Evaluating the Effectiveness of the FlexSpace System in HyFlex Flexible Classroom Management for General Education Courses

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Abstract

The study entitled "Evaluating the Effectiveness of the FlexSpace System in HyFlex Flexible Classroom Management for General Education Courses" aims to

1. evaluate the effectiveness of the FlexSpace system on students' learning engagement in general education courses.

2. analyze students' satisfaction with the use of FlexSpace in HyFlex Flexible Classroom settings.

3. examine the impact of FlexSpace on students' learning outcomes in general education courses.

The evaluation of the FlexSpace system in HyFlex learning environments can be applied to routine academic practices, enhancing learning efficiency, skill development, communication, and collaboration among diverse groups of learners. Supporting students, staff, and other stakeholders using FlexSpace contributes to the creation of a modern and effective learning and working environment. The findings from this evaluation provide valuable insights for improving instructional practices, developing technological competencies, strengthening technical and psychological support, fostering learning communities, ensuring continuous assessment and improvement, and enabling effective resource allocation-all crucial for successful hybrid learning.

Changes in work practices associated with the adoption of FlexSpace in HyFlex classroom management yield both positive and negative impacts. With appropriate support and continuous improvement, negative effects can be minimized while positive outcomes are strengthened, ultimately enhancing the effectiveness of teaching and learning through the FlexSpace system.

Keywords: Blended Learning, HyFlex Flexible Classroom, FlexSpace, Digital Learning Tools, Learning Engagement

1. Introduction

The Office of General Education and Innovation Electronic Learning plays a central role in supporting the university's teaching and learning processes through the integration of digital technologies. To enhance flexibility in instructional delivery, the Office has adopted the FlexSpace system to support HyFlex Flexible Classroom environments, enabling students to participate either in person or online according to their needs. This approach aligns with current educational trends that emphasize accessibility, learner autonomy, and digital readiness.

HyFlex learning models have shown potential in improving student engagement, satisfaction, and learning outcomes by providing multiple learning pathways. FlexSpace

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further strengthens this model by offering a dynamic and adaptable digital learning environment. However, challenges such as unequal access to technology, limited interaction between learning modes, and the need for instructor training can affect the system's overall effectiveness. Given the growing demand for flexible learning in general education courses, it is essential to evaluate how FlexSpace supports teaching and learning within HyFlex settings. This study investigates the system's effectiveness in enhancing student engagement, satisfaction, and academic performance. The findings will contribute to improving instructional practices and guiding future integration of technology-enhanced learning environments.

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. Noichun, N. (2024).

2. Research Objectives

This research aims to:

1. Evaluate the effectiveness of the FlexSpace system on students' learning engagement in general education courses.
2. Analyze students' satisfaction with the use of the FlexSpace system in HyFlex Flexible Classroom settings.
3. Examine the impact of the FlexSpace system on students' learning outcomes in general education courses.

3. Conceptual Framework

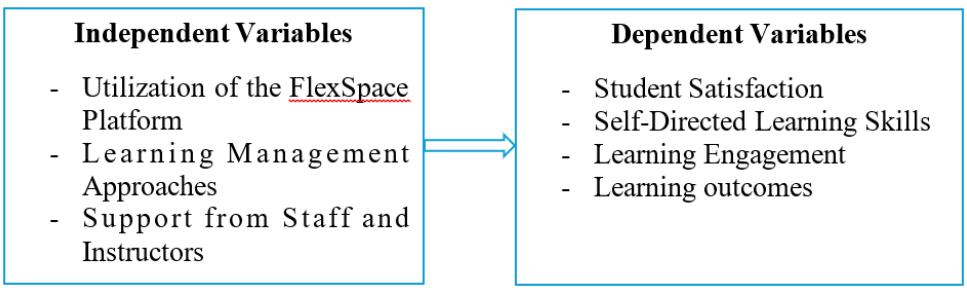

Figure 1. Conceptual Framework

This conceptual framework depicts the relationships between the three key constructs that - Utilization of the FlexSpace Platform, Learning Management Approaches, Support from Staff

and Instructors Learning content refers to the material that learners are expected to master. The quality and relevance of the learning content are important factors that influence learner satisfaction. Learning environment refers to the platform or environment in which the learning takes place. The ease of use and accessibility of the learning environment also affect learner satisfaction. Learning experience refers to the learner's overall experience of the learning process. This includes the level of interaction with the content and the instructor, as well as the opportunities for learners to collaborate with others.

