



**HÁSKÓLI
ÍSLANDS**

Student Satisfaction in a HyFlex Course in Higher Education

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Student Satisfaction in a HyFlex Course in Higher Education

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Preface

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Finally, I would like to thank my family and friends for their love and support during the time I spent researching and writing this thesis.

This work would not have been possible without the support and encouragement of those who have been a part of my journey. This thesis was written solely by me, the undersigned. I have read and understand the University of Iceland Code of Ethics (https://english.hi.is/university/code_of_ethics) and have followed them to the best of my knowledge. I have correctly cited to all other works or previous work of my own, including, but not limited to, written works, figures, data or tables. I thank all who have worked with me and take full responsibility for any mistakes contained in this work. Signed:

Reykjavík, Iceland 2023

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Abstract

HyFlex (Hybrid Flexible) learning is an educational model that combines both online and in-person instruction, providing students with the opportunity to choose how they want to learn. While the benefits of HyFlex learning have been a topic of some research over the last few years, there is still a lack of research on student satisfaction in this type of learning environment. This study aims to address this gap by examining student satisfaction in a HyFlex learning environment in higher education.

The study was conducted at the University of Iceland, where 28 undergraduate and graduate students who were enrolled in HyFlex courses were surveyed about their satisfaction with the course. The survey consisted of both Likert-scale and open-ended questions, and measured student satisfaction in areas such as instruction, technology, flexibility, and engagement.

The results of the study indicated that overall, students were satisfied with the HyFlex learning modality. In particular, students reported high levels of satisfaction with the flexibility and engagement provided by their courses. They also reported that they appreciated the opportunity to choose how they wanted to learn, and that this choice provided them a better fit with their learning style and work life balance. However, some students also reported challenges with technology and difficulty in finding a balance between online and in-person instruction.

The findings of this study also suggest that HyFlex learning can lead to high levels of student satisfaction particularly in areas such as flexibility and engagement. However, it also highlights the importance of addressing technology-related issues and finding a balance between online and in-person instruction in order to optimize student satisfaction.

Ágrip

Ánægja nemenda í Valvísu námi við Háskóla Íslands

Valvíst nám (e. HyFlex eða Hybrid Flexible) er kennsluform sem sameinar fjarkennslu og staðkennslu og gefur nemendum tækifæri til að velja á hvorn veginn þau haga þátttöku sinni í sameiginlegum viðburðum á námskeiði. Þó að kostir við kennslu með HyFlex-skipulagi hafi verið viðfangsefni ýmsa rannsókna undanfarin ár, þá er enn skortur á rannsóknum um ánægju nemenda í slíku námsskipulagi. Þessi rannsókn mun einblína á þá þætti sem hafa lítið verið rannsakaðir og mun kanna ánægju nemenda á háskólanámskeiðum sem buðu upp á vavíst nám.

Rannsóknin var gerð við Háskóla Íslands þar sem könnun var lögð fyrir 28 grunn- og framhaldsnema sem skráðir voru í námskeiðum með valvísu sniði (e. HyFlex). Þátttakendur voru m.a. spurðir um ánægju sína með námið. Könnunin samanstóð af spurningum með svarmöguleikum á Likert-kvarða og opnum spurningum sem mældu ánægju nemenda á sviðum eins og kennslu, tækni, sveigjanleika og þátttöku.

Niðurstöður leiddu í ljós að nemendur væru almennt ánægðir með kennsluformið. Nemendur greindu sérstaklega frá mikilli ánægju með sveigjanleikann í tengslum við þátttökuna í námskeiðunum. Þau tóku einnig fram að þau kunnu að meta að fá val á milli forms þátttöku og þar að leiðandi geta fundið jafnvægi í kringum nám og vinnu. Hins vegar sögðust sumir nemendur eiga í erfiðleikum með tæknina og áttu erfitt með að finna jafnvægi á milli fjarkennslu og staðkennslu.

Niðurstöður rannsóknarinnar gefa þannig til kynna að HyFlex-kennsluformið geti leitt til mikillar ánægju nemenda, sérstaklega hvað varðar sveigjanleika og þátttöku. Hins vegar sé mikilvægt að taka á áskorunum nemenda varðandi tækni og að fundin sé leið til þess að ná jafnvægi milli fjarkennslu og staðkennslu til að hámarka ánægju nemenda.

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1 Introduction

I remember going through school, my hand cramping from trying to write down all of what the teacher was writing on the chalkboard onto my own notes before she completed the second board and begun to erase the first. It was a time where, looking back, I wasn't learning but merely copying the information that was presented in the classroom. At the school I attended, it was assumed in those days that students would take the information they wrote down during class and study the material in the evenings, but I think back about it all now and wonder – what was the point of me even attending class if I was just copying information and if I was to just study the content on my own time anyway? Perhaps there was a better use of time for me, the other students, and the teachers.

My experience is not unique, it was a product of the pre-internet times, a time where using a calculator was frowned upon and cell phones were only just becoming popular (and replacing pagers). It was also a time where the only computers that were available were in the school library and they had a handful of educational games on them and a copy of Microsoft Encarta, a digital encyclopaedia, both of which we rarely got the opportunity to use as teachers thought it was best we utilize the public libraries for all our school work which meant physically going to a library, checking out books if they were even available, and using them for all our school work. I remember when Wikipedia first appeared, our teachers told us all that it is the most unreliable source of information and to not trust it but to continue to rely solely on the physical books at the library. We were confused as to why since it had appeared to us that the sources and information presented on Wikipedia were valid but even after all this time, studies do show that although Wikipedia has many accurate articles, it is not free from errors and perhaps not reliable enough when compared to peer reviewed papers or even physical reference books such as encyclopaedias (Amina & Warraich, 2021; Chesney, 2006). Perhaps even with the ever changing and advancing technology we must remain highly critical of the sources of information on which we are looking at.

Looking back again at my educational past, I think a lot about my experiences throughout my years both in high school and higher education and how technology has been increasingly incorporated into the classrooms. We went from pen and paper, cramping our hands to having a computer in front of us to take notes and now during the time of writing this paper we are seeing AI and machine learning tools such as various Chatbots and ChatGPT emerge to both great excitement on how it can be utilized in various industries, but also what negative implications it may have on aspects such as academic dishonesty (Cotton et al., 2023). The idea of classroom learning has also shifted with some aspects of digital

materials and submissions now being a part of our everyday life. No longer were we struggling to find a store open late at night that sold ink for a printer that just ran out in the middle of printing off an essay, but we could hand in digital word documents instead. The way lessons were taught were also shifting with some classes experimenting with moving some of the lessons online. In fact, my first online learning experience was back in high school where I took a course that was offered as a specialty on image processing which was entirely delivered through the Moodle LMS. I've since also gone through additional college programs and university classes where online learning was a large part.

Although my first experience with online learning was about 20 years ago, and even though it has been 20 years since, we are still finding some teachers over the past decade are resistant to change from their older methods towards newer approaches for a large number of reasons ranging from the aspects of additional workloads, uncomfortableness with change, the idea of 'if it isn't broken why change it' mentality, as well as others (Luther, 2000; Sánchez-Prieto et al., 2019; Snyder, 2017). A report published in the USA from the Online Learning Consortium (2015) found that between the years of 2013 and 2014, although there is an increase in the number of students taking online education courses, the number of academic leaders who saw online learning as crucial to their long-term strategy fell from 70.8% to 63.3% and that only 29.1% of them noted that their faculty accepted the value of online education.

The resistance to change as seen in the Online Learning Consortium study towards online learning could suggest that some educators who were surveyed are still hesitant to move away from traditional methods of teaching. The emergence of newer learning models such as the HyFlex delivery model could help bridge the gap between the traditional methods teachers are perhaps more comfortable with and the newer ones they may not be as comfortable with. The HyFlex model is a delivery model where flexibility and learner choice is the main aspect, and technology is used to help achieve that goal (Naffi, 2020). This approach could not only help bridge the gap with educators moving towards more online offerings but also help to increase overall student satisfaction as suggested in various studies (Pelletier et al., 2021; Rhoads, 2020) which found that the HyFlex model had a positive impact on student satisfaction, engagement, and learning outcomes. Studies such as Rhoads and Pelletier et al. showcase the importance of continuing to explore the potential benefits of the HyFlex model to help address the concerns of educators and academic leaders towards online learning. The resistance to change as seen in the Online Learning Consortium study towards online learning could suggest that some educators who were surveyed are still hesitant to move away from traditional methods of teaching or away from their status quo in which they are accustomed to.

Again, the emergence of newer learning models such as the HyFlex delivery model may have the potential to bridge the gap between the traditional methods teachers are perhaps more comfortable with, and the newer ones they may either not be aware of or be as comfortable with. The idea that the HyFlex model could increase student satisfaction as well as open the offerings that are provided by schools indicate that it's this paper's objective to explore the potential benefits of the HyFlex model to help address the concerns of educators and academic leaders towards online learning and provide insights from the students perspective on their satisfaction levels in the HyFlex model.

This paper intends to investigate the delivery model of HyFlex and see if this new model is one that promotes greater student satisfaction in two courses with both Bachelors and Masters students at the University of Iceland in comparison to other learning models, and seeks to answer the following research questions:

1. How does the HyFlex model effect student satisfaction in a higher educational setting?
2. How does flexibility in students participation in a course impact student satisfaction?
3. What can students engagement with a HyFlex course and the various modalities offered tell us about student needs or preferences when it comes to the organisation of university courses?

It should be noted that this study is small in nature due to the time and resources that would have been required to expand it beyond a small group. Although limited in scope, it serves as an additional resource when studying the HyFlex learning model and its effect on student satisfaction rather than being a definitive answer on if HyFlex influences student satisfaction in a higher education setting. It should also be noted that this study took place during the COVID-19 pandemic and therefore it is possible that the pandemic had an external effect on student satisfaction levels and that had this study taken place before the pandemic we may have seen different results.

2 Literature Review

For this study, it is important to provide a background of the various learning delivery methods that are prevalent in not only many higher educational institutions, but also ones that are also connected to the HyFlex learning model's various modalities. As this study was conducted at the University of Iceland, it was important to determine the various delivery models they are currently offering to students. A report from the University of Iceland (Árnason et al., 2021) states several various learning delivery options which are in use in the Icelandic educational system and a number of delivery types were extracted for use in this study and then grouped into the following four categories for further exploration:

- In-class learning
- Online learning
- Hybrid/Blended Learning
- HyFlex

Many of these delivery methods are quite common to both students and educators alike but as the research below shows, there are strong opinions on the effectiveness of each one. Once we have looked at the four learning delivery methods identified above and provided an overview of each, a summary of their importance as a collective in this study will be provided. The focus of the literature review was that of students who are enrolled in a higher educational setting.

2.1 In-Class Learning

The term 'in-class learning' refers to the type of learning where both learners and educators are physically present in a specific learning environment together at the same time. Although stated as 'in-class learning', other terms for this type of delivery method are 'face-to-face learning' or even just 'in-school learning'. When looking at how learning has been conducted throughout history, the majority of structured learning has been in the physical classrooms of schools when learner and teacher are in the same space at the same time, and even today much of a person's learning, and especially during their earlier years, is done through in-class and in-person learning. If we think back on our own experiences, as children we are with our teachers and classmates at a school and it's only as we grow towards more mature and self-sufficient adults do we find technology coming more into play in the classrooms. That's not to say that children are not utilizing the wide range of technology that we have today in the classroom. The history of the use of technology in the classroom for student learning is long and fruitful, and children's own use of technology for their own learning is also well documented. However, as schools of all types and levels were required

to utilize technology in one way or another during the COVID-19 pandemic, students and teachers were forced to learn how to move the learning interactions they knew to a new online space.

As the average age of the world's population is around 30 years old and even higher throughout North America and Europe (Ritchie & Roser, 2019), the majority of these educated individuals experienced a time when their learning environment was confined to a classroom setting in which they were required to attend and complete assignments without the use of the major technological advances we have today such as the internet. Again, that's not to say there were no technologies or computers used throughout classrooms as in the early 1990's there were many cases of schools beginning to incorporate computers into their classrooms (Taylor, 1996), but as with any change to a teaching method it was at times not embraced by everyone with one teacher at a British primary school stating that, "Primary teaching is general and we don't have the in-depth knowledge of the software or the time to start messing about" (Taylor, 1996, p. 23).

As time progressed, technology became more incorporated into the classroom with a shift from, for example, utilizing overhead projectors and moving into computer-based presentations. Teachers were eager to experiment and use technology with some stating that they wanted to move away from the typical lecture-based methods and become more of a mentor to students and even use technology in more ways in their classroom (Don Quick, 1999).

Interestingly, some research shows that there has been a consistency in the opinion of what the advantages and disadvantages of in-person and in-class learning are throughout the years as in 2004 research by Zhang et al. (2004) found that the advantages are such things as the immediate availability of feedback that students receive, the fact that the in-person learning environment is one that is very familiar to both students as well as faculty, that the in-person learning is seen to be one that is motivating to students, and one that assists in the building and cultivation of a community of learning through social aspects. The disadvantages that Zhang et al. (2004) found on in-person learning was that it tends to be more instructor centred rather than student centred, that it does require a specific place and time in order to occur, and that it is seen as a more expensive learning delivery method when compared to e-learning.

