

# STUDENTS' PERCEPTIONS OF AND PREFERENCES FOR EQUITY IN HYBRID FLEXIBLE LEARNING MODALITIES

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## ABSTRACT

*This study investigated student perceptions and preferences of Hybrid Flexible learning and equity. This research was conducted at fourteen universities with a research sample of 863 students. The cross-sectional survey design used online questionnaires and structured interviews for data collection. The collected data were then analyzed using the Jamovi program. The study examined students' positive perceptions of HyFlex learning modalities and equity. Students' positive perception of the face-to-face mode was the highest, followed by online asynchronous and synchronous modes. There was no gender relationship between face-to-face and equity modes, but there was a relationship between online synchronous and asynchronous modes. This study also found a positive perception of students toward equity, which explains the tendency of students to choose face-to-face and hybrid/blended modalities in the issue of equity or equity in HyFlex learning. This study also found that students' preferences for HyFlex learning modalities were mostly face-to-face and hybrid, followed by online synchronous and online asynchronous. This study also describes the qualitative reasons of students for choosing the HyFlex learning modality/mode.*

**Keywords:** *Student perception, preference, HyFlex learning, Hybrid Flexible, equity*

## INTRODUCTION

During the COVID-19 pandemic, changes and innovations in the learning process occurred very quickly, shifting from traditional face-to-face classes to online education (Khan, 2021; Stewart, 2021). The question is whether, at this time, students will come back to campus full time or continue online classes. One solution for sustainable learning innovation is to give students complete control over their decisions to participate online or in face-to-face courses by using Hybrid Flexible learning classes (Ambrose et al., 2022). Hybrid Flexible learning, abbreviated as

HyFlex learning, is a multimode learning process that combines online and face-to-face components on campus in various modes and has been successfully used in higher education for more than a decade (Beatty, 2019). However, the use of the HyFlex learning mode still needs further study, especially in how students' perceptions and even preferences for HyFlex learning modes/modalities are related to justice issues from the student's point of view.

Student perception is the most important part of evaluating the HyFlex learning mode. This evaluation aims to determine what students need for

their learning activities in each mode to achieve learning outcomes. Students' perceptions of online learning are that it provides more flexibility, while face-to-face learning allows a greater level of interaction and knowledge acquisition (Binnewies & Wang, 2019). Therefore, justice must be present in a class that applies HyFlex learning so all students can have the same experience in all modes (Binnewies & Wang, 2019). If students who attend face-to-face classes feel that they have a better experience than those who attend online classes, or vice versa, this is the student's perception. But the learning experience gained based on the wants and needs of students through the HyFlex mode is a preference that becomes an important issue for student learning equity. Therefore, further studies on the equity issues offered by the HyFlex mode are very important. This is reinforced by research results stating that the flexibility of the HyFlex learning mode can meet various student needs and increase participation and equity (Han et al., 2022). However, designing and implementing the HyFlex learning mode to consider equity is a major challenge (Ambrose et al., 2022; Han et al., 2022). There are also equity issues that include a lack of access to internet/technology; the unavailability of computers, laptops, or tablets; and language barriers (Di Pietro et al., 2020; Li et al., 2020). Equity in this study is more specific to the HyFlex learning modality/mode, which provides potential equity from the student's point of view.

HyFlex learning has been studied from various perceptions and research contexts, including Malczyk (2019), showing that students feel optimistic about teaching HyFlex and the positive benefits and challenges of the Hyflex teaching mode. Kakeshita (2021) also indicated that around 85% of students are generally satisfied with HyFlex learning teaching. Ambrose et al. (2022) illustrated that students who choose the online mode, both synchronous and asynchronous, are perceived as outsiders and observers. To the best of our knowledge, this is the first study to investigate student perceptions and preferences of the HyFlex learning modality and the modality's tendency towards equity in learning. Therefore, this study uses a survey method to investigate student perceptions and preferences on five main variables/aspects: face-to-face, online synchronous, online asynchronous, hybrid/blended, and equity. These finding

will bring new insights for lecturers, students, and instructional designers to consider HyFlex learning now and in the future because it provides flexibility for students and fairness in learning. The current study aims to answer the following questions:

1. What are the students' perceptions of HyFlex learning and equity by gender?
2. What is the level of students' perceptions of the HyFlex learning modalities and equity?
3. What is the students' preferred HyFlex learning modality?

