READINESS FOR THE HYFLEX INSTRUCTIONAL MODALITY IMPLEMENTATION

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ABSTRACT

The HyFlex instructional modality presents a transformative approach to education, blending in-person and online learning to accommodate diverse student needs. This study aims to define and evaluate a framework for assessing the readiness of educational institutions to implement the HyFlex modality. Through a Delphi method, consensus was sought from 17 educational technology experts on key readiness components, spanning Technology and Infrastructure, Faculty Proficiency and Training, Institutional Support and Policies, Student Readiness and Engagement, and Ongoing Evaluation and Feedback. The results revealed high expert agreement on the necessity of robust technological infrastructure, comprehensive faculty development, supportive institutional policies, student engagement strategies, and continuous improvement mechanisms. Statistical analysis yielded high mean scores, predominantly at or above 4.94, and consistently maximum quartile scores, with a standard deviation not exceeding 0.24, indicating a significant expert consensus. These findings provide a validated readiness framework for institutions considering HyFlex implementation, underscoring a multi-dimensional approach that is strategic, systemic, and responsive to the educational ecosystem's diverse constituents.

Keywords: HyFlex Learning, Readiness Assessment, Instructional Strategies, Digital University

INTRODUCTION

The evolving landscape of education has necessitated the adoption of flexible learning modalities that cater to the diverse needs of learners (Kaewsaiha & Chanchalor, 2021). Among these, the HyFlex instructional modality stands out for its ability to seamlessly blend in-person and online learning experiences (Bonk & Graham, 2012; Kaewrattanapat. N., 2022). As educational institutions grapple with the challenges of integrating such hybrid models, understanding, and evaluating their readiness becomes paramount (Bates, 2015).

This study aims to define a clear and comprehensive framework for assessing the readiness of educational institutions to adopt the HyFlex instructional modality. It draws upon the collective expertise of 17 educational technology experts who have delineated essential components for successful implementation. These components span across critical domains, including Technology and Infrastructure, Faculty Proficiency and Training, Institutional Support and Policies, Student Readiness and Engagement, and Ongoing Evaluation and Feedback (Cavanaugh et al., 2014; Mishra & Kereluik, 2013; Picciano & Bates, 2014).

The significance of this research lies not only in its systematic approach to defining readiness but also in its methodological rigor. By employing a Delphi method to reach a consensus among experts, the study ensures that the framework reflects a broad and in-depth understanding of the HyFlex modality (Hsu & Sandford, 2007). The anticipated outcome is to

equip educational institutions with a validated tool to evaluate their preparedness and to identify areas requiring attention or enhancement.

In navigating the transition to HyFlex, institutions must consider various factors such as technological infrastructure, faculty training, policy support, and student engagement (Sun et al., 2013; Yu et al., 2012; Raksakul et al., 2023). The readiness framework developed through this research provides a strategic roadmap for institutions to address these factors comprehensively. By investigating the level of agreement among experts on each component of readiness, the study not only validates the framework but also offers insights into the prioritization of resources and strategies for successful HyFlex implementation.

The introduction of the HyFlex instructional modality heralds a new era of educational flexibility, promising to enrich learning experiences and accommodate individual learner needs (Means et al., 2010). As such, this research contributes to the field by offering a foundational assessment tool that can support educational institutions in their journey towards a more adaptable and learner-centered educational environment.

RESEARCH OBJECTIVES

This research study was aimed to

1. To study and gather data from interviews with 17 education technology experts regarding the components of readiness for the implementation of the HyFlex instructional modality.
2. To analyze and design a model based on the components of readiness for the implementation of the HyFlex instructional modality obtained from the interviews with the 17 education technology experts.
3. To analyze and assess the model of readiness for the implementation of the HyFlex instructional modality by obtaining consensus from the group of 17 education technology experts.