Fast forward 14 years from that article by Zhang et al. to 2018 and research still shows that many of the same disadvantages for in-person learning are still described such as the requirements of physical space and specific times and the availability of the learners themselves in those areas (Odhaib, 2018). Odhaib, like Zhang et al., also mentions that in-class learning is less flexible when compared to e-learning, that it has a low student

engagement level, and that there's no option for students to review or repeat the learning material outside the set class time.

Most recent research papers when discussing the advantages and disadvantages of in-person learning often are comparing it to e-learning, online learning, or some other technologically assisted method of learning delivery but historically there are many critical views on in-person teaching before the rise of technology. Two papers from the early 1990's (Alleman & Brophy, 1994; Bonwell & Eison, 1991) discuss the opportunities of alternative delivery methods that promote greater student engagement. Research by Bonwell & Eison conducted in the early 1990's indicates that long lectures that are typically present in the classrooms during that time is not an efficient or even conducive way of delivering learning materials.

It's important to note however that although technology has been incorporated over the years, and that research has been done on the effectiveness of such in-person learning methodologies, students are still primarily learning in-person in a classroom with statistics from the United States even showing that prior to the emergence of COVID-19, only 19.5% of undergraduate students were enrolled in at least one online course with the other 80.5% still learning in-person in the traditional classroom setting (Thinkimpact, 2021), and in Europe, a survey in 2020 found that 23% of people mentioned they had been enrolled or were doing an online course within the last 3 months (European Union, 2022) and that number grew to 27% in 2021 which indicates that although there is a growing trend with regards to online learners, the majority of learners in Europe are learning in a more traditional method.

2.2 Online Learning

The term online learning is not particularly new with the first use of it occurring in 1995 when the first Learning Management System (LMS) was created called WebCT which later became Blackboard (Singh & Thurman, 2019). The definition of online learning has changed drastically over the years with its first use referring to presenting teaching materials such as text, slides, or a PDF through a LMS system for students to access (Bates, 2014) to being defined as entire courses delivered online from instruction to assessment and everything in between (Singh & Thurman, 2019). Terminology around online learning has many names such as e-learning, online courses, online education, and blended learning with Singh & Thurman (2019) finding over 46 different definitions during their literature review.

When we look at defining exactly what online learning is however in the modern age of the internet and technology, as researchers such as Singh & Thurman (2019) noted there is a variation on what it exactly entails. Oblinger & Oblinger (2005) had described online learning

as something that takes place entirely online while others such as Lowenthal et al. (2009) define online learning as the actual technology or contextual environment in which the learning is delivered and absorbed within. Other authors are even describing it as the actual access to learning materials or the experiences of the learners which are using some kind of technology that differs from the typical in-class methodology (Benson, 2002; Carliner, 2004; Conrad, 2002) and the university of Iceland defines online learning as a modality that is organized in a way that does not require real-time student engagements (Árnason et al., 2021).

Although opinions are differing on the details of what online learning actually consists of, the underlying concept is that the learning delivery utilizes technology that enables the learners to engage with the learning materials in an 'online' or rather an environment that is not forcing them to be attending their studies in-class learning environment at a specific time and place as described in the previous section. This actual technology can vary quite a bit and will in no doubt change drastically as we move towards the future.

When examining the research on the advantages and disadvantages of online learning, Dumford & Miller (2018) found that the online learning environment to be worse than a traditional classroom with respect to levels of collaborative learning for first year students with students reporting a degradation in the quality of interactions and fewer overall diverse discussions with others in the course. Dumford & Miller noted similar patterns in senior students when it came to lower levels of collaborative learning and a less diverse interactions between students and the advantages they saw seemed to be fairly limited and surrounded mainly quantitative reasoning activities.

Another study which examined the advantages and disadvantages also seemed to weigh more heavily on the disadvantages and mentioned student isolation, lack of motivation, lack of student to student interactions and cooperation, and even lack of technological knowledges as major disadvantages (Zylfiu, 2020). This paper adds to those that seem to attempt to portray online learning as one of the better delivery methods, but they end up having the same disadvantages of either teacher and student or student and student engagement.

A study by Rizvi et al. (2019) looked at the possibility of various demographics such as age, gender, background and the effect it has on students enrolled in an online course. Although initially the hypothesis was that these demographics would play a significant factor in the students experiences with online learning, Rizvi et al. found that there was little to no significant effect on the online learning experiences of the students.

Although many studies focus on the disadvantages of purely online learning, one study did note that although online learning showed promise, there was only a marginal increase

in student knowledge and skill outcomes when compared to in-person learning (Pei & Wu, 2019). Pei & Wu also note that although their study does not show any significant advantages to online learning, they also did not see any reduction in learning. This equality of learning although sounds negative, does showcase a very important aspect that one method does not necessarily need to be better than another but begins to pave the way for multi modal approaches.

2.3 Hybrid/Blended Learning

Blended learning, a mixture of both online and in-class learning models, truly began and became popular starting in the early 2000's (Güzer & Caner, 2014). Blended learning can be defined as a type of learning that combines online and technological delivery methods which results in the learner not needing to be always physically present at a specific time and place to receive the learning materials, lectures, or even assessments and combines that with the traditional in person classroom where the learner is required to physically be present at times for content which could also include lectures, learning materials, and assessments (Tandoh et al., 2014). The University of Iceland defines blended learning as a delivery method which is a combination of in-person real-time study and the online modality (Árnason et al., 2021). The University of Iceland's definition of blended learning also states that it is possible that attendance might be optional in the real-time in person sessions.

Blended learning can even have been considered to have occurred previous to the rise of the internet when students would receive letters, radio programs, and even videos from their teachers to learn from (Güzer & Caner, 2014). Although the radio aspect may not be a part of blended learning as modern classrooms have come to know the term, and although it does require a student to be learning at a specific timeframe, it does remove the need for that learner to be physically in a classroom which aligns with the majority of definitions of blended learning (Hrastinski, 2019).

Much like online learning, blended learning has a wide range of definitions with some considering blended learning to be when 30-80% of course content is delivered through an online format (Means et al., 2013), others arguing that the online component would consist of half of the course content (Bernard et al., 2014), and even some defining it as such when any content is available to students online (Bliuc et al., 2007). One can clearly see there is no consensus as to what blended learning truly is and that any use of online technology can technically be considered blended learning. It is however generally agreed upon that the idea behind blended learning is not to just utilize some aspect of online learning mixed with in-class learning but that blended learning should be built around the utilization of the best

and more effective aspects of both in-person and online learning (Al Musawi, 2011; H. Chen et al., 2011; S. Jones, 2019).

But what do educators mean when they talk about their class being a blended learning class? Hrastinski (2019) explained that although there are many researchers attempting to define the term, it should be more seen as an umbrella term with the possibility of many possible avenues in which one can conduct the course. Can one say that a course with 10% of the content and learning online isn't a blended course? I would argue that anything that deviates from the traditional in-class model might consist of a blended course if that other content is made available as a digital format. Perhaps even simply providing access to learning resources and content online would suffice as a blended course as students will then have the ability to both engage with the learning materials in-class during their typical learning structure and through their digital methods outside their class.

When it comes to the advantages that surrounds a blended learning environment, Mukhtaramkhon & Jakhongirovich (2022) find the main advantage is blended learning's ability to provide more flexibility for students and teachers in the learning process allowing them to adjust the learning material delivery times to better much the needs of students. They also argue that blended learning allows students to be more connected to their teachers as it provides at times an easier access to faculty through technology such as e-mail and that those students who may be less likely to participate in-person due to anxiety or some other reasons might be more inclined to participate in an online environment.

Some of the disadvantages which Mukhtaramkhon & Jakhongirovich mention for blended learning are that mainly the blended learning environment would fail if not planned and executed correctly. It also requires all students to have access to technology which although true, a national study of high school students access to technology in the USA by Moot & Vitale (2018) found that 99% of students surveyed had at least one piece of technology at home with mobile phones being the most common and that 99% of students also had access to the internet. This availability of technology isn't just confined to the USA as another study conducted in South Africa also found 98.1% of students had access to technology and that the mobile phone was the most common (Thinyane, 2010). We see that even though the South African study is over a decade old, the availability of technology was still extremely high.

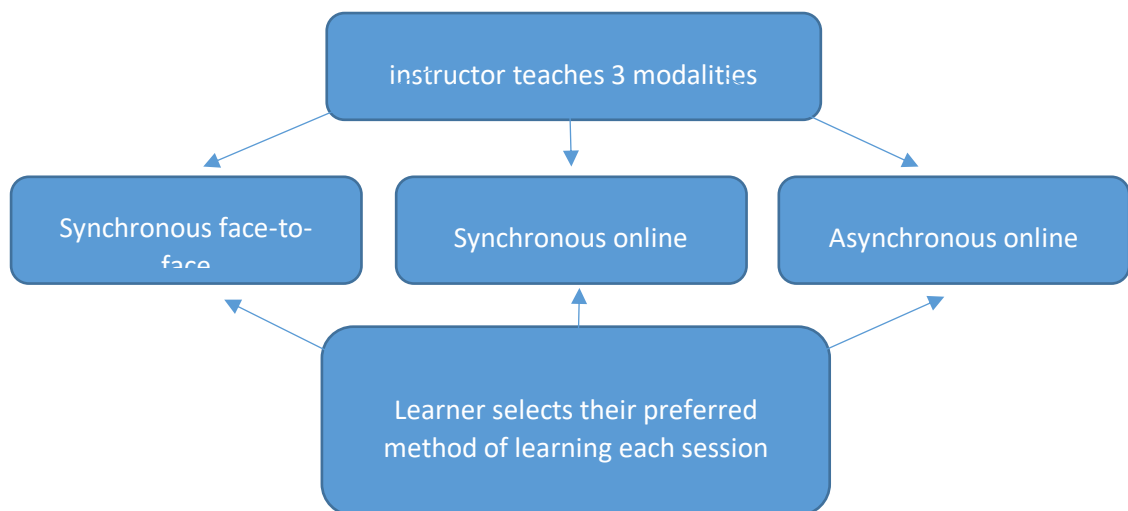
These two studies and others like it perhaps signal that the stated disadvantage of blended learning of access to technology as mentioned by Mukhtaramkhon & Jakhongirovich (2022) is perhaps no longer relevant. Mukhtaramkhon & Jakhongirovich however did also mention the difficulty of managing online settings and the technical support required to

enable it as a disadvantage in addition to the varying degree of technological knowledge which mirrors the comments by Zylfiu (2020) on one of the disadvantages of online learning.

2.4 Hyflex

Developed by Brian Beatty at San Francisco State University, the HyFlex (Hybrid Flexible) model combines both a hybrid/blended learning environment, characterized by both an online and in-class learning structure, with a flexible learning atmosphere, allowing students to themselves decide not only how they learn, but when (M. Abdelmalak, 2014; Beatty, 2007, 2019; Naffi, 2020). Typically, the methods of instruction students can choose from are in-class, synchronous online, and asynchronous online sessions. In a HyFlex model, we can imagine a class of 30 students, where 15 are physically in class with the teacher, 5 are online synchronously and are able to engage in discussion with the in-class students, and the other 10 are asynchronous, watching a video of the lecture and completing their learning outside the scheduled class times, with all achieving the same learning objectives for that class. This methodology and practice of giving control of the learning to the students themselves aligns with the andragogy principles of self-directed learning (M. Abdelmalak, 2014).

Figure 1 The authors visual representation of the HyFlex teaching and learning design



Beatty and others explain that in order for the HyFlex model to be successful, one must follow four guiding principles (M. Abdelmalak, 2014; Beatty, 2007, 2019; Detyna et al., 2023; Naffi, 2020):

1. Learner choice: allowing for students to choose which mode of instruction they wish to participate in for each given week.
2. Equivalency: ensuring that the learning activities and outcomes across all the different methods of instruction are equal.

3. **Reusability:** making the various learning method resources, such as online discussion boards or video recordings, available to all students.
4. **Accessibility:** ensuring all students have the technological skills needed to fully participate in all learning modalities.

It is critical to the success of the HyFlex model that each learning method results in the same level of satisfaction and resulting learning outcomes, and no method should result in a learning deficit or reduction in quality (Lakhal et al., 2014) though one of the major factors educators are challenged with is the implementation of a HyFlex classroom. Sanchez-Pizani et al. (2022) have begun their investigation into the technical setup of a HyFlex classroom, researching various microphones as well as technical requirements of a video camera in order to determine in their opinion the optimal setup for a HyFlex classroom and although they have determined a number of recommendations the implementation of a real world study of this has yet to be completed.

Detyna et al. (2023) conducted a study at Kings College in London in which they conducted 4 mock HyFlex learning sessions with the teachers themselves being both the teachers and students in various roles (in-person and online). Through these mock sessions they found that a number of obstacles arose on noise levels and the engagement of the online students. The researchers recommended that both icebreaker activities should be used to try and bring together the two groups of students and kickstart engagement as well as a graduate student or some other type of teacher assistant would help manage the online aspect of the HyFlex session and act as a class assistant in that regard. They also recommended that standardized laptop or computer equipment be provided to teachers in the HyFlex rooms and not have them bring their own computers to avoid any software or hardware compatibility issues.