## LITERATURE REVIEW

### *HyFlex Learning*

HyFlex is a course design model that delivers a hybrid learning component (which combines face-to-face learning with online learning) in a flexible course structure (Jongmuanwai et al., 2021). HyFlex is a learning process that combines online and face-to-face student attendance in one meeting at the same time (Berga et al., 2021; Binnewies & Wang, 2019; Miller et al., 2021). HyFlex learning is more student centered and flexible compared to standard hybrid mode classes (Liu & Rodriguez, 2019). HyFlex learning has four main principles, namely: (a) learner choice, giving students choices about how they will follow the learning process; (b) equivalency, offering equal learning activities in all modes; (c) reusability, using the same learning objects for all students; and (d) accessibility, ensuring that students are equipped with the technology and skills to participate in all modes (Beatty, 2019).

HyFlex learning provides opportunities for students to make learning choices based on their needs and previous experiences (Liu & Rodriguez, 2019). Students can choose face-to-face, synchronous online, or asynchronous online learning activities (Heilporn & Lakhali, 2021). However, the presence of HyFlex learning has two distinct challenges. First, students must have equitable access to learning resources, tools for completing study assignments, and learning support. Second, there must be active learning strategies for student engagement, such as feedback, classroom response systems, or collaborative activities (Binnewies & Wang, 2019). That means the type of response implemented in face-to-face delivery is often different from its application online. The measure of student engagement preference needs to be

adjusted for each mode of delivery. Therefore, it is necessary to investigate other students' perceptions and preferences of the modes offered by HyFlex learning.

### Equity Pedagogy

Equity represents students' perceptions of equal learning opportunities (Ahmed & Indurkha, 2020). Equity pedagogy can also be referred to as using correct teaching strategies through the digital learning media (Hardaker et al., 2010; Mahande & Abdal, 2022). In this study, equity indicates the HyFlex learning strategy/method/style. More specifically, the perceived equity when participants utilize the HyFlex learning mode. The issue of equity is essential, along with criticism of the online learning mode, to determine whether it offers a learning experience that has sufficient equity compared to the face-to-face method. It is essential to investigate this issue further by studying students' perceptions and preferences early on in the HyFlex learning mode. This is done to determine which mode, according to students, is the most promising for equity in learning and what activities from each of these modes contribute to equity learning activities.

### METHODOLOGY

This section presents the research methodology we used to investigate student perceptions and preferences about HyFlex learning to understand equitable learning in Higher Education.

#### Participants

The participants for this study were enrolled in undergraduate programs from four state universities and ten private universities in Makassar, Indonesia. These randomly selected undergraduate students had sufficient experience in online/blended/hybrid learning using various learning management systems provided by the campuses and their lecturers. This shows that students are somewhat familiar with online learning from their point of view and are reliable. The total number of survey participants was 863, consisting of 295 males and 568 females.

#### Instruments and Procedure

We developed a closed questionnaire instrument and a structured interview for this study. The questionnaire is defined as the form used in the survey design that is filled out by participants in

the study and returned to the researcher (Creswell, 2015). We used a cross-sectional survey design for this study. The questionnaire consists of 18 items with a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. Questionnaire items were divided into four groups: face-to-face, online synchronous, online asynchronous, and equity (Mahande & Abdal, 2022). The structured interview consisted of one closed question and one open question. The questionnaire focused on student perceptions, and the structured interview focused on student preferences regarding HyFlex learning. Next, the validity and reliability of the instrument were examined. Five information technology learning experts reviewed the validity, and we modified it according to their suggestions tested it on thirty students to check for clarity. Cronbach's alpha scored 0.70, which indicated that the questionnaire was reliable.

The questionnaires were distributed via a google form to students from June to July 2022. Participation was voluntary, and participants received emails and WhatsApp messages along with a link to the questionnaire. All data were collected anonymously, and no names or other identifying information were collected except for the study program and significance.