CONCEPTUAL FRAMEWORK

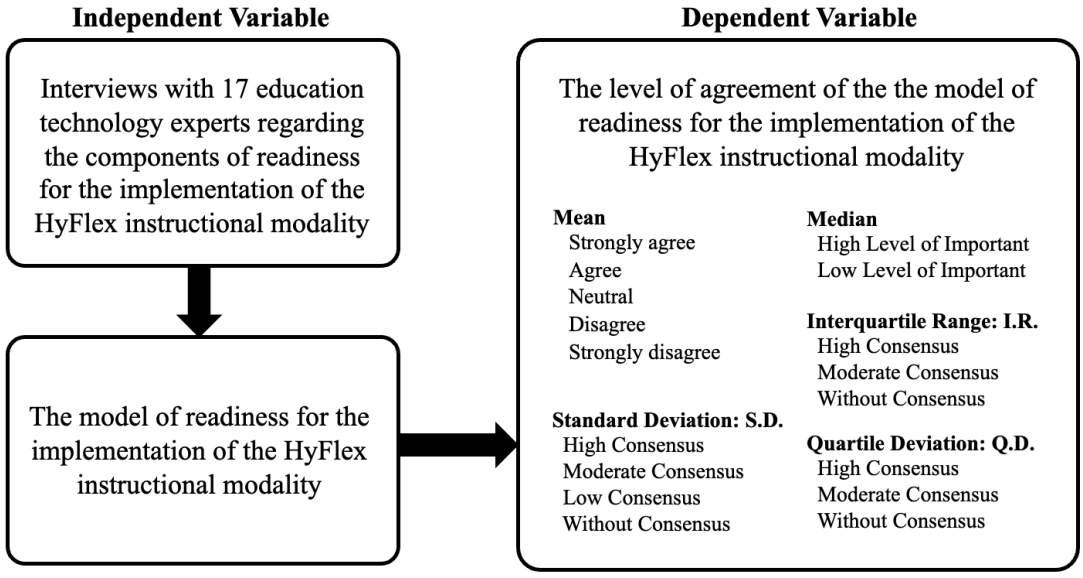

Figure 1. Conceptual Framework for Assessing Readiness in HyFlex Instructional Modality Implementation

Figure 1 presents the conceptual framework employed in this study to assess the readiness for the HyFlex instructional modality's implementation. The framework is initiated by the independent variable, which encapsulates the qualitative data derived from structured interviews with a panel of 17 educational technology experts. These interviews aimed to identify the essential components that constitute readiness for the HyFlex instructional modality.

The resulting model of readiness, informed by this expert input, constitutes the central element of the framework. The dependent variable represents the collective level of agreement or consensus on the readiness model, as evaluated by the same experts.

Key statistical measures, such as mean and median, standard deviation: S.D., interquartile range: I.R. and quartile deviations: Q.D., are used to gauge the central tendency and dispersion of agreement levels. The interquartile range serves as an indicator of consensus strength. This figure encapsulates the methodological progression from data collection to evaluative assessment, aligning with the study's objectives to systematically study, construct, and validate a readiness model for HyFlex educational frameworks.

METHODOLOGY

This study adopted a quantitative research design to critically investigate the readiness for the implementation of the HyFlex instructional modality. The research embarked on a meticulous analysis of pertinent literature sourced from comprehensive international academic databases. Concurrently, the development of the interview instrument was undertaken, rigorously validated for content by five experts through the Content Validity Index (CVI) method. The CVI was operationalized on a four-point scale ranging from '1 - Irrelevant' to '4 - Absolutely relevant', facilitating the computation of both the Item Content Validity Index (I-CVI) and the Scale Content Validity Index (S-CVI/Ave). The CVI assessment was guided by Lynn's (1986) protocol for establishing the significance of content validity, thereby ensuring the interview tool's methodological integrity., as per the following formulas:

$$ICVI = \frac{N_c}{N}$$

$ICVI$ is a content-based accuracy index each of question item.
N_c is the number of experts who evaluate content consistency at level 3 and level 4 only.
N is the total number of experts.

$$S - CVI/Ave = \frac{\sum ICVI_i}{P}$$

$\sum ICVI_i$ is the sum of the I-CVIs for all items.
P is the total number of items.

The methodological execution was meticulously aligned with the research objectives: The solicitation and analysis of insights from experts provided a foundation for identifying key readiness components for the HyFlex modality, directly addressing the study's first objective to examine and collect pertinent data.