The framework proposes that HyFlex Flexible Classroom Management for General Education Courses is a pedagogical approach that seamlessly integrates the benefits of online learning and face-to-face instruction. By combining diverse teaching methods, it fosters interactions between instructors and students, as well as among students themselves, through the use of world-class tools and software. This approach stimulates active learning and critical thinking, while also enabling students to leverage modern technology. Sivapach, B., & Colleagues. (2020)

This study explores the implementation of a hybrid learning model that combines the flexibility of online learning with the structure of traditional classroom instruction.The hybrid approach aims to foster student engagement and improve learning outcomes by providing a variety of learning experiences. Yaso, M. (2017)

4. Methodology

1) The study population consisted of 6,000 undergraduate students enrolled in general education courses at Suan Sunandha Rajabhat University. Using simple random sampling and the Krejcie & Morgan table, a representative sample of 361 students was selected.

2) This study adopted a quantitative mixed-methods research design. Quantitative data were collected through online questionnaires measuring students' learning engagement, satisfaction, and learning experiences with the FlexSpace system in HyFlex Flexible Classroom settings. Qualitative data were obtained through in-depth interviews to explore students' opinions and experiences in greater depth. In addition, system data from FlexSpace, including login frequency, activity participation, and assignment submissions, were analyzed to support the findings.

The study aimed to assess students' engagement, satisfaction, and learning outcomes, as well as the effectiveness and usability of FlexSpace. Sample questions included satisfaction with HyFlex learning, usefulness of FlexSpace, and suggestions for improvement. Students' activity logs and submitted assignments were also analyzed to evaluate performance and learning quality.

In this study, the Independent Variable (IV) is the implementation of FlexSpace System in HyFlex Flexible Classroom Management for General Education Courses, while the Dependent Variables (DV) pertain to the levels of student opinions and satisfaction regarding these activities. To measure these variables, a structured questionnaire in narrative form was developed, adhering to Likert Scale standards. The scoring and interpretation criteria for the questionnaire responses are categorized as follows:

Table 1 Level of Satsifaction

Score	Level of Satsifaction
5	Very high
4	High
3	Moderate

Score	Level of Satsifaction
2	Low
1	Very Low

Table 2 Likert Scale standards:

Mean Score Range	Interpretation
4.51 – 5.00	Very high
3.51 – 4.50	High
2.51 – 3.50	Moderate
1.51 – 2.50	Low
1.00 – 1.50	Very low

The research is conducted at the Office of General Education and Electronic Learning Innovation, Suan Sunandha Rajabhat University, and spans from December 2024 to September 2025. Data analysis will involve the calculation of percentages, overall averages, and standard deviations to derive meaningful insights from the collected questionnaire responses.

5. Result

A Likert scale is a commonly used tool in survey research to measure respondents' attitudes, opinions, or perceptions on a particular subject. The scale typically ranges from strongly agree to strongly disagree, providing a structured way to collect and analyze quantitative data. Here's an example of a 5-point Likert scale with corresponding labels:

Table 3 Students' Satisfaction with the Effectiveness of the FlexSpace System in HyFlex Flexible Classroom Management for General Education Courses

Aspect	Mean ($\bar{x}$)	Standard Deviation (SD)
Ease of access to the platform received indicating that most students found it very convenient to use	4.76	0.43
System speed and stability were reflecting high satisfaction with the reliability of the platform	4.79	0.41
Ease of menu navigation showing that students found the interface user-friendly	4.78	0.41
Satisfaction with learning content and activities highlighting positive perceptions of the course materials	4.75	0.43
Perceived effectiveness compared to traditional classroom learning indicating that students felt learning through FlexSpace was as effective or better than in-person learning	4.70	0.46
Interaction and participation in activities demonstrating active engagement	4.70	0.46
Satisfaction with learning tools and resources	4.66	0.48
Use of technology supporting learning	4.68	0.47
Diversity and quality of learning resources	4.70	0.46