#### Data Analysis

The descriptive statistics for the main study variables are summarised in Table 1. A scale was considered acceptable if Cronbach's alpha was 0.70 or higher. High Cronbach alpha signifies that the indicators measure the same construct (Bujang et al., 2018). The rule of thumb for Cronbach Alpha is 0.708 means that the square of 0.708 is equal to 50%. It means that the indicators have reflected a minimum of 50% of their construct variance (Hair et al., 2017). Cronbach's Alpha measurement in this study was met. Furthermore, the Likert scale applied in this study ranges from 1 = *strongly disagree* to 5 = *strongly agree*. Hence, a value above 3 indicates a positive attitude, while a value below 3 indicates a negative attitude.

Table 1. Descriptive Statistics for HyFlex and Equity Variables (N=863)

Variables	Items	Range	Mean	Std
Face-to-Face	5	1-5	3.95	1.05
Online Synchronous	4	1-5	3.44	1.22
Online Asynchronous	4	1-5	3.76	1.07
Equity	5	1-5	4.05	0.90

## FINDINGS

### *Student Perceptions of HyFlex Learning Modalities and Equity by Gender*

The first question of this study is whether the students' perceptions of HyFlex learning and equity differ by gender. In order to measure and discern the relationship between gender (male and female) and mode in choosing the HyFlex learning modality, we used the Cross tabulation test and the Person chi-square test. A significance of  $p < .05$  means there is a relationship between gender and preference for the HyFlex learning mode.

Based on Figure 1, each gender group has a different level of perception of the HyFlex learning modalities and equity. Most respondents in each gender group agreed with the HyFlex learning modalities and equity, followed by a moderate level and then a low level. Furthermore, the Pearson chi-square test showed  $p$  values for online synchronous ( $X^2 = 7.731$ ;  $p = 0.021$ ) and online asynchronous ( $X^2 = 8.572$ ;  $p = 0.014$ ), each with  $p < .05$ , which means that there is a relationship between gender

and preference for online synchronous (OS) and online asynchronous (OA) modes. Meanwhile, the face-to-face (F2F) mode ( $X^2 = 4.484$ ;  $p = 0.106$ ) and equity (EQ) ( $X^2 = 4.854$ ;  $p = 0.880$ ) each obtained a  $p > .05$ , which means there is no difference in preference between gender and preference for face-to-face and equity modes. Thus, the level of student perception by gender is not related to the face-to-face modalities of HyFlex learning and equity. However, the level of student perception by gender is related to the online synchronous and online asynchronous modalities of HyFlex learning.

### *Student Perceptions of HyFlex Learning Modalities and Equity*

The second question that will be discussed is the level of the students' perceptions of the HyFlex learning modality, which consists of the three modes of face-to-face, online synchronous, and online asynchronous, and equity. This will be answered by examining the mean and standard deviation.

Figure 1. Student Perceptions of HyFlex Learning and Equity Modalities by Gender



Table 2. Student's Perception of Face-to-Face

Face-to-face	Mean	Std	%
I always have face-to-face discussions on campus.	3.71	1.10	18.78
I am interested in the demonstration method carried out in the classroom directly.	4.09	0.95	20.46
Practicum/Laboratory I usually do in learning on campus.	3.90	1.19	20.18
I think the project-case based method is better implemented in face-to-face classes.	4.12	0.89	22.10
I dare to ask questions or express opinions in face-to-face classes.	3.93	1.03	21.99
Total	3.95	1.05	20.70

Table 2 shows students' positive perceptions of the face-to-face mode. This is indicated by the mean value of 3.95 with a standard deviation of 1.05. More specifically, a strong perception of the implementation of the face-to-face mode was built from the indicators/items of the project-case based method and the demonstration in the face-to-face class directly.

Table 3 shows the students' positive perception of the online synchronous mode. This is indicated by the mean value of 3.44 with a standard deviation of 1.22. More specifically, a strong perception of the implementation of the online synchronous mode is built from indicators/items of video conferencing in terms of discussing and expressing opinions that can trigger active student involvement.

Table 4 shows the students' positive perception

of the online asynchronous mode. This is indicated by the mean value of 3.76 with a standard deviation of 1.07. More specifically, a strong perception of the implementation of the online asynchronous mode is built on the indicators/items of learning flexibility and the availability of teaching materials.

