	5	16.7
	B	3	10.0
	C	4	13.3
	D	6	20.0
	E	4	13.3
	F	5	16.7
	G	3	10.0
Years of Teaching	1 year	8	26.7
	2 years	6	20.0
	3 years	5	16.7
	4 years	4	13.3

The results in Table 2 indicate that among the 30 educators who participated in the survey, there were 20 females and 10 males. The data were analyzed to identify patterns and significant differences in perception and readiness between genders and across other demographic variables and professional characteristics.

5.1. Interpretation

The majority of educators in the survey were female, making up 66.7% of the participants, with males constituting the remaining 33.3%. This suggests a significant gender imbalance, with female educators being more than twice as numerous as their male counterparts. The largest proportion of educators fell into the 26–30 year age range (40%), followed by the 31–35 year range (33.3%), and the smallest proportion was in the 36–40 year range (26.7%). This indicates that the educator population in the survey was relatively young, with the majority being in their late 20s and early 30s.

Faculty D had the highest number of educators represented in the survey (20%), followed by Faculty A and Faculty F (both at 16.7%). Faculties B and G had the lowest representation, each representing only 10% of the educators. This distribution suggests that there may be differences in the willingness or ability of educators from different faculties to participate in the survey, or it could reflect the actual size and composition of the faculties.

The majority of educators had less than five years of teaching experience, with the highest number having one year of experience (26.7%), followed by four years (13.3%), two years (20%), and three years (16.7%). This indicates that the survey population was composed of relatively inexperienced educators, with a significant number being in the early stages of their teaching careers.

Overall, the results in the table provided insights into the composition of the educator population that participated in the survey, highlighting trends in gender, age, faculty representation, and teaching experience. These demographics are important to consider, as they may influence educators' perceptions and readiness for HyFlex learning. For example, younger educators or those with less teaching experience may have different views on technology integration and workload compared to more experienced educators. Similarly, differences in faculty culture or resources could affect educators' perceptions of HyFlex learning environments.

Table 3: Perception of hybrid flexible (HyFlex) learning among educators.

Item	Statement	Mean
1	HyFlex learning environments are conducive to quality education.	3.91
2	HyFlex allows for better accommodation of diverse student needs.	4.01
3	The integration of technology in HyFlex is beneficial for student learning.	4.10
4	HyFlex provides adequate opportunities for student–teacher interaction.	3.81
5	I believe that HyFlex will be the future of higher education.	3.91
6	HyFlex requires more work from educators compared to traditional teaching methods.	3.44
7	HyFlex can lead to improved student outcomes.	3.92
8	I am confident that students can be successful in a HyFlex environment.	4.16
9	HyFlex is a practical approach for my discipline.	3.81
10	I think that HyFlex will increase my workload significantly.	3.29

Table 4: Readiness to use hybrid flexible (HyFlex) learning among educators.

Item	Statement	Mean
1	I feel prepared to teach using the HyFlex model.	3.77
2	I have the necessary technological skills to implement HyFlex.	3.92
3	I am familiar with the instructional design principles for HyFlex courses.	3.54
4	I have access to the resources needed to support HyFlex teaching.	3.77
5	I am comfortable with the tools required for online teaching in a HyFlex context.	3.97
6	I have received adequate training on HyFlex teaching methods.	3.55
7	I am ready to adapt my current courses to a HyFlex format.	3.78
8	I feel confident in my ability to assess student learning in a HyFlex environment.	3.99
9	I am prepared to facilitate student engagement in both online and in-person components of HyFlex courses.	3.78
10	I understand how to provide effective feedback to students in a HyFlex setting.	3.99

Based on Tables 3 and 4, the interpretations below were made.

- Positive Perception of HyFlex

The majority of the perception items had a mean score above 3.29, suggesting that the educators surveyed generally had a positive perception of HyFlex learning environments. They saw the potential for quality education, accommodation of diverse students' needs, and beneficial integration of technology.

- Concerns about Workload

The lowest mean score for the perception items was associated with the statement "HyFlex requires more work from educators compared

to traditional teaching methods" (mean = 3.44). This indicated that while educators appreciated the benefits of HyFlex, they were also concerned about the increased workload it could entail.

- Confidence in Student Success

The educators expressed a relatively high level of confidence in students' ability to succeed in a HyFlex environment (mean = 4.16), which is encouraging for the implementation of such models.