A study by Malczyk (2019) in which 18 students entered into a 5-week experimental HyFlex course found that prior to the start, the majority of students (61%) anticipated that they would mostly be participating in the course in-class or face-to-face as they have traditionally done up to that point. The researcher was surprised that in fact on the 5th week, only 33% of students ended up engaging in the course face-to-face from 50% at week 1, while the online portion went from 56% to 67%. It's also interesting to note that it was only during week 1 that saw the highest number of students in-class face-to-face through the entire 5 weeks with each week passing typically resulting in less students attending in-person. The predictions that researchers had with regards to the number of students who would attend in person was much higher than the actual result with some weeks being as much as 50% higher than the actual outcome. Researchers also noted that although some

students were interested in participating in the course synchronously, the reality of the study was that no student actually chose this modality.

Another study by Padilla Rodriguez (2022) conducted in late 2021 in which she hosted workshops and online discussion boards for university educators on their experiences on the implementation of HyFlex at various universities in Mexico found that many of the educators faced challenges that resulted in the implementation of HyFlex to be discontinued for the time being. The researcher found 3 main challenges the faculty faced with HyFlex: various technical issues, an overload in their work, and a lack of guidance. It was noted that teachers didn't have access to various digital and technical devices such as computers and the webcams and microphones they received were insufficient for HyFlex to be successful. The teachers were also faced with the challenging aspect of the 'free' version of teleconferencing software such as Zoom which limited their virtual sessions to a time limit of 45 minutes. The faculty also found the additional workload of preparing and managing a HyFlex class to be too demanding and with the lack of guidance they were simply ill equipped to deal with managing such a class where they questioned exactly how to make it work. Although the faculty was faced with challenges that resulted in the HyFlex model being abandoned for the time being, they were still said to be open towards new innovations such as HyFlex in the future.

As we look towards the advantages and disadvantages of the HyFlex model, as it's a mix between in-class, online, and blended learning we can simply review the advantages and disadvantages of each of those to see a majority for HyFlex. The HyFlex model does however require additional challenges not present in the other deliver models as the teacher needs to juggle multiple delivery modes simultaneously. The major advantages will be discussed further in the next chapter on student satisfaction in a HyFlex environment.

2.5 Student Satisfaction

Student's satisfaction is a difficult thing to measure as everything from their overall experience at the school to how well a course delivery method matches their own preferences may affect their satisfaction levels (Elliott & Shin, 2002). The definition of student satisfaction varies depending on the lens in which it is being viewed as one researcher may describe it as the opinions of the students towards the various experiences they have as students (Razinkina et al., 2018) whereas another researcher describes it as a student's post evaluation of the teachings or even services they experienced (Detyna et al., 2023).

What we see from the literature is that the majority of research on student satisfaction is based solely on the subjective experiences of the students in their student setting and

environment in which they are in, but it ignores the exterior aspects which may drive their perceptions and satisfaction levels. The concept of quality of student life or QSL, for example, looks past the confines of the school or education itself and begins to examine what other factors influence the quality of that students life to which one part is overall student satisfaction (Benjamin, 1994). For the purposes of this paper, student satisfaction will be defined as according to Benjamin (1994) in that it is not only the experiences inside that classroom that shape the satisfaction of students but also other factors such as previous experiences, job or family responsibilities, etc as well as from Diep et al. (2017) who states that student satisfaction is defined by how well the individual students feel their learning experiences have meet their expectations. This definition combination of both Benjamin (1994) and Diep et al. (2017) therefore looks at not only the collective sum of the individual students feelings towards how their learning experience met their expectations, but also takes into account other external factors which are not obviously directly linked to their learning.

As the HyFlex model combines the 3 different delivery models of in-person learning, online learning, as well as blended learning, it's important to review each individually with regards to the satisfaction levels of students to gain a deeper understanding of each of the 3 modalities that HyFlex has to offer and how each affect satisfaction as well as how the 3 combined may influence student satisfaction. The HyFlex model literature will also be examined with regards to student satisfaction to gain a background on what the literature says regarding how students perceive the HyFlex model in a higher education setting.

2.5.1 In-Class Learning

When it comes to the literature review of in-class and in person learning, the majority of studies examined during the writing of this thesis revolved around student satisfaction being compared across various countries or the studies looked at student satisfaction within the institutions themselves with regards to their facilities and faculty. The commonalities between them however are that all look at students who are enrolled in higher educational institutions.

Mai (2005) conducted research comparing student satisfaction between students enrolled in higher education where the majority of their learning is in the form of in-person learning in the UK and the USA, and what the influential factors were that resulted in that level of satisfaction. 332 students were surveyed in total with 184 from the UK (across 11 different universities) and 148 from the USA (across 12 different universities) with the overall gender split being 51% female respondents and 49% male. Although the research focused heavily on the comparison between countries, it did conclude that across all

students, over 70% (71.7%) rated themselves as either 'satisfied' or 'very satisfied' with their learning experiences. If we are to also include the students who rated themselves as 'somewhat satisfied' that number jumps to over 90% (92.2%) leaving only 7.8% of students as 'not satisfied' or 'very dissatisfied'. The factors that Mai found to effect student satisfaction the most was the teacher's perceived interest in the subject that he/she was teaching, followed by the feeling students had about their current studies and degree's ability to further their career and then overall students' perception in the class. The study did conclude that when comparing student satisfaction between the UK and USA, students in the USA were overall more satisfied with the aspects of the student's impression of the school, and impression of the quality of education they were receiving to have the greatest impact in determining their satisfaction levels.

Benjamin (1994) looked for a correlation between a student's satisfaction in higher education and their own personal quality of life both inside and outside of their studies. Benjamin stressed the importance that both of these aspects be taken into consideration in order to truly determine that the student's satisfaction levels which are measured are to be meaningful in any way. Benjamin uses the term 'Quality of Student Life' (QSL) as a wide mapping of various aspects of a student's life both inside and outside of the classroom. This QSL term included variables such as the students' social status, income levels, relationship statuses, family obligations, academic backgrounds, etc., to only name a few. Benjamin utilized a large array of previous research conducted around students in higher education to map a claim that this wider scope of QSL played an extremely important role in the student's life and it was not only important to examine the student in the educational environment but also their life outside of it. This overall view of more than just the student at school showed that this QSL played a significant role in the student satisfaction levels overall. Benjamin did not however suggest that this either low or high QSL was the only deciding factor in the students satisfaction levels but that it should be an important consideration for all those looking to measure or improve the satisfaction levels of students in higher education.

Elliot (2002) conducted a study which consisted of surveying 1,805 students at a university in the upper Midwest of the United States of America in which he hoped to determine which aspects of a students experience at university had an effect on his/her satisfaction. Of the 1,805 participants, the majority were female (52.6%) with males at 45.1% and the remainder (2.3%) providing no response. The students were also of a wide range of ages from 18 to over 45-years-old (with the majority between 19-24 with 75.2%) and were also fairly evenly split across class levels of freshman (21%), sophomore (16.7%), junior (26%), senior (31.2%), and other (2.9%). He used a Likert-type scale that featured questions

based on the Student Satisfaction Inventory™, which measures both student satisfaction and their priorities, and consisted of questions that spanned across 11 different topics such as academic advising effectiveness, campus climate, campus life, campus support services, concern for the individual, as well as others.

Elliot found that courses which were of a more student-centred approach as well as those that had an overall effectiveness as perceived by the students in which the learning was delivered were important factors in the overall satisfaction levels of the students and signalled an increase in the student's satisfaction of their overall educational experience.

Research conducted by Hanssen & Solvoll (2015) at a Norwegian university sought to determine if there were specific facilities at the university that had an effect on student satisfaction. They sent out a web-based survey to 5,232 students of which only 1,457 (28%) completed. Of those who completed the survey, 65.5% were female and 34.4% were male. Their study concluded that there were three major facility factors that seemed to effect student satisfaction: the quality of the student social areas that were available throughout the university, the library facilities, and the auditoriums. The researchers noted that the access to computers at the university was not a factor in influencing student satisfaction and it is their opinion that this is a direct result of the majority of Norwegian households having access to computers (93% in 2013) which resulted in the student being self-sufficient with access to computers.

The interesting aspect of these various research papers is that they mostly conclude a different aspect in which student satisfaction is influenced. Aside from Benjamin (1994), the majority of research papers viewed primarily the student's life within the educational environment and the resources available to them as factors which drive satisfaction. We do see however some thought into the student's external life as Hanssen & Solvoll (2015) noted computer access was not a driving factor in the satisfaction of students as the majority had access to one outside the school. Although the majority of research papers reviewed were focused around the educational institution and student life within it, there are some such as by Narakornwit et al. (2019) which looks at aspects of the student life such as physical ailments, family life, work, etc and how that affects their performance and perceptions at school as well as their overall quality of life. Narakornwit et al. noted that although there were aspects of student life that affected satisfaction and quality of life, there were mixed conclusions as some of the individual factors registered on both the high and low ends of reported satisfaction.

2.5.2 Online Learning

As technology improves and has allowed educational institutions and teachers to potentially shift some or even all their learning content to an online platform in one way or another, and the COVID-19 pandemic forced many universities around the world to move online entirely at various times, many researchers have investigated if online learning has an effect on student satisfaction when compared to face-to-face learning environments.

In one study Soffer & Nachmias (2018) compared 3 online courses to 3 in-person courses of the same subject and found students rated their satisfaction in the online courses higher than those who took the in-person version. They had also found that student grades were also higher overall in the online versions of the course.

Palmer & Holt (2009) investigated the level of student satisfaction where the learners were taking a course entirely through online learning at Deakin University in Australia. The study consisted of a survey that was sent out to students and received a total of 761 responses in which numerous questions were asked surrounding the students learning experience as well as other topics such as amount of time they spent online, and time spent studying. The results of this study were that not only were students spending less time online than researchers had initially thought they would be, but that students were also spending less time on homework than even faculty had anticipated. The students were also found to be for the majority (approximately 70%) satisfied with the entirely online learning experience but researchers noted that respondents surveyed stated low importance of things such as learning without face-to-face contact with teachers or other students as well as communications and interactions online with other students. The concerns that students seemed to have were largely in line with what researchers found any student, online or in-person, would be concerned with such as how they would access learning materials, submission guidelines, as well as marking schemes and how they would be assessed.

Another researcher who investigated the satisfaction of students between online and in-person learning in a business English course found that students were less satisfied with the online course (Tratnik et al., 2019). Another paper by Landrum et al. (2021) pointed out that while some students in their study found other classmates participation in an online environment to be helpful in their learning, others found it distracting and perhaps even a hinderance to their learning success. This difference between not only students in the same research study but studies overall raises questions as to if the course content itself should play an influential role in if the course would be perceived as more effective and increase student satisfaction in one format or the other.

As noted by various researchers (Bates, 2014; Lowenthal et al., 2009; Oblinger & Oblinger, 2005; Zeng & Wang, 2021), online learning has so many variables and

methodologies it becomes difficult to determine exactly what link there is between student satisfaction and the online learning methods. Some utilize asynchronous methods of learning, others are synchronous, and some are a mixture of both.

As online learning was gaining popularity in the 2000's, a 2008 survey conducted by the University of Wisconsin-Madison in the USA found that not only did students prefer courses which contained an online learning aspect to them, it was 82% of students (Schaffhauser, 2009). Although this data shows students eagerness to have online learning content, a study on student choices between online and face-to-face learning by Keis et al. (2017) found that out of 10 students which participated in their study, only 4 chose the online version of the course. This research also noted that 2 of the 6 students who attended the course in-person had previously enrolled in the online version, discontinued it, and now were taking it in-person. Interestingly, this newer 2017 study seems to directly contradict the outcome of the 2009 study with regards to student preference.

2.5.3 Blended Learning

When looking at the effect a blended learning environment has on students, studies have shown that blended learning improves student performance (Hughes, 2007), provides higher student retention (Fincher, 2010), and can perhaps even increase student motivation and satisfaction (Woltering et al., 2009). One study of 34 students in a traditional in-person classroom and another course consisting of 30 students in a blended course found that students taking a course in-person were more satisfied with the course instructions they were given than those in a blended learning model (Chen & Jones, 2007).

A study by Jones & Chen (2008) which compared the satisfaction of students from both a traditional in-class course consisting of 38 students and a course consisting of 58 students that had a blended approach of both in-person and online, found that although there were drawbacks to a blended learning course, the students in the blended course were considerably more satisfied with the interaction and availability of their professor than that of the traditional group. The blended learning group was also found to be more satisfied with group work among their classmates citing satisfaction with decision making and overall effectiveness of the groups interactions. The study did however mention that students in the blended group were not satisfied with the level of interactions on message boards or during virtual meetings with both their teacher and fellow students. It was also important to note that the majority of blended students responded that they would prefer at least 3 in-person sessions as it seems they found a level of benefit to having the in-person sessions to complement their online experience.

A study by Chen & Yao (2016) looked into the factors which influence student satisfaction in a blended learning environment and found that the learners perceptions of ease of use of the various e-learning materials was a factor in their overall satisfaction and when looking at demographics such as age, Chen & Yao noted that the younger age groups were found to be prioritizing the design elements of the course and e-learning materials and it was those design factors that had the greatest influence in their overall satisfaction levels within the blended learning environment.