Table 5 shows students' positive perceptions about equity. The equity indicator is developed and derived from the HyFlex learning mode. So the indicators/items discussed are related to the three modes (face-to-face, online synchronous, and online asynchronous), the combination of the three modes (hybrid), and access to learning resources and activities through the participation mode. Students' perception of equity is indicated by the mean value of 4.05, with a standard deviation of 0.90. More specifically, a strong perception

Table 3. Student's Perception of Online Synchronous

Online Synchronous	Mean	Std	%
I prefer to be involved in lectures directly through video conferencing.	3.45	1.17	25.09
I think one virtual lab can support synchronous (live) online learning.	3.20	1.28	23.33
Online presentation of project assignments is more flexible.	3.33	1.25	23.64
I dare to ask questions or express opinions during lectures via video conference.	3.76	1.11	25.90
Total	3.44	1.22	24.49

Table 4. Student's Perception of Online Asynchronous

Online Asynchronous	Mean	Std	%
I am interested in having discussions in online forums through a learning management system (LMS) or other applications.	3.57	1.15	23.73
I watched the simulation/AR/VR videos provided.	3.75	1.01	24.58
I read the provided ebook/module based teaching materials.	3.81	1.01	24.66
I can study anywhere and anytime (my study time is more flexible).	3.92	1.08	24.78
Total	3.76	1.07	24.44

Table 5. Student's Perception of Equity

Equity	Mean	Std	%
I think that face-to-face HyFlex learning is more flexible and equitable for my needs.	4.07	0.88	20.10
I think HyFlex learning via video conferencing gives me a fair measure with more flexible time according to my circumstances and needs.	3.92	0.90	19.38
I think HyFlex learning via online asynchronous (discussion forum/video/simulation) is more flexible and equitable for my needs.	3.80	0.95	23.30
I think the combination of the three modes of participation (hybrid) can provide an equity learning experience according to my circumstances and needs.	4.05	0.84	32.44
In my opinion, every student should have equal/fair opportunities to access learning resources and participate in learning activities for all modes of participation.	4.40	0.80	52.08

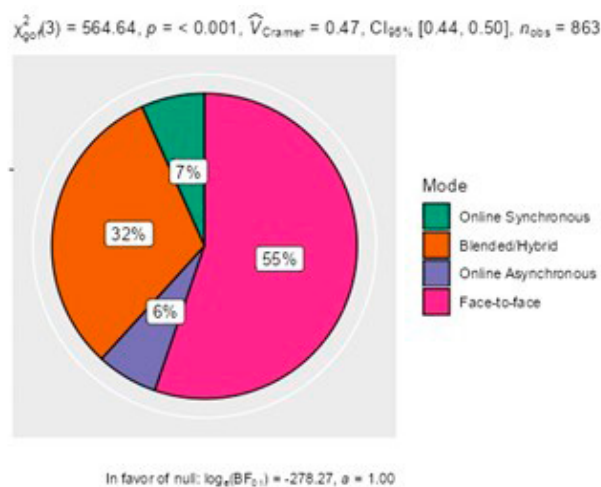
of equity is built on indicators/items about fair or equal opportunity in accessing learning resources and activities for all HyFlex learning participation modes. More specifically, face-to-face and hybrid (all three modes) are modes that students perceive as better than the other modes, namely the online synchronous mode and the online asynchronous mode.

### Student Preferences for HyFlex Learning

The third question of this research (What is the students' preferred HyFlex learning modality?) is answered by using the percentage of the three HyFlex modes plus a hybrid (a combination of the three HyFlex modes). Closed questions were given to the students: "If you offered to follow eye studying through HyFlex learning, participation mode, which course are you? Which mode do you choose?" Figure 2 shows significant differences in the frequency of student preferences for the four HyFlex learning modes. Students' preference for the face-to-face mode obtained relatively higher scores than the proportion of students who chose hybrid/blended, online synchronous, and online asynchronous modes. This shows that if it is related to equity pedagogy, face-to-face and hybrid provide equity opportunities for learning (see Table 5). Meanwhile, online synchronous and asynchronous modes can offer equity only when combined with face-to-face (hybrid).

Figure 2 is clarified by conducting structured interviews with open-ended questions given to students for each mode of participation in HyFlex learning.