- Readiness to Teach HyFlex

The readiness items had mean scores ranging from 3.54 to 3.99, indicating that while the educators felt somewhat prepared to teach using HyFlex, there is still room for improvement in terms of training and resources.

- Technological Skills and Tools

The educators felt fairly confident in their technological skills (mean = 3.92) and comfortable with the tools required for online teaching in a HyFlex context (mean = 3.97) , suggesting that the technical aspects of HyFlex teaching were less of a concern compared to other readiness factors.

- Instructional Design and Training

The lower mean scores for "I am familiar with the instructional design principles for HyFlex courses" (mean = 3.54) and "I have received adequate training on HyFlex teaching methods" (mean = 3.55) indicated areas where educators may need additional support. This suggested a need for more professional development opportunities focused on HyFlex instructional design and teaching strategies.

- Resource Access

The mean score for "I have access to the resources needed to support HyFlex teaching" (mean = 3.77) was slightly lower than the scores for technological skills and comfort with tools. This indicated that while the educators had the necessary skills and comfortability level, they were less certain about having all the resources they needed to effectively implement HyFlex.

- Engagement and Feedback

The educators were somewhat confident in their ability to facilitate student engagement (mean = 3.78) and provide effective feedback (mean = 3.99) in a HyFlex setting. This was positive for student-centered learning, but it also highlighted areas where further training or best practices could be beneficial. Overall, the interpretations suggested that while the educators were open to and saw the value in HyFlex learning, there were specific areas, such as workload concerns, instructional design, and training, where institutions may need to provide additional support to enhance teachers' readiness and confidence in implementing HyFlex models.

5.2. Conclusions Aligned with Research Objectives

5.2.1. Objective 1

To determine the level of preparedness among TVET educators, including assessing their confidence in applying essential technological skills (e.g., using online learning platforms) and their instructional design abilities to create engaging and effective learning experiences in a HyFlex environment

- Technological Skills and Tools

The educators reported high confidence in their technological skills and were comfortable with tools for online teaching. This suggested that they felt adequately prepared in terms of technical capabilities to engage in HyFlex teaching. This result was aligned with the findings of Singh and Khan (2023) and Sedek and Hassan (2019).

- Instructional Design and Training

The lower scores for familiarity with instructional design principles and the adequacy of training on HyFlex teaching methods highlighted a gap. While the educators were confident in the technology, they may have needed further professional development in instructional strategies specific to HyFlex. This result echoed the findings of Thompson and Thompson (2022).

5.2.2. Objective 2

To identify the types of support and professional development required to explore the resources, training, and institutional support needed to enhance educators' capability to teach effectively in HyFlex settings, ensuring continuous improvement and adoption

- Training Needs

The relatively lower scores for training and instructional design highlighted the need for more professional development opportunities. Institutions should focus on enhancing educators' understanding of instructional principles and student engagement techniques within the HyFlex model. Similarly, Saharudin et al. (2021) also found that insufficient training and a lack of instructional design knowledge hinder teachers' ability to effectively implement innovative teaching models.

- Resource Access

The mean score for access to necessary resources indicated that while the educators felt technically prepared, they were less confident about the availability of all required infrastructure and materials. This suggested that institutions should also focus on resource provision as part of their support strategy. This finding was similar to that of Makonye and Ndlovu (2023), who identified inadequate access to essential resources as a barrier to the effective adoption of innovative teaching models.

5.2.3. Objective 3

To assess the perception and overall readiness of TVET educators toward HyFlex learning environments, comprising evaluating educators' attitudes toward acceptance of, and challenges in adapting to HyFlex instruction and understanding how prepared they feel to meet the demands of flexible, student-centered learning.

- Positive Perception of HyFlex

Most perception items scored above 3.29, with the educators seeing HyFlex learning as conducive to quality education and believing it could accommodate diverse student needs. This suggested an overall positive perception of HyFlex as a promising instructional model. These findings echoed those of Garcia and Hernandez (2021), who also reported positive perceptions of HyFlex for its flexibility and potential to enhance educational outcomes.

- Confidence in Student Success

The educators expressed a high level of confidence in students' ability to succeed in a HyFlex environment, indicating a positive outlook on the potential outcomes of this teaching approach.