In another study by Zhu (2017) of 117 university students in Belgium who were enrolled in a blended learning course were found to have differing satisfaction levels depending on the individual student. Zhu found that there were four key factors that influenced student satisfaction: The student's individual preference for learning modes, the student's maturity and readiness to engage with a blended learning model, the teacher's ability and competency with a blended course, and finally the teacher's ability to support a blended learning model. The recommendations that Zhu had to help promote the success of a blended learning course in relation to student satisfaction was that both teachers and students should be provided with assistance and clear expectations as to what the course will entail. Students who for instance think that a blended learning course may result in less course work overall should have that expectation corrected and teachers provided with assistance in both the development and implementation of a blended course from the school itself.

2.5.4 HyFlex

With the HyFlex delivery model, the student is put in control of their learning and can choose which delivery method matches with their preference at any given time. A study by Rhoads (2020) investigated the student satisfaction of a 16-week HyFlex learning environment in an undergraduate course. The study consisted of 81 students across 15 courses and was framed within the andragogical framework of adult learning theory and concluded that the HyFlex model successfully provided an increase in student satisfaction and believes that the HyFlex model has the opportunity to not only help students with their learning goals but can also save institutions money through maximizing campus capacity and potentially shorten the needed course length.

Another study on the HyFlex model done by Koskinen (2018) investigated the experiences of learners in a HyFlex learning environment through a qualitative case study once again through the lens of andragogy. Eight students were involved and interviewed for this study and students were asked about their perceived benefits and drawbacks of the HyFlex model, how they engaged with the content, how they self-direct their learning, as

well as how a HyFlex course design helps or hinders their learning. Koskinen found that students enjoyed the flexibility of the HyFlex model but they did however find communication with the other students difficult. Some students also preferred attending class in person due to their negative experiences with online learning. The students did however find the flexibility of HyFlex to be the most attractive aspect, with it also being a preference over online learning. Students did note however that engagement during synchronous sessions was difficult. Koskinen also noted that the limitations included the small survey size, as well as the fact that HyFlex is a newer model and needs more research before a solid conclusion could be made on its validity.

A study by Bakach (2021) revolved around 22 undergraduate level courses which used a HyFlex model at a college in the southern United States and spanned across four different programs consisting of 222 students. From the study, Bakach found 3 emerging themes:

1. "Improved learning experiences and outcomes" to which the student participants found the HyFlex model to have improved their learning experiences. It was also noted that this had a number of sub themes that saw students feeling a sense of enhanced learning and the feeling of empowerment.
2. "Improved lifestyle" which saw the students stress levels reduce and gave a more balanced life. Several sub themes also emerged which all focused on the various aspects of a balanced life (i.e. work/life balance, school/life balance, family/school balance, etc.)
3. "Concerns and hopes" which students noted their challenges regarding the HyFlex model, their own personal learning model preferences, some concerns related to their instructors as well as other varying concerns. Researchers also noted the students hoped that the university would continue to offer courses in the HyFlex model in the future.

The overall satisfaction levels of students in Bakach's study was 95.7% with only 4.3% of students reporting dissatisfaction and only 1.8% of students suggesting that HyFlex had impacted their learning in a negative way. Despite this high satisfaction, some students reported that they were concerned about the facility's ability to teach a HyFlex course, their own preference for face-to-face learning, as well as some reporting the instructors own attitude towards the HyFlex model was negative.

In another study by Miller et al. (2013), which consisted of 161 undergraduate students enrolled in a HyFlex course model in the United States, found that an overwhelming number of students (95%) agreed that the use of technology resulted in an increase to their course participation over what they had expected prior to starting the course. Students also were asked what attendance modality they would choose in the future if given the choice with

only 5% stating face-to-face lectures without the use of technology, 38% stating online lectures, and 57% stating both face-to-face with the use of instructional technology. Some students in the study however did express concern regarding their professors' views on their chosen learning modality which may have had an effect on the self-reporting aspect of the data collection for this study.

2.6 Theories Supporting HyFlex

The HyFlex model and the flexibility it provides to students builds upon adult learning theories and the concept of putting the learners in control of their own learning environment. As the HyFlex model also encompasses various learning delivery methods, previous research and background insight on the different delivery methods were important to acknowledge in this paper. As stated previously, research into student satisfaction in various delivery methods has shown mixed results. There have also been more recent studies on what is called 'zoom fatigue' which explores the effect of online and virtual environments (Nadler, 2020; Wiederhold, 2020) which may provide important considerations for a flexible delivery method.

The framework behind many of the research papers on HyFlex is predominantly andragogy and self-directed learning with some hinting at the theories of community of inquiry, and transformative learning theory. There has been a considerable amount of research over the past few decades on adult learners, but as the specific term HyFlex is relatively new and research in that area is scarcer. As stated, research on HyFlex approaches also shows mixed results in terms of both student satisfaction (Koskinen, 2018; Rhoads, 2020; Wright, 2016) as not all students are found to have an increased level of satisfaction as well as mixed levels of engagement (Binnewies & Wang, 2019; Leijon & Lundgren, 2019) but most researchers mention the need for further research to be conducted.

Although much more complex than one might be able to write in this paper alone, it's important to outline some key factors for each of the following theories when looking at if the HyFlex model which may promote greater student satisfaction.

2.6.1 Andragogy

Andragogy is a term that "stems from the Greek word andragogos which means 'teaching adults'" (Ekoto & Gaikwad, 2015, p. 1178) and it's therefore easy to see why many researchers link it to HyFlex. Although the term andragogy was first used by Alexander Kapp (Loeng, 2017), researcher Malcolm Knowles built upon the work conducted by previous researchers to expand on the term and develop his theory on adult learners and define their characteristics (Mews, 2020). As learners mature, the educational approach changes from

the pedagogical model which puts emphasis on the teacher to develop and instruct what will be learned, to andragogy in which the learning becomes more self-directed (Loeng, 2017). Knowles' work on adult learners provided insight into the ways in which adult learners differ from child learners.

According to Knowles et al. (2020), there are six key characters of adult learners:

1. **The Need to Know:** information on what the learner must learn and how that learning will be applicable to their lives and the benefits of the learning.
2. **The Learner's Self-Concept:** adults like to be seen as self-sufficient and in control of their own lives.
3. **The Role of the Learners' Experiences:** as adults naturally have more experiences than child learners, that experience provides a resource in which they themselves contribute to their learning.
4. **Readiness to Learn:** adults position themselves as ready to learn when there is a direct correlation to their lives and the learning that occurs or when they are moving from one stage in their life to the next.
5. **Orientation to Learning:** adults are task-oriented and problem-centred learners who become more orientated to learning when they perceive that the learning material will help them with situations they face in their own lives.
6. **Motivation:** adults are typically pushing for growth and further development in their own lives but are mostly motivated by intrinsic motivations rather than extrinsic motivations.

As the HyFlex model allows students the choice of delivery method, this directly connects with the learner's self-concept characteristic outlined by Knowles et al. Research on adult learners has also shown that they learn more effectively when their individuality is taken into consideration which in turn goes against the singular style of learning (Holton et al., 2001) which is common in many universities. As the HyFlex model provides learners with choice and flexibility, it breaks free of the 'one size fits all' approach and allows for students to choose a method which is best suited for their individual learning needs.

Although many researchers have also made the connection between HyFlex and andragogy (Abdelmalak, 2014; Abdelmalak & Parra, 2016; Bakach, 2021; Koskinen, 2018; Rhoads, 2020), when it comes to andragogy and student satisfaction, there has been limited research on the connection. One study by Ekoto & Gaikwad(2015) of a group of graduate students in the Philippines found no solid connection between a student's level of satisfaction when viewed through the lens of andragogy principles and noted that their study "does not directly confirm or revoke andragogy in general and its association with learning satisfaction in particular" (Ekoto & Gaikwad, 2015, p. 1185). Another study by

Bressiani, & Roman (2017) investigated the connection between each of the principles of andragogy and if they contributed to an increase or decrease in student satisfaction. The researchers found that although there were some principles which saw an increase in student satisfaction, there were also others which saw satisfaction levels lower or remain unchanged.

2.6.2 Community of Inquiry

The community of inquiry framework is a process model built initially around an online learning environment by Garrison et al. (1999). It revolves around three elements: social, cognitive, and teaching presences (Swan et al., 2009).

The cognitive presence as described by Garrison et al. (1999) refers to the students ability to “construct meaning through sustained communication”. The social presence refers to the ability to which students can incorporate their own personality and characteristics into their courses and are able to present themselves to others in their group as a unique and real individual (Garrison et al., 1999). Finally, teaching presence refers to two key aspects of which are not necessarily the responsibility of a designated teacher but often is, with the first being the actual design and construction of the learning experience and the second is the facilitation of the materials (Garrison et al., 1999). Research has shown that although each element is crucial to maximize the student learning potential, a strong teaching presence can significantly contribute to the social and cognitive presence in a blended or online learning environment (K. Moore & Shemberger, 2019).

Research by Mohandas (2022) looked at a HyFlex course through the lens of community of inquiry and found numerous connections. When it came to the element of social presence, students were found to be freely interacting within their groups and working together in a cohesive way. It was noted however that at times the online portion of the group was putting forth extra effort to engage with the in-class group members and relied on their in-class group members to put forth any questions which they wanted to ask the instructors. For the cognitive presence, Mohandas noted that although it was present and visible in the HyFlex course, it was difficult to separate the various sub phases as it was “happening in a cohesive manner” (Mohandas, 2022, p. 118). There was also the observation that students reflections became apparent during interviews of the students rather than specifically during the course. The teaching presence was visible in the HyFlex course as the teachers provided the organization of the class, facilitation, and direct instruction. The teachers in the study also ensured they connected with each group of students, provided positive feedback, and ensured students felt at ease with both the expectations of them as well as the communication with their teachers. Mohandas concluded that there was no

significant difference between the HyFlex modalities when it came to the student perception the social, cognitive, or teaching presence elements of the community of inquiry.

2.6.3 Self-Directed Learning

Self-directed learning is the process in which learners themselves are responsible for their own learning and are actively orienting themselves towards learning and gaining knowledge to further understand and solve problems (Geng et al., 2019; Morris, 2019).

Research has shown that adult learners not only tend to utilize a variety of devices and locations to learn and meet their own needs of self-directed learning (Bonk et al., 2015) but also that online learning environments can foster additional barriers to learning such as procrastination that can occur when learning in an online environment (Song & Hill, 2007). Other studies have shown that online learning is more effective to students with a higher ability for self-directed learning (Shapley, 2000) and that their perceptions of the course and overall academic success increased (Lee et al., 2002). Even in a group collaboration setting, research argues that self-directed learners are more collaborative and there are increases in learning effectiveness (Jiusto & DiBiasio, 2006).

As the HyFlex learning model allows learners to choose for themselves the method in which they will learn, those who have the ability for higher levels of self-directed learning can adjust their learning to be one that is more in line with self-directed learning and perhaps an online learning environment. HyFlex is also in line with self-directed learning as students are also given the ability to take control over the time and the place in which their learning occurs. Although there is little to no direct research on only the connection between HyFlex and how it relates to self-directed learning, many researchers have noted a connection between the theory itself and the characteristics of the HyFlex model (Abdelmalak & Parra, 2016; Livingston, 2022; Rhoads, 2020; Trail et al., 2020).

2.6.4 Transformative Learning

Transformative learning theory refers to the process in which a learner engages in various learning activities which either are a cause for or allow for their ability to see something in a different viewpoint than what their perceptions were previously (Vindaca & Lubkina, 2020). Described by Mezirow (2000), transformative learning has 10 key elements:

1. A disorienting dilemma.
2. Self-examination.
3. A critical assessment of assumptions.
4. Recognition that one's discontent and the process of transformation are shared.
5. Exploration of options for new roles, relationships, and actions.

6. Planning a course of action.
7. Acquiring knowledge and skills for implementing one's plans.
8. Provisional trying of new roles.
9. Building competence and self-confidence in new roles and relationships.
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective.

Transformative learning and the process of expanding one's viewpoint on how learning can be conducted in a higher educational setting makes this an important theory for this research. Historically, educational institutions have placed a priority on students attending courses in-person and in the classroom. As the COVID-19 pandemic spread around the world and various restrictions on in-person learning were enacted, students and teachers were both faced with the challenges associated with moving their learning online and thus thrown into the first key element of transformative learning of a disorienting dilemma. What was once perhaps seen as impossible to do, many students were able to, with the assistance of the educational institutions, complete their courses, achieve their learning objectives, and graduate from their studies without the need for in-person learning as it may have been previously.

One study that observed this transformative learning was by Saliba (2023) who looked at the way teaching was conducted in Qatar during the COVID-19 pandemic noting that like many of the faculty were faced with challenging their own assumptions with regards to education and technological uses and were examining their "feeling and experiencing a disorienting dilemma" (Saliba, 2023, p. 188). Saliba also found that had it not been for the COVID pandemic, it was unlikely that many faculty members would have had the opportunity to adopt more online aspects into their class based on the overall lack of readiness and support the administration of their university was providing. The teachers in their study in the end, through the challenges of COVID-19 and moving courses online at times, gained new knowledge of various technology available and new skills on the aspects of planning a course in various modalities.

One researcher went as far as to say that the COVID-19 pandemic and the resulting need to move to a HyFlex style of learning was perhaps the most important and dramatic transformations that has occurred in the way we teach during this period of remote and online learning (Vujnovic & Foster, 2022).