Figure 2. HyFlex Learning Modality Preferences



There is an apparent qualitative reason for how students respond to choosing the HyFlex learning mode (See Table 6). The responses from students who choose the face-to-face mode are because students can concentrate more easily, are motivated to learn, can express opinions or ask questions more easily, and can interact directly with friends and teachers. For the hybrid mode, together with the three modes, students chose the hybrid mode because it is more flexible, they have no reason not to attend lectures, and they feel ineffective if they use only the face-to-face, or online synchronous, or online asynchronous mode. Another reason they prefer hybrid is that not all students have good internet access, which means they can customize the three modes. Students chose the online synchronous mode because it could be done anywhere, saved time, felt braver to express opinions or ask questions, was more comfortable, and focused more on following the lesson. For the online asynchronous mode, students chose it because it is more flexible, videos can be played repeatedly, they feel comfortable and not nervous, and it is more time efficient.

### DISCUSSION

This section presents a discussion of the research results. Furthermore, the first question is the relationship between the students' perceptions of HyFlex learning modalities and equity and gender. We found no relationship between students' perceptions by gender for face-to-face and equity modes, but there was a relationship between students' perceptions by gender for the online synchronous and asynchronous online modes.

The second question concerns the level of the students' perceptions of the HyFlex learning modalities and equity. We found that students positively perceived the HyFlex learning modality. Of the three modalities, face-to-face has a highest level of perception, followed by online asynchronous, then online synchronous. Demonstration methods, project-based learning, and direct face-to-face discussions in face-to-face classes significantly contribute to student perceptions. This confirms research which states that students choose face-to-face because of the direct interaction in the teaching and learning process (Nasution et al., 2021).

Furthermore, the flexibility of learning, learning materials, and resources such as ebooks/

Table 6. Summary Comment Qualitative from Student

Questions	Face-to-Face	Online Synchronous	Online Asynchronous	Blended/Hybrid
What is a reason to choose the wrong one between face-to-face, online synchronous, online asynchronous, or blended/hybrid?	<p>...in face-to-face learning, we can better understand what the lecturer is explaining</p> <p>...more lively in learning and easy to convey something directly and expressing opinions can be easier without any obstacles</p> <p>...concentration while studying...</p> <p>...face to face socialization and discussion with classmates.</p>	<p>...online is more interesting and less hassle</p> <p>... lectures can be done anywhere</p> <p>...more flexible and saves time...</p> <p>... experience convenience for introverted people</p> <p>...can adjust to our convenience rather than having to meet face-to-face ...</p> <p>...choose online synchronous because it can focus more..."</p>	<p>can be re-learn</p> <p>...the discussion forum is more flexible and can be discussed at any time</p> <p>...more comfortable and less nervous during learning;</p> <p>...can save time.</p>	<p>... learn anytime and anywhere through online but are still given the opportunity to discuss more intensively through face to face</p> <p>...there is no reason for students not to attend lectures.... provide a little relaxation time while off campus.</p> <p>...will not be effective if only using one of the face to face, online synchronous, or online asynchronous...</p> <p>...not all students have good internet access.</p>

emodules, simulation videos/AR/VR offered from the online asynchronous model also contribute to student perceptions. Meanwhile, for the online synchronous mode, the courage of students to express their opinions through video conferences and project assignment presentations contributes to student perceptions. The results related to online synchronous and online asynchronous modes state that although the lecture process is held face-to-face, students also like having instructions given online synchronously and asynchronously (Bali & Liu, 2018; Yan et al., 2021). Video conferencing and discussion forums are good tools to increase synchronous and asynchronous online interactions among students in the classroom (Luo & Clifton, 2017). Relevant to the research results, students become more accustomed to the online modes. Moreover, more introverted students prefer the asynchronous mode (Aloni & Harrington, 2018; Borg et al., 2021), as reflected in the students' courage in expressing their opinions.

The essential things that builds the students' positive perceptions of equity in hybrid/HyFlex learning are having fair opportunities to access learning resources and to participate in the

teaching and learning processes by having a voice in the face-to-face, hybrid, online synchronous, and online asynchronous modes. This conforms with the research results that students prefer a face-to-face learning environment, want video formats in the form of presentations, and desire lecturers teaching with videos in the classroom (Binnewies & Wang, 2019).