Aspect	Mean ($\bar{x}$)	Standard Deviation (SD)
Technical support and problem resolution	4.70	0.46
Guidance and support from instructors and staff	4.68	0.47
Responsiveness to questions and issues	4.68	0.47
Flexibility in participating in learning activities	4.70	0.46
Comfort and privacy while using FlexSpace	4.70	0.46
Overall learning experience	4.66	0.47
Perceived value and enjoyment of learning	4.66	0.47
Perceived knowledge and skill development	4.70	0.46
Perceived progress in learning	4.70	0.46
Confidence in applying knowledge and skills acquired	4.66	0.47
Satisfaction with learning outcomes received the highest	4.86	0.68
Overall Satisfaction	4.71	0.47

In summary, students expressed very high satisfaction across all evaluated aspects of using the FlexSpace system. The findings suggest that the platform effectively supports learning, engagement, interaction, and skill development in HyFlex Flexible Classroom settings.

6. Findings

The evaluation of the FlexSpace system in managing learning through the HyFlex Flexible Classroom for general education courses revealed that students' engagement increased significantly. The platform's flexibility allowed easier access to content and group activities, while technology tools facilitated interaction with peers and instructors. Students actively participated in online discussions, collaborative projects, and learning activities, demonstrating higher involvement compared to traditional classroom settings.

Regarding learning effectiveness and satisfaction, FlexSpace enhanced students' academic performance by providing continuous access to quality learning resources and multimedia tools, which supported deeper understanding of the course content. Most students reported high satisfaction with the platform, highlighting its flexibility, usability, and the support provided by instructors and technical staff. Additionally, the system promoted the development of self-directed learning skills, time management, and communication skills through collaborative online activities.

The study also found that administrative support, including technical assistance, training, policy guidance, and resource allocation, played a critical role in the successful implementation of FlexSpace. Improvements in system accessibility, interface design, interactive features, and continuous evaluation contributed to higher learning effectiveness and satisfaction. Overall, FlexSpace was found to be a highly effective platform for hybrid learning, supporting student engagement, academic achievement, and skill development while addressing the needs of both students and instructors.

7. Conclusion

The evaluation of the FlexSpace system for managing HyFlex Flexible Classroom learning in general education courses indicates that the platform effectively supports student engagement, learning outcomes, and satisfaction. FlexSpace provides flexible access to content, interactive tools, and collaborative activities, enabling students to participate actively and develop self-directed learning, time management, and communication skills. Most students reported high satisfaction with the platform, appreciating its usability, resources, and support from instructors and technical staff. The system also positively impacted academic performance by allowing students to apply knowledge and skills in real-life contexts.

Administrative and technical support, training, and clear policy guidelines were found to be critical for the successful implementation of FlexSpace. Improvements in system accessibility, interface design, interactive features, and continuous evaluation further enhanced learning efficiency and user satisfaction. Overall, FlexSpace was well-received by students, offering a hybrid learning environment that accommodates diverse learning styles while providing opportunities for skill development, collaboration, and effective knowledge acquisition.

Flexible learning is characterized by its adaptability to different schedules, locations, and methods. This has emerged in response to socio-economic structure shifts and the rapid growth of technology in the digital age. Not only it transforms how individuals lead their lives, but also compelling them to leverage technology extensively for online learning. Notably, it plays a crucial role in expanding equal and continuous access to higher education opportunities for people of all ages. Digital learners are adept at using digital devices to quickly access and apply information.Higher education institutions should embrace a combination of formal and informal learning connecting expert knowledge with shared experiences, by allowing students to take ownership of their learning, tailor it to suit their personal needs, unlimited access to learning resources, and be able to analyze information efficiently, to ensure students derive maximum benefits from their learning pursuits.(Saengpraew, D., & Prompet, P. 2025).

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