3 Methodology

This study aimed to explore the various emerging techniques and methods that are being used in educational institutions around the world and more specifically the HyFlex model and the effect it has on student satisfaction on a group of higher educational students enrolled in two courses at the University of Iceland. This chapter will revisit the research questions, provide a description of the research methods chosen and the reasoning behind it, as well as information on the survey itself and the participants.

3.1 Research Questions & Assumptions

The primary purpose of this thesis was to explore how the HyFlex model effects student satisfaction in a higher educational setting if at all, with follow up questions related to what the satisfaction levels are for the various learning modalities for students as well as if there are other factors that affect the student satisfaction that are not directly related to a specific learning modality.

The following research questions acted as a guide throughout the research process and the writing of this thesis:

1. How does the HyFlex model effect student satisfaction in a higher educational setting?
2. How does flexibility in students participation in a course impact student satisfaction?
3. What can students engagement with a HyFlex course and the various modalities offered tell us about student needs or preferences when it comes to the organisation of university courses?

It is the goal of this study to provide information on a HyFlex course which can provide insight into how to better cater to adult student needs and provide data in which a conversation can be started with universities so that they may work towards offering more course flexibility within all courses offered. It will also provide information on what modalities are preferred by students, as well as the concerns and issues that students have which the university can attempt to resolve prior to the start of a flexible course.

3.2 Research Design

This research project was designed as a mixed methods research approach and a survey was created that consisted of both open-ended questions which were in line with qualitative research strategies and more numerical questions from the results of Likert-scale survey questions which are more of the quantitative strategy. Mixed methods research design is

defined by Johnson and Onwuegbuzie (2004) as a method of research that combines both the techniques of quantitative and qualitative methods together in a single research study.

The rationale for this mixed methods approach is that the numerical information provided by the participants could allow for trends and hard evidence on their preferences and answers but in order to fully dive deeply into the responses, open ended questions are vital so that the participants could elaborate on various aspects of the survey questions which is in line with the research by Creswell (2009) who states that while quantitative research is based on the actual variables which can be directly observed and measured while qualitative research is much more towards investigating the reasons behind the quantitative data. Creswell (2014) also noted that the benefits of both qualitative and quantitative data become combined when working with a mixed methods research approach and that it allows the researcher to find conclusions through the quantitative data and then proceed to make sense of the information and dive deeper into the information through the qualitative methods.

The convergent design as described by Creswell & Plano Clark (2018) in which they state that there is only a single phase of the study where both qualitative and quantitative data are collected at the same time and then analysed on their own to be then combined together into cohesive and connected research was picked as the framework in which the survey and research was conducted since the survey consisted of both Likert-scale questions as well as open ended and free text ones. Creswell & Plano Clark (2018) also noted there were various streams of the convergent design, the fully integrated variant was picked for this research paper as it allowed both the quantitative and qualitative research aspects to work together throughout the study rather than working with one and then the other, combining them at the end. This would reduce the impact and time requirements of the participants but also fit in with the time requirements of this very thesis.

3.3 Participants

Two classes comprising of 30 students from a mixed group of both bachelor's degree programs as well as master's degrees from the University of Iceland's International Studies in Education and Adult Education programs were asked to participate in the survey. Two classes were chosen as faculty for both courses were ready to structure their course in the correct modalities to which the HyFlex model is based.

The students were known to come from a range of backgrounds, primarily Icelandic with a few from outside of Iceland and with a wide range of ages as well as a mix of both full-time and part-time studies.

The courses in which the participants were enrolled were previously conducted primarily in a blended learning delivery method with a portion of the course being conducted in a face-to-face in person learning environment and another portion conducted online. As a result of the COVID-19 pandemic however, the courses shifted to more of a flexible model which allowed students to participate through various modalities simultaneously through in-person learning, synchronous online learning, and asynchronous online, and had therefore been conducted in this flexible way for a year prior to this study.

Two students from the courses did not participate and there was therefore a total of 28 valid student respondents to the survey sent which gave a 93% participation rate. The student participants were not given any information regarding the HyFlex model nor were they told the exact research questions but were informed through the email sent that the survey was a part of a Master's thesis which hoped to gain an understanding of their experiences in their courses which provided them with flexibility in the way they participated and attended the course.

3.4 Instrumentation

A survey consisting of 34 questions, four of which were free text responses, was created and consisted of various questions that asked about the student's personal backgrounds, age, gender, educational background, employment, as well as many questions on their current course and their views on the flexible aspects of the course (see Appendix A). Questions were also included which asked participants about the different modalities and their modality choices throughout the course. The survey questions on the student's life outside the course were included as it aligned with previous research that suggested satisfaction levels are influenced by not only a student's experiences within the course and educational environment but also other factors in their personal life (Benjamin, 1994). Bakach's study (2021) also provided a reference point for the creation of the survey questions as his study revolved around similar topics when it came to investigating student preference of modality as well as a study by Rhoads (2020) which looked at undergraduate students and featured a survey with questions revolving around the topics of student demographics, various questions on the course content and delivery methods used, as well as both questions on the overall flexibility and modality choices and overall comments from students. The survey questions that asked students directly about their satisfaction levels as well as questions on the course materials and learning objectives (see Appendix A) were guided by the research by Diep et al. (2017) in which satisfaction levels were measured by how students feel their learning experiences have met their expectations.

3.5 Data Collection

With consultation from a professor at the University of Iceland, an initial draft of the research survey was constructed and after a review and revision process, a Microsoft Forms link to the online survey was sent to students of 3 classes via both email and a direct message to them on the University of Iceland's learning management software (LMS) Canvas at the end of their semester in late November 2021. Sending the survey at the end of November was done with the hope that the responses to the survey would include their accurate and authentic experiences and recollections as the semester was fresh in their mind but also not have it being sent too late where the student would be occupied with final exams and projects which may alter their stress levels and thus alter the results of the survey. The goal was to have the students complete the survey during a time when their stress levels were at their lowest and hopefully as a result, gather an impartial and more balanced result.

3.6 Data Analysis Procedure

The survey data was collected and the open ended questions interpreted through the thematic analysis (TA) framework as described by Braun & Clarke (2012) which outlines the analysis process in a six-step approach starting with the familiarization of the data, generating an initial coding system based on the data, searching and identifying themes present, reviewing the themes that emerged, defining the themes and giving them names or labels, and finally producing a report on the thematic analysis.

After thoroughly reviewing the open-ended survey responses, an initial coding system was created to attempt to categorize participant responses. The coding was also deductive in nature with the literature review and theories outlined previously along with the initial review of the data steering the coding process. It is important to note that as not every participant answered each survey question, some of the data percentages did not total 100% and were a fraction of the total participants.

As the Likert-scale has received some criticism as the steps between the scale responses are not necessarily equal to each other and research suggests that Likert-scales should be clarified as to how the data is analysed (Sullivan & Artino, 2013), it is important to specify the how this study looks to interpret the data. The Likert-scale in this study is view and analysed in a way in which the Likert scale was interpreted with values between 1 and 5 with equal numbering between. The responses with 'strongly agree' equating to most frequent and a value of 5 with and 'strongly disagree' as least frequent with a value of 0.

3.7 Reliability

There is no reason to believe the student respondents were anything but truthful with their answers as the survey results were not to be shared with anyone and they would remain anonymous. As I was in a course with a few of the selected participants, there is the slight chance of a bias from them as they were aware of the survey having a connection to my own thesis, and they were also aware of the HyFlex learning model prior to their participation. With that said however, there were only 2 students which fell into this category and at worst we would be looking at a bias percentage of 7%. As the sample size is small and this thesis is built as an initial look into the HyFlex model at the University of Iceland and not large enough in scale to warrant any significant change, the risk of participant bias is seen to have a minimal effect if one at all on this research project.

3.8 Covid-19 Pandemic

As the entire world saw, in 2020 we were struck with the COVID-19 pandemic resulting in global restrictions resulting in everything from travel bans to gathering restrictions with Iceland having many of these restrictions in place throughout 2020 and 2021.

The University of Iceland first was forced to close their doors for a period of four weeks and move classes online on March 16, 2020 (University of Iceland, 2020b) to which the University of Iceland stated that the move to an online format was challenging for teachers but that they are prepared for the task.

The University of Iceland saw multiple closures throughout 2020 and 2021 with courses moving from in-person learning to online and back numerous times throughout the pandemic. Students and teachers alike were therefore accustomed to various learning delivery methods at the time of this study in late 2021 as they had experienced all the various modalities of the HyFlex learning environment throughout the two years. It's also important to note that even when the University was able to open again, the University of Iceland, and in particular the courses in this study, offered a flexible learning model in which students had the opportunity and flexibility to attend their learning in the various modalities we see in the HyFlex model.

Although the courses were not specifically designed with HyFlex in mind, the pandemic and the year prior to this study inadvertently prepared the faculty and students for a mix of learning modalities in which this study is based on. It is therefore important to note that had this study occurred prior to the COVID-19 pandemic, the results may have differed greatly than what has been seen after the pandemic.

4 Data Analysis and Results

As mentioned above, this thesis study invited students from two courses at the University of Iceland to participate in a survey with questions revolving around their own perceptions of their educational experiences, and more specifically their satisfaction levels in a HyFlex course. The study contained 8 questions related to their individual backgrounds, age, employment, gender, etc., 6 questions on the course structure they experienced in their course, 3 questions surrounding learning flexibility, 5 questions on that student's individual choices both during his/her current semester as well as previous experiences, and 12 questions on their satisfaction levels (see Appendix A). Of the 34 survey questions, 4 were in free form allowing the participants to enter in the answer to the question in their own words.

In this chapter I present the results from the analysis of this data and the connections to the previously presented research questions. It is organized according to the various following four topics in which were first identified and grouped together based on the initial research reviews to which the survey was constructed:

1. Demographic analysis
2. Course design satisfaction analysis
3. Course flexibility satisfaction analysis
4. Modality choice analysis

This section, after the results are presented, then concludes with a summary of the results.

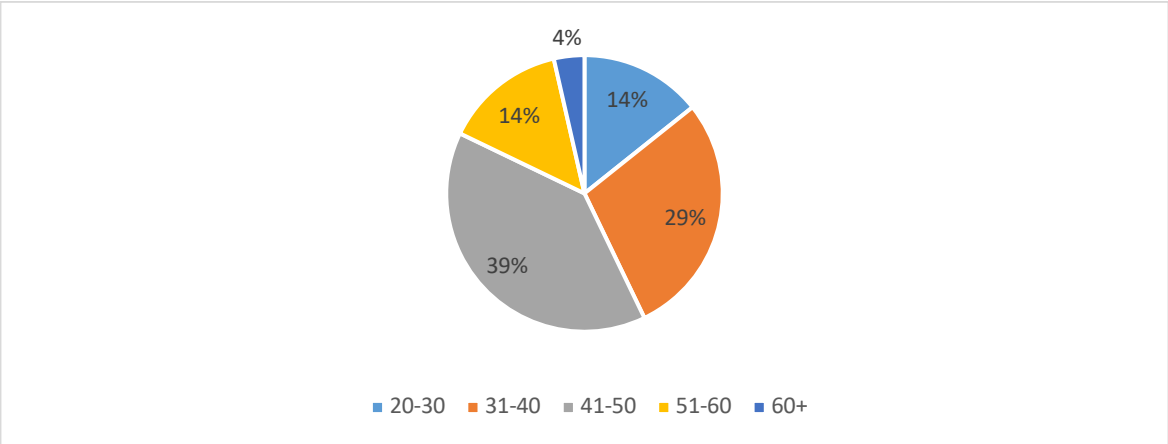
4.1 Demographic Analysis

The student demographics were an important aspect of the survey as they provided details into the students' lives which may have presented a correlation between their satisfaction levels of the flexible course and one or more of the aspects of the demographic as described by Benjamin (1994) with his view on the quality of student life and aspects which are outside of the educational institutions themselves. It is important to note that due to the low number of participants, the relevance and comparisons made cannot provide reliable conclusions but may perhaps provide insight into directions for further research with a larger participant group.

The age range of survey respondents was between 24 and 68 years old. Of the 28 valid responses, as seen in Figure 2, the majority of participants, 86%, were over the age of 30.

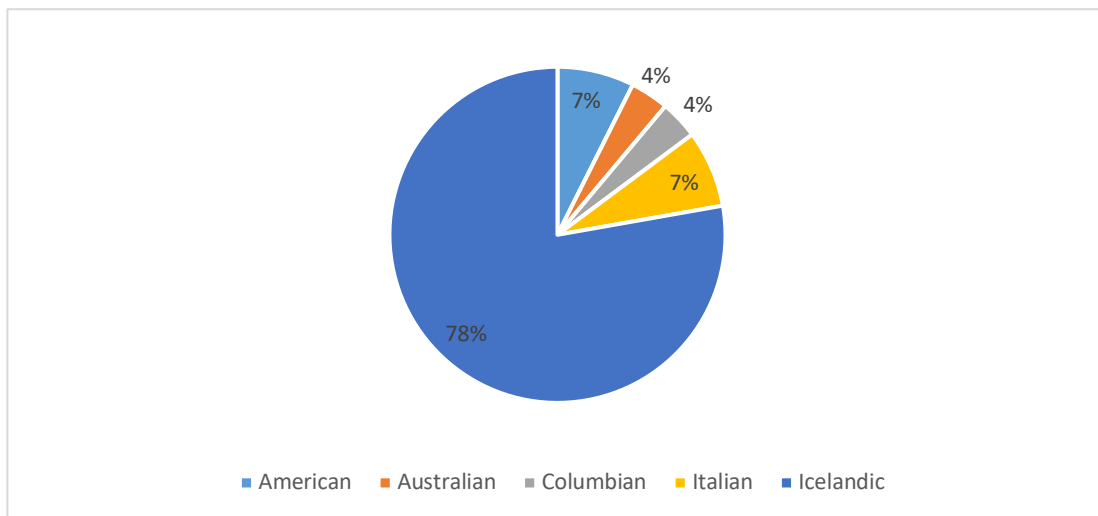
Regarding gender within the participant group, 39% were male (n=11) and 61% were female (n=17) with no participants selecting the options of other or preferring not to disclose.