- Concerns about Workload

Despite the positive perception of this learning mode, the educators expressed concerns about the increased workload associated with HyFlex teaching. Similarly, the item "HyFlex will increase my workload significantly" scored the lowest. This suggested that workload management is a significant concern that institutions need to address to encourage the adoption of HyFlex. Beatty (2019) also highlighted similar concerns regarding the potential for increased workload in the implementation of HyFlex models.

5.3. Engagement and Feedback

The educators felt reasonably confident in their ability to engage students and provide effective feedback. This indicated that with

additional support in instructional design, they were likely to successfully facilitate learning in a HyFlex environment. This finding echoed the work of Kaur (2020), who emphasized the importance of instructional support for educators in enhancing student engagement.

As a conclusion, the findings showed that while the educators surveyed were generally receptive to HyFlex and technologically prepared to use it, challenges remain in terms of workload, instructional design, and training. Institutions need to provide ongoing professional development and ensure sufficient resources to support the successful implementation of HyFlex learning.

6. Conclusion and Recommendations

This study aimed to explore educators' perceptions of and readiness for HyFlex learning in TVET higher education. Through a quantitative analysis and a survey of 30 educators, the study sought to understand the attitudes, beliefs, and preparedness of educators regarding implementing HyFlex learning models. The demographic analysis revealed that the majority of educators in the study were female, with a relatively young age distribution and varied levels of teaching experience (predominantly under five years). The distribution across faculties was uneven, indicating potential differences in faculty engagement or representation in the study. The analysis of the educators' perceptions showed a generally positive view of HyFlex learning, with recognition of its potential to enhance educational quality and accommodate diverse student needs. However, concerns about workload, the need for additional training, and the requirement for adequate resources were also identified. Based on these findings, recommends several strategies are recommended to enhance educators' readiness and confidence in implementing HyFlex learning. These include providing clear workload guidelines, offering instructional design support, ensuring access to necessary technological resources, and fostering a supportive institutional culture that recognizes the unique challenges of HyFlex teaching. In conclusion, while educators are open to and see the value in HyFlex learning, there are specific areas where institutions may need to provide additional support to enhance teachers' readiness and confidence. By addressing these areas, the institutions may facilitate a more successful and sustainable adoption of HyFlex learning models, ultimately improving the educational experience for both educators and students.

Exploring educators' perceptions of and readiness for HyFlex learning in TVET higher education here revealed crucial insights into the challenges and opportunities of implementing this learning model. While the HyFlex approach offers flexibility, accessibility, and a personalized learning experience, its success largely depends on educators' technological proficiency, pedagogical training, and institutional support (Beatty, 2019). Furthermore, curriculum flexibility and access to resources play vital roles in ensuring that educators can adapt their teaching to diverse student needs. Teachers' readiness for HyFlex depends on continuous professional development and support to navigate the complexities of multimodal instruction (Graham *et al.*, 2019). Institutional investment in infrastructure, training, and equitable access to digital tools is essential for the sustainable integration of HyFlex in TVET. Ultimately, addressing these factors could foster a more inclusive and adaptable learning environment, improving the quality of education and preparing students for the evolving demands of the workforce.

Based on these findings, the study suggests several strategies to boost educators' preparedness and confidence in adopting HyFlex learning. First, institutions should develop and communicate clear guidelines regarding workload expectations in a HyFlex environment to address concerns about increased workload and facilitate a smoother transition. Second, ongoing professional development focused on instructional design is essential, including workshops and mentorship programs designed to equip educators with effective multimodal instruction skills. Third, ensuring access to necessary technological resources, such as reliable digital platforms and learning management systems, is crucial to support HyFlex teaching. Creating a supportive institutional culture that acknowledges the unique challenges of HyFlex teaching may foster collaboration among educators, encouraging the sharing of best practices and resources.

Furthermore, institutions should offer continuous professional development opportunities tailored to HyFlex learning, focusing on pedagogical approaches, technology integration, and student engagement strategies. The development of effective assessment and feedback mechanisms for both in-person and online students could enhance the learning experience while providing valuable insights into student progress. The establishment of mentoring programs wherein experienced educators guide their peers in implementing HyFlex teaching may also build confidence and share effective strategies. Lastly, investing in research to evaluate the effectiveness of HyFlex learning will help institutions gather data on student outcomes and educator experiences, informing ongoing improvements. By addressing these areas, institutions may facilitate a more successful and sustainable adoption of HyFlex models, ultimately enhancing the educational experience for both educators and students.

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