The synthesized information from expert consultations was instrumental in constructing a readiness model for HyFlex implementation (Objective 2), with the I-CVI reflecting the item-wise consensus on the model components.

To fulfill Objective 3, the model's comprehensiveness and precision were evaluated by the same body of experts using a 5-point Likert scale, ranging from '1 - Strongly disagree' to '5 - Strongly agree', across statistical parameters such as Mean, Standard Deviation (S.D.), Median, Interquartile Range (I.R.), and Quartile Deviation (Q.D.).

Table 1: Numbers and proportion of experts whose endorsement is required to establish content beyond the .05 of significance (Lynn, 1986)

Number of Experts	Number of experts who agree with quite relevant or absolute relevant	Proportion of experts who agree
2-5	All	1.00
6	At least 5	0.88
7	At least 6	0.86
8	At least 7	0.88
9	At least 7	0.78
10	At least 8	0.80

From Table 1, the consensus metrics provided a structured framework to interpret the experts' level of agreement, interlinking statistical quantification with qualitative assessments to validate the HyFlex readiness model. The outcome of this evaluation was a compelling consensus (S-CVI/Ave = 0.99), affirming the instrument's reliability and endorsing the model's robustness for subsequent data collection and analysis within the HyFlex instructional framework.

The evaluation was concluded by consensus from seventeen experts. . The 5 point-Likert scale:

5 = Strongly agree
4 = Agree
3 = Neutral
2 = Disagree and
1 = Strongly disagree

The 5 point-Likert scale was employed to identify the level of agreement of the skill set for digital university manpower model.

Table 2: Statistics and expert group consensus assessments.

Statistics	Definition of Consensus	References
Mean		
4.50 – 5.00	Strongly agree	Best, J. W. (1981)
3.50 – 4.49	Agree	
2.50 – 3.49	Neutral	
1.50 - 2.49	Disagree	
1.00 – 1.49	Strongly disagree	
Median		
≥ 4.00	High Level of Important	Ab Latif R, Dahlan A, Ab Mulud Z,
≤ 3.50	Low Level of Important	Mat Nor MZ. (2017)
Standard Deviation: S.D.		
0.00 – 1.00	High Consensus	Johannes I. F. Henning & Henry

Statistics	Definition of Consensus	References
1.01 – 1.49	Moderate Consensus	Jordaan. (2016)
1.50 – 2.00	Low Consensus	
> 2.00	Without Consensus	
Interquartile Range: I.R.		
0.00 – 1.00	High Consensus	Saedah Siraj, & Azdalila Ali. (2008)
1.01 – 1.99	Moderate Consensus	
> 2.00	Without Consensus	
Quartile Deviation: Q.D.		
0.00 - 0.50	High Consensus	Soon Fook Fong, Pei Eng Ch'ng, Fei Ping Por. (2013)
0.51 – 1.00	Moderate Consensus	
> 1.00	Without Consensus	

This methodological approach ensures a rigorous and systematic evaluation of the components necessary for the readiness of HyFlex instructional modality, laying a solid foundation for the empirical aspect of this research.

RESULT

Through an exhaustive set of interviews with 17 experts in educational technology, this study has delineated critical components necessary for the successful adoption of the HyFlex instructional modality. These components have been categorized into five primary domains; each encapsulating specific elements essential for readiness:

1) Technology and Infrastructure

This domain underscores the significance of hardware, software, and network bandwidth. It entails an assessment of the availability and quality of devices essential for both educators and learners, such as computers, cameras, microphones, and reliable internet access, ensuring equitable distribution and considering contingencies like loaner programs. The software evaluation focuses on the suitability and compatibility of learning management systems (LMS) and digital tools for HyFlex delivery, emphasizing accessibility for all learners. Network readiness is gauged by bandwidth sufficiency, particularly during peak times, necessitating potential network enhancements or load balancing.

2) Faculty Proficiency and Training

The transition to HyFlex demands a solid foundation in HyFlex pedagogical principles for faculty, encompassing inclusive activity design and effective facilitation across modalities. Equally, faculty should possess the technological prowess to navigate and utilize online platforms confidently, create engaging content, and troubleshoot issues—skills to be honed through targeted workshops and support systems.