Figure 2 Participant Age



The survey participants came from a variety of nations as seen in Figure 3 with the majority stating Icelandic as their nationality which is unsurprising as the University of Iceland is itself located within Iceland. When it came to their current city in which they live however, two responses were discarded as one did not answer the question and was left blank and the other listed “Iceland” as the city. Of the remaining valid responses, 4% listed Akranes, Iceland as the city in which they lived during their studies (n=1), 8% lived in Hafnarfjörður, Iceland during their studies (n=2), 4% lived in Ísafjörður, Iceland during their studies (n=1), 8% listed Kópavogur, Iceland as their city (n=2), 4% listed Selfoss, Iceland (n=1), 69% listed Reykjavik, Iceland (n=18), and 4% listed Steinkjer, Norway as the city which they lived during the course (n=1). Again, it comes as no surprise that Reykjavík has the highest percentage as the University of Iceland is itself located in Reykjavík.

Figure 3 Participant Nationality



In terms of educational levels, two responses were discarded as two of the answers were left blank leaving 26 valid responses. Of the valid responses, 42.3% of survey respondents were enrolled in a bachelor's degree program (n=11) while 57.7% were enrolled in a master's degree program (n=15).

With regards to participants employment statuses, 82.1% of participants responded that they were employed (n=23) while 17.9% responded that they were not employed (n=5). When it came to the level of employment and if the employment was full-time or part-time, of those participants who stated they were employed, 60.9% responded that they were employed full time (n=23) while 39.1% stated that they were employed in a part-time job (n=9). Survey question 17 (see Appendix A) asked participants if they would like to be employed during their studies to which 78.6% stated they would (n=22), 14.3% answered that they were not sure if they would like to work during their studies (n=4), and 7.1% said they would not like to work during their studies (n=2).

In some of the freeform answers regarding why the flexible course was important, 41% of woman (n=7) responded with an answer that mentioned either family or child obligations while only 9% of men (n=1) mentioned family which indicated a family structure was higher stated by woman than men. Although family obligations were mentioned by woman more than men, there is no evidence to suggest family obligations are less prevalent in the male group than the woman as none of the survey questions directly asked about family responsibilities.

The final survey question from the first section was on if participants required a student loan in order to attend their studies to which 92.9% of participants stated that they did not

require a loan in order to study (n=26) while 7.1% of participants stated they did require a loan (n=2).

As a generalization, the survey results showed that the majority of participants were female (61%), of European nationality (85%), between the ages of 30-50 (75%), pursuing a master's degree (58%) and were employed full-time (61%) with only 7% of participants requiring student loans to attend their studies.

When looking at the generalized student respondent persona it perhaps makes sense that at the University of Iceland the majority of respondents would be of a European nationality as the university itself is within Europe. It also upon looking at the statistics of the student body at the University that the majority would be woman since the university has an overall female population of 67.8% (n=10,231) in comparison to men at 32.1% (n=4,843) (University of Iceland, 2022).

4.2 Course Design Satisfaction Analysis

The next series of questions in the survey were a 5-point Likert-scale questions which focused on the overall course structure with an answer range of “strongly disagree” (1) and “strongly agree” (5). As research question 1 was focused on the satisfaction of the participants in a HyFlex environment, these questions on course structure are intended to provide insight into the participants views and opinions of the course and provided a portion of the information needed to answer research question 1.

Table 1 The Course material was presented in a well-structured way.

Response	<u>N</u>	<u>%</u>
Strongly agree	9	32.1
Agree	17	60.7
Neutral	2	7.1
Disagree	0	0
Strongly disagree	0	0

When it came to if participants felt their course was presented in a well-structured way, as seen in Table 1, 92.8% of participants either agreed or strongly agreed with that statement representing a huge majority with none of the participants disagreeing. Similarly, when participants were asked if the course material was arranged in a logical sequence and that it was understandable, as seen in Table 2, 82.1% either agreed or strongly agreed and again, none of the participants disagreed or strongly disagreed.

Table 2 The course material was arranged in a logical sequence and was understandable.

Response	<u>N</u>	<u>%</u>
Strongly agree	8	28.6
Agree	15	53.6
Neutral	5	17.9
Disagree	0	0
Strongly disagree	0	0

Next, when participants were asked about the learning objectives of the course and if they were clearly conveyed at the start of the course, Table 3 shows 85.7% of participants either agreed or strongly agreed they were clearly conveyed at the start of the course though unlike the previous two results, a small percentage disagreed that the learning objectives were clearly conveyed at the start. Additionally, when participants were asked if the course material contained the information needed to meet the learning objectives, as seen in Table 4, 85.7% of participants either agreed or strongly agreed with again a small percentage of participants disagreeing that the materials covered all information needed to meet the learning objectives.

Table 3 The learning objectives were conveyed clearly at the start of the course.

Response	<u>N</u>	<u>%</u>
Strongly agree	9	32.1
Agree	15	53.6
Neutral	2	7.1
Disagree	2	7.1
Strongly disagree	0	0

Table 4 The course materials covered all the information I needed to meet the learning objectives.

Response	<u>N</u>	<u>%</u>
Strongly agree	10	35.7
Agree	14	50.0
Neutral	2	7.1
Disagree	2	7.1
Strongly disagree	0	0

The final two survey questions in this section referred to the student’s participation in the course both overall throughout each week and during the sessions which they were participating online.

When asked if the participants participated during every class week either online or in person, as seen in Table 5, 75% of participants either agreed or strongly agreed that they participated every class week either online or in-person, while 14.3% of participants disagreed. When asked about the online sessions and if participants had their webcam’s active during those sessions, 89.3% of participants either agreed or strongly agreed that they have their webcam active with only two participants either disagreeing or strongly disagreeing with that statement as seen in Table 6. As the survey questions for these two previous survey questions did not fit to have a neutral response, the analysis of these two questions interpreted neutral to be “neither agree nor disagree with that statement”.

Table 5 I participated during every class week either online or in person.

Response	<u>N</u>	<u>%</u>
Strongly agree	10	35.7
Agree	11	39.3
Neutral	3	10.7
Disagree	4	14.3
Strongly disagree	0	0

Table 6 I often have my webcam active in online sessions.

Response	<u>N</u>	<u>%</u>
Strongly agree	15	53.6
Agree	10	35.7
Neutral	1	3.6
Disagree	1	3.6
Strongly disagree	1	3.6

When mapping the overall participant responses of the Likert-scale for the entire section on course structure with strongly agree as 5 and strongly disagree as 1, we find that overall participants responded with a 4.2 on the scale which is just above agree overall on all statements.

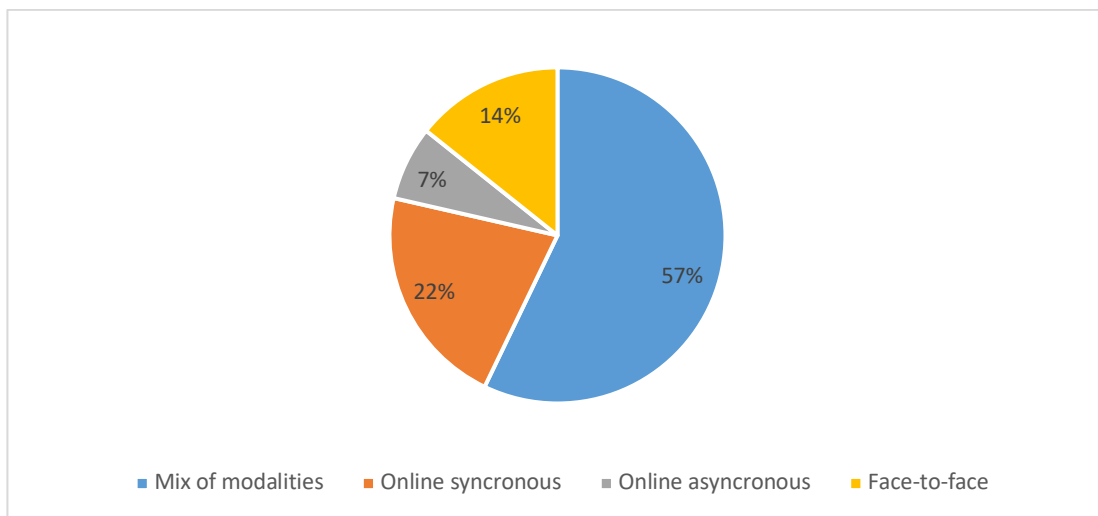
4.3 Modality Choice Analysis

When it came to research questions 2 and 3, and if students utilize the ability to choose the learning modality and if so, is there a preference of one over another, survey questions 13, 14, 15, 16, and 18 (see Appendix A) were created to determine if the participants utilized the flexibility and if so, was there a clear preference.

When participants were asked if they had previously been enrolled in a course which offers flexibility in how they could participate week by week, we saw a clear divide in the responses with 46.4% of participants having responded that they have had this level of flexibility in a previous course while 42.9% of participants stated they have not had flexibility, and 10.7% were unsure if they have.

The next series of questions directly asked the participants about their participation in the course itself and the various modality choices in which they were offered. Participants were asked which learning modality they anticipated they would use during the semester and as Figure 6 shows, the majority of participants stated they would be utilizing a mixture of the different modalities throughout the semester, with the lowest percentage stating they would be utilizing the online asynchronous modality.

Figure 4 Participant anticipated modality choice.

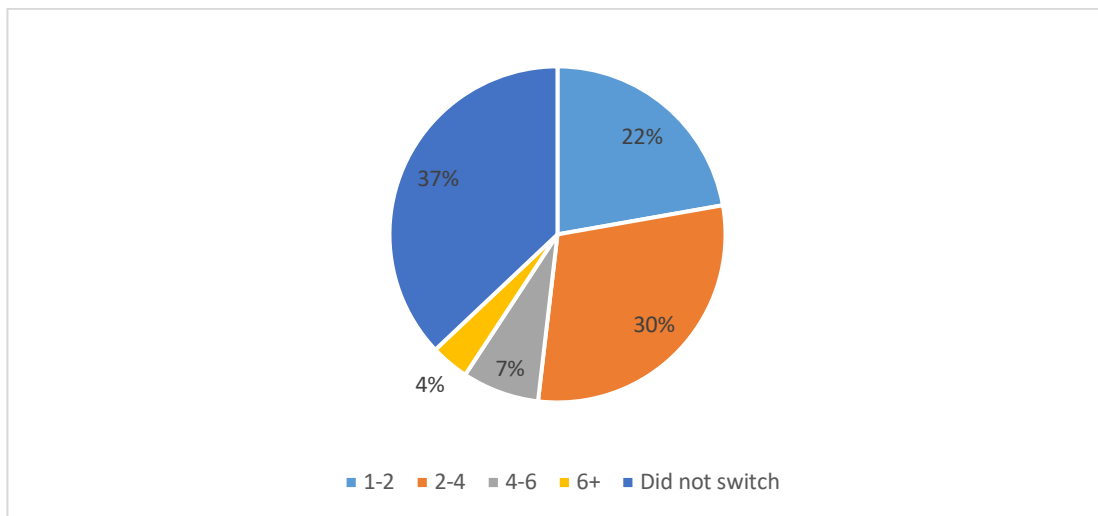


Participants were then asked 2 questions surrounding their modality choices during the semester and the course. Firstly, participants were asked if they switched participation modes throughout the semester to which 60.7% of participants stated they did change modalities while 39.3% of participants stated they did not switch modalities and stuck to a single learning modality throughout the semester.

When asked if they did switch, how many times they changed learning modalities throughout the semester, there were 27 valid responses as 1 participant did not answer the survey question. From the valid responses as we see in Figure 7, 63% of participants changed

modalities during the semester while 37% of participants stated they did not switch learning modalities throughout the semester.