The third question is about student preferences for HyFlex learning modalities. We found that the face-to-face mode had the highest percentage value, followed by hybrid, online synchronous, and online asynchronous (Figure 1). Qualitative reasons (Table 7) are summarized from student statements. The face-to-face mode is preferred because of the direct interaction among friends and with lecturers. Students find it easy to concentrate and are motivated to learn when supported by the classroom's learning atmosphere, which is different from studying outside the classroom. This confirms the results of other research, which states that most students prefer face-to-face lectures equipped with additional instructional modes (Binnewies & Wang, 2019). The hybrid/blended mode is a combined mode in which the implementation and

delivery of content are shared among the three modes of face-to-face, online synchronous, and online asynchronous. The results of this study emphasize that the face-to-face and hybrid modes are HyFlex learning modalities that promote learning equity (see Table 7). Students choose the hybrid mode because it is more flexible, they no longer have reasons not to attend lectures, and they feel learning is ineffective if it is restricted to only one mode, i.e., just face-to-face or just online synchronous, or asynchronous. Furthermore, not all students have good internet access, so that they can customize their learning by using all three modes to fill in possible gaps.

Meanwhile, the online synchronous and online asynchronous modes save time, mileage, and congestion on the road, and learning activities can occur even when students are ill or have family events or other obligations. Students feel more daring in asking questions, giving opinions, and answering questions via video conference or discussion forums in which they can directly or indirectly respond to lecturers and fellow students. Teaching materials and learning resources in the form of recorded videos or simulations can be accessed and played back any time so that students who do not understand the first time can access the materials later and still learn.

#### **CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH**

This study investigates the perceptions and preferences of HyFlex learning and equity learning modalities. We examined students' positive perceptions of the three modalities of HyFlex learning and equity and learned that the students' positive perceptions of the face-to-face mode is the highest (as seen in the categories of demonstration method and project-case based directly in face-to-face classes), followed by the online asynchronous mode (learning flexibility and availability of learning materials and resources) and the online synchronous (asking and expressing opinions via video conferencing). Furthermore, this study also found a positive perception of students towards equity (fair or equal opportunity in accessing learning resources and learning activities for all HyFlex learning participation modes). More specifically, about the perception of equity, the face-to-face mode and hybrid (a combination of three modes) obtained higher perceptions than the other two

modes of online synchronous and online asynchronous. This positive perception of equity shows a tendency for students to choose face-to-face and hybrid/blended modalities if the issue is related to fairness or equality in HyFlex learning.

Additionally, the level of student perception according to gender is not related to face-to-face modalities and equity, but there is a relationship between gender and the online synchronous and online asynchronous modalities. We found that the most preferred modes by students were face-to-face and hybrid, followed by online synchronous and online asynchronous. The results of the qualitative discussion provide an overview of students' reasons for choosing these modes. They liked having direct interactions between friends and lecturers, being more flexible according to learning needs, and having the ability to ask questions, argue, and answer various questions. Furthermore, they appreciated that learning materials and resources could be updated at any time.

This study investigated student experiences in HyFlex learning from various college faculties. HyFlex learning is a development method of traditional hybrid learning that sounds unfamiliar to the respondents who were the sample of this study. Most of the research respondents recognized hybrid more than HyFlex. Although hybrid learning modalities to be the same as HyFlex learning, the difference is in terms of the flexibility of participation/involvement in the implementation of lectures and the delivery of learning content. However, the main limitation of this study is the general experience of respondents with hybrid learning, which is not specific to HyFlex. As HyFlex learning moves forward, any additional insight into the student experience in HyFlex learning can inform equity pedagogy decisions and provide direction for further refinement and improvement. In addition, the flexible online/hybrid learning experience offered by faculty and students more broadly may not reflect future experiences with different situations.

Based on the limitations of this study, future researchers could conduct longitudinal investigations to examine the modalities of HyFlex learning and its potential to achieve equitable education and to learn students' perceptions of HyFlex learning in a broader context and with different methods and approaches. We also recommend that lecturers and students prepare and implement the HyFlex



learning mode in lectures in higher education, especially since this study proves that students show a high positive attitude for it.

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