3) Institutional Support and Policies

Institutional readiness involves securing administrative buy-in that aligns with the university's strategic goals, ensuring adequate resource allocation. It also involves the refinement of policies to address attendance, assessment, and equity in student support services, alongside the establishment of professional development initiatives for the continual advancement of faculty expertise in HyFlex instruction.

4) Student Readiness and Engagement

Student preparedness is addressed by providing comprehensive orientation on HyFlex course navigation, technological proficiency, and self-directed learning competencies.

Additionally, the institution must proactively mitigate accessibility barriers, ensuring all students have equitable technology access and support.

5) Ongoing Evaluation and Feedback

Finally, establishing feedback loops through data collection on course design, technology use, and learning outcomes is vital. This continuous feedback should be leveraged for iterative improvements, fostering a culture receptive to innovation within the HyFlex learning environment.

These identified components form the pillars of the readiness model for HyFlex implementation. Each component represents an integral part of the ecosystem, requiring careful consideration and strategic planning to facilitate a seamless transition to this flexible instructional approach. The consensus among the experts underscores the necessity for a holistic readiness model that not only anticipates technological and pedagogical requirements but also addresses the broader institutional context and ongoing adaptability. Following the synthesis of interviews from all 17 experts, an analysis was conducted, and a model was designed as illustrated in Figure 2.

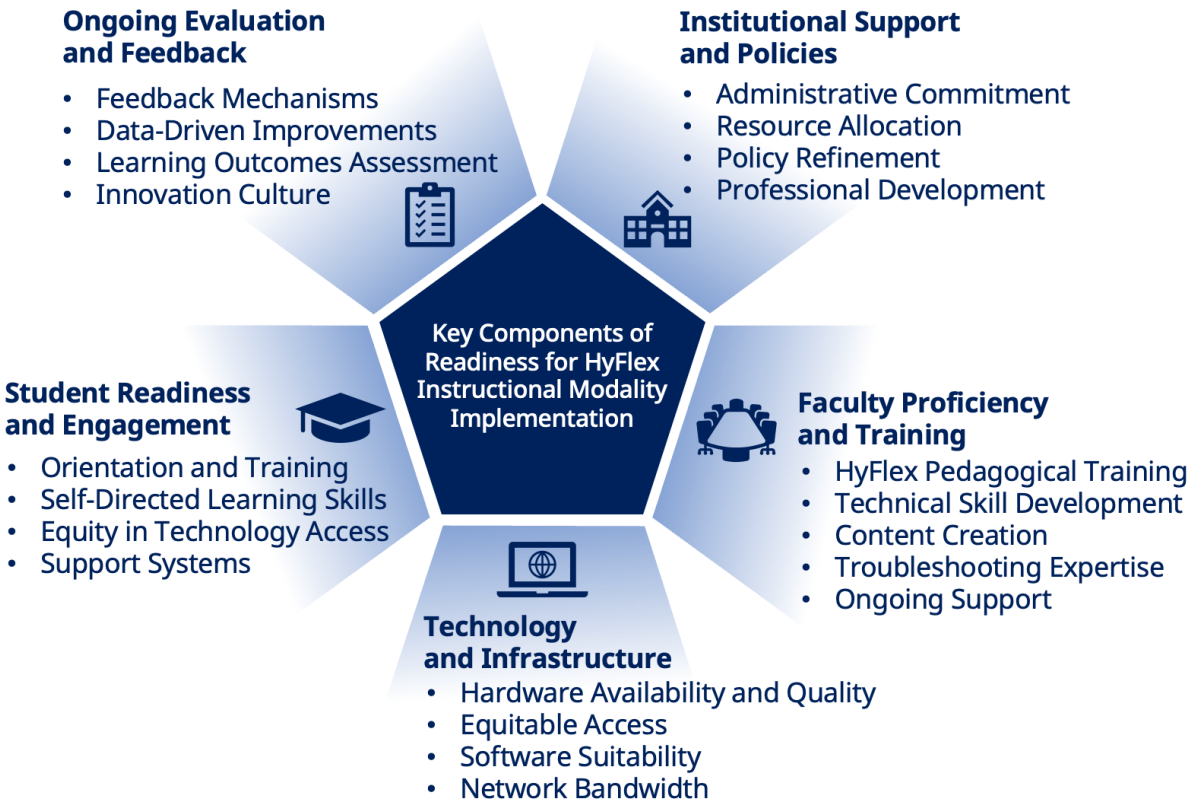

Figure 2. Readiness in HyFlex Instructional Modality Implementation Model

Figure 2 illustrates the essential components necessary for considering and planning the implementation of the HyFlex Instructional Modality in educational institutions. Each section of the model contains key components as follows:

Technology and Infrastructure

- **Hardware Availability and Quality**: Assessing the accessibility and functionality of essential devices for educators and learners, like computers, cameras, and microphones.

- **Equitable Access**: Ensuring that all participants have equal access to the necessary technology, potentially through loaner programs or other support mechanisms.
- **Software Suitability**: Evaluating learning management systems and digital tools for their effectiveness in a HyFlex setup, with a focus on compatibility and learner accessibility.
- **Network Bandwidth**: Ensuring the network infrastructure can handle the demands of HyFlex delivery, especially during periods of high usage, and considering upgrades or load balancing solutions if needed.

Faculty Proficiency and Training

- **HyFlex Pedagogical Training**: Ensuring faculty have a comprehensive understanding of HyFlex teaching principles, including creating inclusive activities and facilitating across in-person and online platforms.
- **Technical Skill Development**: Providing training for faculty to enhance their proficiency in using digital tools and platforms necessary for HyFlex teaching.
- **Content Creation**: Empowering faculty to develop engaging and interactive online content that caters to the diverse needs of HyFlex classrooms.
- **Troubleshooting Expertise**: Equipping faculty with the skills to troubleshoot technical issues quickly to maintain the continuity of teaching.
- **Ongoing Support**: Offering continuous support and resources, such as workshops and help desks, to assist faculty in adapting to the evolving demands of the HyFlex instructional model.

Institutional Support and Policies

- **Administrative Commitment**: Ensuring that the leadership is fully committed to the HyFlex model and that its implementation is aligned with the strategic objectives of the institution.
- **Resource Allocation**: Guaranteeing that sufficient resources and funding are provided for the necessary technology, training, and support systems required for HyFlex instruction.
- **Policy Refinement**: Updating existing policies or creating new ones that cater to the unique needs of HyFlex instruction, particularly concerning attendance tracking, equitable assessment practices, and accommodation for student support services.
- **Professional Development**: Implementing ongoing training and development programs for faculty to build and maintain their proficiency in HyFlex teaching methodologies and use of technology.

Student Readiness and Engagement

- **Orientation and Training**: Implementing detailed orientation sessions for students to understand HyFlex course structures and expectations, and to ensure they are adept at using the required technologies effectively.
- **Self-Directed Learning Skills**: Encouraging the development of self-management and independent learning skills, which are crucial for success in a HyFlex learning environment.
- **Equity in Technology Access**: Actively working to remove barriers related to technology access, ensuring that all students have the necessary devices and internet connectivity to participate fully in HyFlex courses.
- **Support Systems**: Establishing robust support systems to aid students in overcoming challenges associated with digital literacy and to facilitate their seamless engagement with the HyFlex modality.5) Ongoing Evaluation and Feedback

Ongoing Evaluation and Feedback

- **Feedback Mechanisms**: Setting up systems to consistently gather feedback from both faculty and students on various aspects of the HyFlex courses, including instructional design, technology, and user satisfaction.
- **Data-Driven Improvements**: Utilizing the collected feedback to make data-informed decisions for iterative enhancements to the HyFlex modality.
- **Learning Outcomes Assessment**: Regularly evaluating learning outcomes to ensure that the HyFlex model effectively meets educational objectives.
- **Innovation Culture**: Encouraging a culture of continuous improvement and innovation that is responsive to feedback and willing to adapt HyFlex practices for optimal effectiveness.

The developed model was evaluated and certified by 17 educational technology experts based on consensus. The assessment results are shown in Table 3.