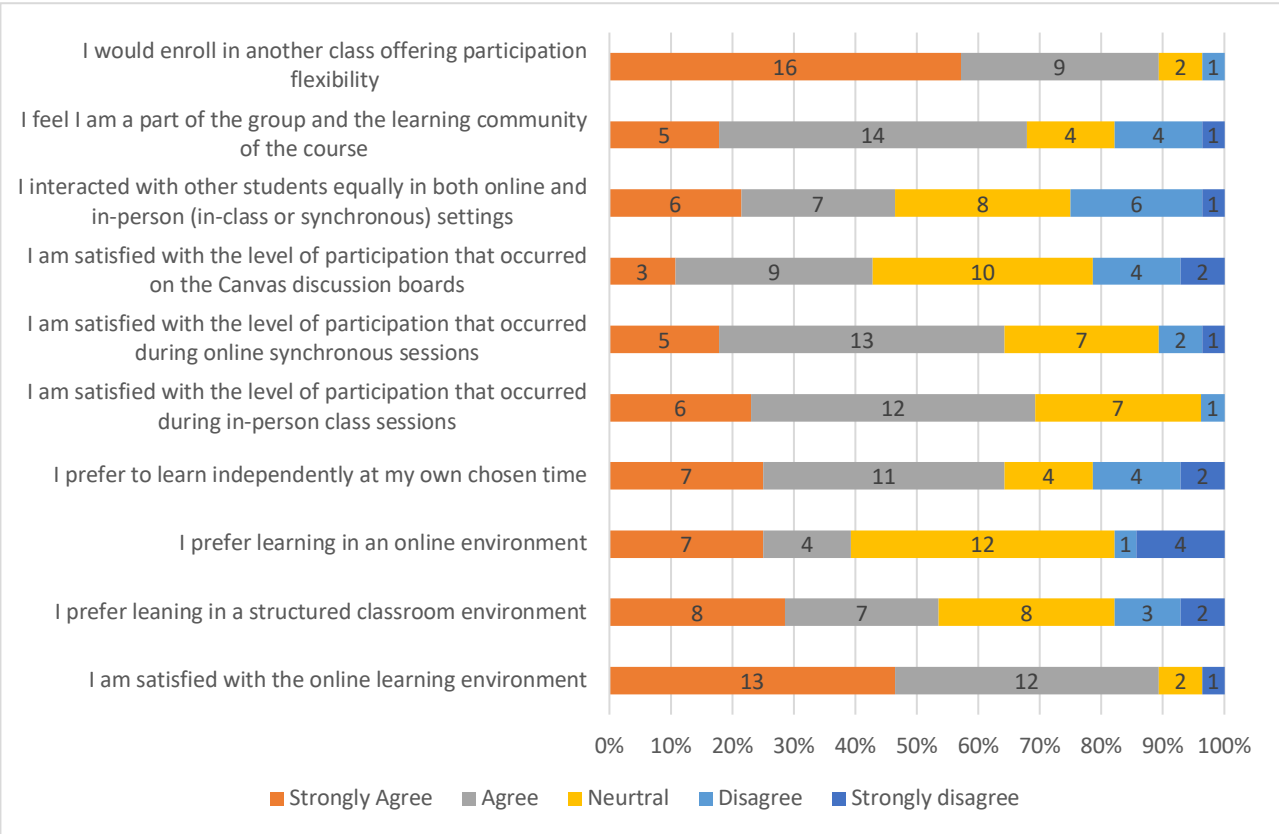
Figure 5 Times participants switched learning modalities.



The participants were asked a series of questions, as seen in Figure 8, which focused mainly on their preferences of learning modalities and how they participated throughout each of them. The survey questions were connected to research question 1 as it related to the student's own satisfaction and preferences of learning modalities. It also connected to research question 2 and 3 on the choice of modalities as there could be a relation to the student preferences and the actual modalities which they chose during the semester. Finally, a question was asked if the participant would enrol in another course offering modality flexibility which is directly related to research question 1 on satisfaction of the HyFlex course.

As seen in Figure 8, when participants were asked if they were satisfied with the online environment, we see 89.3% of participants stated they either agree or strongly agreed with that statement with only 3.6% of participants strongly disagreed that they were satisfied with the online environment. Participants were also asked about their preferences on the various learning modalities starting with first if they preferred learning in a structured classroom environment to which 53.6%, or just over half of participants stating that they agreed or strongly agreed with that statement while 28.6% were neutral, and 17.8% disagreed or strongly disagreed with that statement. Participants were then asked if they preferred learning in an online environment to which the majority of responses, at 42.9%, were neutral. The final question regarding participant modality preference asked if participants preferred to learn independently at their own chosen time to which 64.3% of participants responded that they either agreed or strongly agreed to that statement while 21.4% stated they either disagreed or strongly disagreed.

Figure 6 Participant modality preferences and satisfaction



The participants were then asked 3 questions on their satisfaction levels with the level of participation in each of the learning modalities. Participants were asked if they were satisfied with the level of participation that occurred on the Canvas LMS discussion boards and as seen in Figure 8, 42.8% stated that they either agreed or strongly agreed with that statement while a large percentage was neutral and 21.4% either disagreed or strongly disagreed. When asked if they were satisfied with the participation levels during online synchronous sessions 64.3% stated they either agreed or strongly agreed with that statement with 10.7% either disagreed or strongly disagreed with that statement. The last question on their satisfaction levels of participation asked participants if they were satisfied with the level of participation that occurred during in-person sessions found only 26 valid responses as 2 participants did not answer this survey questions. Of the valid responses, as seen in Figure 8, 69.3% of participants either agreed or strongly agreed with that statement with none of the participants strongly disagreeing.

The participants were then asked two questions on the interactions between students during the course. The first question asked if the participants felt they were a part of a learning community during the course to which 67.9% either agreed or strongly agreed that they were while 17.9% stated they either disagreed or strongly disagreed that they were a part of the course learning community. Next participants were asked if they interacted with

other students equally both online and in-person to which results were mixed with 46.4% either agreed or strongly agreed that they did while 28.6% were neutral and 25% either disagreed or strongly disagreed that they interacted equally.

Finally, participants were directly asked if they would enrol in another class offering participation flexibility to which a large majority, 89.2% either agreed or strongly agreed that they would with none of the participants strongly disagreeing.

4.4 Course Flexibility Satisfaction Analysis

Survey questions 10, 11, 12, 19, and 20 (see Appendix A) focused on the participants’ views and satisfaction levels related directly to the flexibility that the course provided. These questions directly relate to research question 1 which asked about student satisfaction in a HyFlex course environment. Survey questions 11, 12, 19, and 20 were free text questions where the participants were able to write in their own words. As some participants wrote in Icelandic and some in English, Google Translate was utilized to provide an English version of the text.

As seen in Table 7, when the participants were asked how important the amount of flexibility offered in the course was to them (see table 7), nearly all of them stated that it was important or extremely important (n=25) with only one participant stating they found the amount of flexibility that was offered was extremely not important.

Table 7 Importance of the amount of flexibility offered in the course.

Response	<u>N</u>	<u>%</u>
Extremely important	18	64.3
Somewhat important	7	25.0
Neutral	2	7.1
Somewhat not important	0	0.0
Extremely not important	1	3.6

Survey question 11 asked participants to answer in their own words why the amount of flexibility offered in the course was, or was not, important to them. There was a total of 16 valid responses as 12 participants did not provide a response to question 11. For survey question 12, participants were asked what course delivery flexibility meant for them in their own words. There was a total of 20 valid responses as 8 participants did not respond to question 12. Survey questions 19 and 20 asked participants what they liked about a flexible course (question 19) and what they disliked about a flexible course (question 20). For

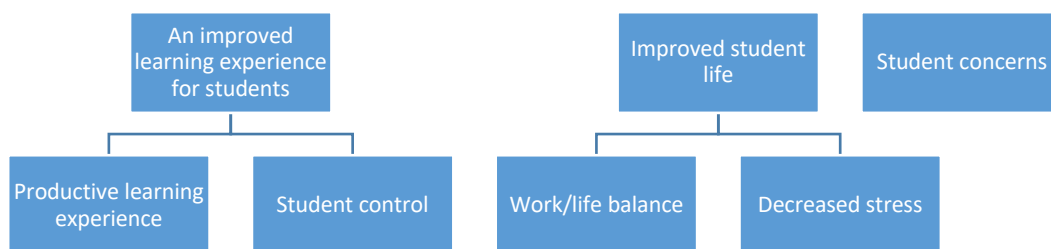
question 19, there were 23 valid responses as 5 participants did not provide a response, and for question 20 there were 17 valid responses as 11 did not provide a response.

As mentioned previously, free text responses were interpreted through the thematic analysis (TA) framework as described by Braun & Clarke (2012) and three themes emerged from the four free-text survey questions (survey questions 11, 12, 19, and 20). The themes that were identified were:

1. An improved learning experience for students
2. Improvement in the student's life
3. Student concerns

In addition to the 3 main themes that emerged, several subthemes emerged which from the first theme on an improved learning experience for students, the subthemes were that of a more productive learning experience for the student as well as students felt more in-control of their learning experience. The subthemes that emerged from the second theme on the improvement in the student's life was that of a more work, school, life balance and a second subtheme of a decrease in stress among the students. The third theme did not present any subthemes.

Figure 7 Emerging themes and subthemes from survey questions about course flexibility



4.4.1 Theme 1: Improved learning experience

The free text responses from participants for survey questions 11, 12, 19, and 20 were reviewed and it was discovered that the participants found the course flexibility provided them with both various levels of productive learning experiences, as well as provided them with more control over their learning experience. From these two findings, the two subthemes of 'productive learning experience' and 'student control' emerged from the single theme.

4.4.1.1 Subtheme 1.1: Productive learning experience

The subtheme of a productive learning experience emerged from a number of the free text responses with many participants noting that the availability of recordings, the flexibility of attending the course either online or in-person, as well as being able to focus more on the learning materials overall increased their satisfaction levels.

When it came to participants views on the flexibility of modality and attendance choice, one participant mentioned that:

It meant that I could attend classes online if I could, or watch the recording of the class if that suited me better.

Another participant expressed their satisfaction with the flexibility and specifically with one modality when they stated that, “Being able to study mainly online is the main reason I will be graduating this semester” and another stating that the course flexibility, “Gives people options to learn in the way they feel most comfortable and in a way that meets their needs”. One participant however did not see the benefit of a flexible course and noted that they, “did not need the flexibility” and only interacted with the course with the online synchronous modality and worked in a full-time job.

4.4.1.2 Subtheme 1.2: Student control

Throughout the free text survey questions, the subtheme of student control arose with participants noting that the course gave them control over their learning with many participants mentioning learning at their own pace, better flexibility, as well as the overall freedom of choice in their responses.

In a response, one participant stated that the flexibility was important as it provided them, “the freedom of choosing what was more suitable for me at the moment” and another student writing that, “if something came up, it was still possible to attend”. The learner choice also was mentioned with regards to their ability to decide what modality to choose each week with one participant stating that they liked the flexible course as it provided them the “opportunity to learn at own pace and time” and another participant stating the flexibility allowed them to, “manage my own speed and how I respond to each lesson and assignment.”

4.4.1.3 Theme 2: Improved student life

The theme of an improvement to the overall student life emerged across all free text survey questions and as a result two subthemes were identified. The first regarding the balance between the student’s school life, their work, and their personal life and the second subtheme which revolved around the decrease in stress levels as a result of the flexible course structure.

4.4.1.4 Subtheme 2.1: Work/life balance

Many respondents directly mentioned the flexible course structure having a positive effect on the balance in their lives between their schoolwork and studies, their employment, as well as their personal life and family responsibilities.

One participant clearly mentioned many of these aspects and stated that the course delivery and its flexibility meant that they had the:

Ability to go to my place of work regularly. Arrange with my partner to drop off and pick up children at school, sport, music, and other activities. Lowers stress. Run the home - chores, shopping, cleaning, cooking, laundry. Social activities.

Another participant mentioned their employment and stated that the flexibility meant they, “could work full time and study” with another simply stating it was important to them because of, “full time working”, and another stated, “I work full time and have a big family” and another stating, “I have a full time job and a family”.

Many participants mentioned their family obligations in addition to their employment in their free text responses with one participant stating that:

Due to my job, family, and other responsibility I have as a middle-aged woman. If I was younger, say 20 to 25 years old, no children or family orientated obligations, flexibility would not then be as important, I would think.

Three participants mentioned they had very young children or newborns and as a result the flexibility was very important to them. One of these participants stated that:

I am a mother of four young children so my day to day life is often chaotic and unpredictable. It was important to me to be able to attend classes online or view the recordings when it fitted my schedule.

Two of the other participants who mentioned young children also stated that it was important to them, “Because it gave me the possibility of taking care of my newborn while continuing my studies” and another stating, “Because I just had my first baby at the time and she was home with me all day every day so flexibility was very important”

4.4.1.5 Subtheme 2.2: Decreased stress

Stress was also a subtheme that was identified as many respondents directly mentioned the reduction of stress in their free text answers. One participant noted that the flexibility was important to them and stated that:

It meant not having to stress if I was not feeling well (I could stay home and participate remotely) or if the Covid numbers were high and I was anxious about going into a large group of people on campus.

Another participant mentioned a reduction in stress levels and stated they:

liked not worrying about the time it would take to drive to class, find parking and make my way to the classroom. That added time allowed me to have extra time to take care of responsibilities around the house, prepare for class or even relax for a couple of minutes.

Reduction in stress levels were also stated at the beginning of a free text response from another participant who stated that they liked the flexible course as it provided:

Less stress, you can plan much better regarding and in connection with various other responsibilities. I always try to show up at and participate in all classes. Another thing is, recordings of classes, are very useful to me, being able to listen again to some classes, or parts of the lessons, is a great benefit for me.