Table 3: The evaluation consensus results from 17 experts:

Indicators	Mean	S.D.	Quartiles			I.R.	Q.D.
			Q1	Median	Q3		
Technology and Infrastructure							
Hardware Availability and Quality	4.94	0.24	5	5	5	0.00	0.00
Equitable Access	5.00	0.00	5	5	5	0.00	0.00
Software Suitability	5.00	0.00	5	5	5	0.00	0.00
Network Bandwidth	5.00	0.00	5	5	5	0.00	0.00
Sum	4.99	0.06					
Faculty Proficiency and Training							
HyFlex Pedagogical Training	4.94	0.24	5	5	5	0.00	0.00
Technical Skill Development	4.94	0.24	5	5	5	0.00	0.00
Content Creation	4.94	0.24	5	5	5	0.00	0.00
Troubleshooting Expertise	4.94	0.24					
Ongoing Support	4.94	0.24	5	5	5	0.00	0.00
Sum	4.94	0.24					
Institutional Support and Policies							
Administrative Commitment	4.94	0.24	5	5	5	0.00	0.00
Resource Allocation	5.00	0.00	5	5	5	0.00	0.00
Policy Refinement	4.94	0.24	5	5	5	0.00	0.00
Professional Development	4.94	0.24	5	5	5	0.00	0.00
Sum	4.96	0.18					
Student Readiness and Engagement							
Orientation and Training	5.00	0.00	5	5	5	0.00	0.00
Self-Directed Learning Skills	5.00	0.00	5	5	5	0.00	0.00
Equity in Technology Access	4.94	0.24	5	5	5	0.00	0.00
Support Systems	4.94	0.24	5	5	5	0.00	0.00
Sum	4.97	0.12					
Ongoing Evaluation and Feedback							
Feedback Mechanisms	4.94	0.24	5	5	5	0.00	0.00
Data-Driven Improvements	4.94	0.24	5	5	5	0.00	0.00
Learning Outcomes Assessment	4.94	0.24	5	5	5	0.00	0.00
Innovation Culture	4.94	0.24	5	5	5	0.00	0.00
Sum	4.94	0.24					
Summary	**4.96**	**0.16**					

This table presents the aggregated consensus ratings from a panel of 17 experts on key components of readiness for HyFlex Instructional Modality implementation. The ratings span across five domains: Technology and Infrastructure; Faculty Proficiency and Training; Institutional Support and Policies; Student Readiness and Engagement; and Ongoing Evaluation and Feedback. Each domain's components were evaluated on a 5-point Likert scale, with mean scores near 5 indicating a strong agreement on their importance and readiness. The uniformly high median and quartile values reflect a consensus across the board, with minimal to no interquartile range (I.R.) and quartile deviation (Q.D.), demonstrating a high level of expert consensus on the readiness for implementing the HyFlex instructional modality across all considered factors.

CONCLUSION

This study has systematically established a validated readiness framework for the implementation of the HyFlex instructional modality, as substantiated by the consensus of seventeen experts in the field of educational technology. The investigation identified critical dimensions of readiness, categorized into five domains: Technology and Infrastructure, Faculty Proficiency and Training, Institutional Support and Policies, Student Readiness and Engagement, and Ongoing Evaluation and Feedback.

The data derived from the expert panel reveal strong concordance on the essential components of readiness, with mean scores chiefly at or above 4.94 and quartiles consistently at the maximum of 5. The standard deviation across almost all components remained low, primarily not surpassing 0.24, indicating minimal variance among expert opinions. This robust agreement is further illustrated by the negligible interquartile ranges, pointing to a unified perspective on the elements critical to the HyFlex instructional modality.

The statistical unanimity among the experts underscores the criticality of a multi-faceted readiness approach that extends beyond technological capabilities to include pedagogical aptitude, institutional policy, student engagement, and iterative evaluation. The study's outcomes provide a comprehensive roadmap for educational institutions to evaluate and enhance their HyFlex modality readiness, ensuring that such initiatives are strategically implemented, meticulously planned, and tailored to the diverse requirements of all educational stakeholders.

In adopting this expert-validated readiness framework, educational institutions are positioned to proactively approach HyFlex modality adoption, fostering an adaptive and equitable educational environment well-suited for the current and evolving landscape of higher education.

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