4.4.2 Theme 3: Student concerns

The last theme that emerged from the free text survey questions surrounded various student concerns such as concerns regarding technological issues to the concerns that student-student interactions would suffer or even their own concerns on their ability to manage their time on their own. The majority of the concerns were expressed in the responses on survey question 20 (see Appendix A) as it specifically asked what participants disliked about a flexible course.

When it came to student interactions, one participant stated that:

Getting to know people was more difficult. I only felt we were successful at building personal bonds when we met in person. Online learning did not allow for that. So having a combination of real-life and online is a better solution.

Another participant mentioned that they disliked the flexible course as it resulted in, “poor social connection with other students” and another mentioned participation of other students in the course and that, “not everybody participates” and another stated simply, “not seeing classmates”. Another participant even mentioned the online participation of other students and stated that:

It's too easy for people to turn on their cameras for attendance and then disappear for the remainder of the class, completely ignoring any participation requests or requirements.

Some participants were concerned with the technological aspects of the HyFlex model with one participant stating that, "Sometimes too much time was taken away from us because of technical issues" and another stated that, "When technology is not working with us and technical problems are taking over - but there is little that can be done about it, this is life."

A number of participants also stated their own self-discipline concerns in a HyFlex course and that they, "needed to learn on my own how things worked at first" and another stating, "a lack of self-discipline which I had to overcome" and even one participant mentioning that, "more likely that I (personally) would just skip showing up and not bother".

One participant mentioned the involvement of the teacher in their response and stating that, "disorganization and uncertainty that can arise in oneself due to the habit of the teacher organizing everything".

4.5 Summary

The survey was developed and guided by three research questions which was the basis for the data collection in this mixed-methods study. The data was analysed, and the three main themes emerged of improved learning experience, improved student life, and student concerns which then prompted the four subthemes of decreased stress, work/life balance, student control, and productive learning experience.

The initial indications of the data suggests that although there are concerns from participants regarding the HyFlex model and a flexible course environment, the positives outweigh the negatives. Participants seemed to be extremely satisfied with the level of freedom and flexibility they courses provided them and the initial data strongly indicates a high desire from participants for them to be offered another flexible course in the future as almost all participants stated they 'agree' or 'strongly agree' they would enrol in another class offering participation flexibility (n=25).

Overall, participants stated that the flexibility decreased stress levels, increased their freedom and flexibility making them better able to manage a school, employment, and family life balance. The data however is currently mostly singular in the responses and a deeper analysis and comparison between survey responses is needed to determine if there is a correlation between data as well as not only attempt to confirm the overall satisfaction

of students but provide an insight into the possible rationale of the results against existing literature and theory.

5 Discussion

The purpose of this research was to answer three key questions relating to the experiences of students in a higher educational environment at the University of Iceland in a HyFlex model course. The key research questions in this study were:

1. How does the HyFlex model effect student satisfaction in a higher educational setting?
2. How does flexibility in students participation in a course impact student satisfaction?
3. What can students engagement with a HyFlex course and the various modalities offered tell us about student needs or preferences when it comes to the organisation of university courses?

It is again the hope that this study on a HyFlex course would provide insight into how to better cater to adult student needs and provide data in which a conversation can be started with universities so that they may work towards offering more course flexibility within all courses offered. It is also intended that this data would provide information on what modalities are preferred by students, as well as the concerns and issues that students have which the university can attempt to resolve prior to the start of a flexible course.

In this section I will discuss the main findings from the research data in the context of the literature review that was outlined in section two, and divide the discussion into four sections:

1. Demographics
2. Course design satisfaction
3. Course flexibility satisfaction & modality choice
4. Student satisfaction

This first section outlines the overall demographics of the study, the student backgrounds, and provides insight into if there is any relevant connection between the demographics and satisfaction levels within the HyFlex course. This first section is in line with the research of Benjamin (1994) as it also looks outside the classroom and external factors in the lives of the participants that may play a role in their satisfaction. The second section looks at the overall course design and its relation to student satisfaction levels and is connected to research question one as well as research on student views and expectations. The third section will discuss the course flexibility and its effect on the satisfaction of students as well as the modality choices in which students engaged with throughout the course. The third section is connected to research questions two and three. The fourth and final section will discuss the overall student satisfaction levels of the HyFlex course as they experienced it and is connected to all the research questions. Each section is in line with

both the work on the quality of student life as described by Benjamin (1994), but also investigates the students' own perceptions and expectations and how they affect satisfaction levels as described by Diep et al. (2017). This chapter will then conclude with a summary and present the findings in relation to the research questions being asked.

5.1 Demographics

When we look at gender and the various aspects of the course, we find that the two stated genders trend along the same pattern of answers with respect to many of the survey questions. Both genders had similar responses to if they required student loans during their studies in order to attend their studies, both reported their web cameras were typically active during their classes, and similar positive responses to questions around the course structure and content, etc. The results also show that while the majority of woman responded that they were working during the course, all of men respondents responded that they were working. In some of the freeform answers regarding why the flexible course was important we saw that 41% of woman responded with an answer that mentioned either family or child obligations while only 9% of men mentioned family. This family aspect on its own might explain some of the reasoning behind the lower rate of employment among woman during their studies but also may provide an insight as to why all the woman participants either "agree" or "strongly agree" that they would enrol in another flexible course while most of the men would enrol.

When it came to age and commonalities of survey responses and the ages of participants, it seemed age did not show any major differences as 57% of the respondents were of the age 40+ and the other half were under 40. 56% of the older half of the age group (40 years+) were found to "strongly agree" that they were satisfied with the online learning environment while just over a third of the ages below the age of 40 responded "strongly agree". This difference could be explained simply by the fact that the older age group reported working full time to a higher degree than the younger ages. The under 40 age group also reported a greater preference in-person classroom learning than the 40+ group with 42% compared to 19% although the 40+ group however did not all agree that they preferred to learn independently as the survey responses that were either "agree" or "strongly agree" showed the 40+ group with 56% while the under 40 group was 67%. These findings were particularly interesting as the group which preferred in-person learning the most (the under 40's) also was the same group that preferred independent learning. The research also found that the 40+ age group switched learning modalities more often and on average switching at least once more often than the under 40 age group (69% vs 50%). It is interesting that both groups responded with similar levels of how important the course

flexibility was for them with only one from each group having responded “neutral” and none responding as “disagree” or “strongly disagree” as we saw 39% having stated they did not switch modalities. This indicates that although there is a slight difference in modality changes between age groups, it is not a large enough difference or participant group to suggest a conclusion one way or another when looking at age and the significance it plays in a satisfaction of the HyFlex course.

As the courses studied here features individuals who have a vast amount of experience in the educational systems across varying ages, the prior experiences of the learners should be taken into consideration when designing and targeting learning for adults as mentioned in the literature on adult learning and andragogy (Knowles et al., 2020). It is true that of course as adults have lived longer lives, they would have gained more experience and more so called ‘life lessons’, but when looking at the context of HyFlex and other flexible delivery and learning models, HyFlex may be too new of a learning model to have any significant impact from the demographics of the learners as both younger and older student would perhaps not have had the experience with this type of flexible course model that they may have made with the individual or even mixed modalities on their own.

As a newer learning model, the HyFlex model itself could have contributed to a disorienting dilemma for students and teachers alike which falls in line with the theory on transformational learning as described by Mezirow (2000), and as was seen in the research by Saliba (2023) which mentions that HyFlex was perhaps disorienting for students and teachers, but we did not see from the survey results in this study that students were disoriented. In fact, the results of this study show that students were primarily positive on almost all aspects of the HyFlex model and when looking at the previous student experiences, the fact that there was no official HyFlex model in place at the University of Iceland during this study, and that 46% of students responded that they had previously taken a course which provided flexibility on how they learned week by week and 43% stating that they had not, it was assumed that students would be disoriented to this new delivery model and flexibility offered. The question that arises from this is: what are the previous experiences these students had that seemed to have prepared them for this delivery model? The only guess we can make at this point is that students became more prepared for a flexible learning environment as the COVID-19 pandemic in Iceland had shifted learning from one modality to another and back again several times as well as assistance from the experiences which the faculty at the University of Iceland has as various courses have historically been delivered in a variety of modalities throughout the years.

As this study missed the opportunity to allow students to expand on their previous experiences with a flexible course by elaborating in a free-text question, we cannot assume

one way or the other and try to correlate demographics to satisfaction with the flexibility of the HyFlex model, it is just simply too divided and inconclusive to come to any real conclusion without additional data on the previous experiences and additional feedback from the participants themselves. As some studies have shown, demographics, such as age, had no effect on the successful implementation of the principles of andragogy nor did the varying age of students show any significant impact on course satisfaction levels or have an impact on their learning as a whole (Conaway, 2009; Rizvi et al., 2019) which this study's data aligns with. This study's results disagree with the notion that course design has an impact on the younger age groups are described in research by Chen & Yao (2016) as this study again saw no significant differences with regards to the various demographics of the participants and their responses when it came to overall satisfaction levels or opinions of the flexible course.

As the satisfaction levels of the participants in this study tended to be positive regardless of demographics such as age, educational level, nationality, or gender, this study provides no new insight, nor does it drastically go against the current research identified with regards to demographics and student satisfaction levels. It does support earlier research which finds that for students, flexibility in course delivery is one of the more important aspects and even more important than the student interactions between themselves within the course (Kim & Kim, 2021).

5.2 Course Design Satisfaction

Course design is an important factor in any course but even more so in a HyFlex learning environment as there are three modalities with which both the learners and teachers interact with. We see from previous research that there are many factors to take into consideration when designing a HyFlex course such as the technical requirements, online engagement, teacher preparedness, overall learning outcomes, and readying the students for the course (Detyna et al., 2023; Koskinen, 2018; Miller et al., 2013; Padilla Rodriguez, 2022; Sanchez-Pizani et al., 2022).

The results of this study indicate that participants agree that the course material and design was presented in a well-structured way, that learning objectives were conveyed clearly at the start of the course, the course material was arranged in a logical sequence and was understandable, and the course materials covered all the information they needed to meet the learning objectives. The majority of participants also reported participating during every class week either online or in person with most stating that they had their webcams active during the online sessions.

We did also see however that many students felt the online learning aspects, the webcams and other technology, was a hindrance and a barrier that they as well as their teachers and fellow students had to overcome. Students also noted that they required a new approach to learning as they needed to push themselves to become more independent and resist procrastination and other distractions which is in line with the literature where, for example, Broadbent (2017) wrote that the online learning environment can foster and create additional barriers such as those described.

Even though in this study it seems barriers such as procrastination did not have a large contributing factor to the satisfaction of participants, it is important to begin to investigate ways on how to reduce barriers such as procrastination and encourage those who feel they may procrastinate to utilize the various modalities which may work best for them in those situations.

The data from this research shows that the majority of participants found the base course design, which consisted of a mixture of modalities as well as utilizing the University of Iceland's LMS to present information, acceptable and were satisfied with the overall course design which goes against the majority of the research reviewed in this study where students reported dissatisfaction with various aspects of a HyFlex course (Bakach, 2021; Koskinen, 2018; Miller et al., 2013). One possibility for this could be that as a result of the pandemic, in addition to the experience faculty have at the University of Iceland with multiple modalities, these courses and students were more familiar with the structure as it was not a major change from what they had experienced the few years prior.

When it came to if the students felt they were a part of the learner group and learning community within the course, 68% of them responded that they did while 18% of participants completely disagreed and did not feel as though they were a part of the learner group or community. Unsurprisingly, the disagreeing group also responded that they did not prefer an online learning environment and were not as satisfied with the level of participation that occurred during the online sessions. This response from participants of feeling less connected to the other students and the community of learning as a whole is in line with the research on student interactions in a blended course by Jones & Chen (2008) and in a HyFlex course by Koskinen (2018) as many participants in this study mentioned that the community, and getting to know other students in their class was not only a challenge, but something they felt was extremely important as a part of the course.

This study also saw similar comments as researcher Mohandas (2022) did in where students felt the interactions between themselves needed a bit of a push from the faculty and some students even wanted teachers to provide more encouragement or even enforcement for students to not just disappear after the first few minutes of class. The

students remark about others disappearing after the first few minutes of class directly connects to this study as a participant in this research also mentioned the same concern.

Interestingly as well since almost half of the respondents of this study were reported to be overall displeased with the level of participation on the LMS canvas boards, participants felt the online presence throughout the course was fairly good. The reasoning could very well be that the participation levels in this HyFlex model with multiple modalities were perhaps different from what students were typically used to seeing throughout their educational experiences.

The amount of positive teacher presence in this study as seen through the results and presented in Table 4, showcases the positive feedback on the learning objectives, as well as data seen in Table 5 which shows the participation levels during class, showcases, as we saw in the research by Moore & Shemberger (2019), that even though the social and cognitive aspects as described in the community of inquiry framework (Swan et al., 2009) were lower than expected and somewhat negative at times from the student responses, the teacher presence seemed to make up for that negativity and perhaps, as Moore & Shemberger (2019) suggested, contributed to the increase in social and cognitive aspects. As the teachers for the courses in this study were accustomed to multiple semesters of hybrid and flexible course delivery in one way or another as a result of the COVID-19 pandemic, their course design had some of the pillars in place prior to the start of the course to both try and foster a greater community of learning and also ensure their presence was felt to all students regardless of modality choice.

Dissatisfaction with the learning community however isn't something that seemed to deter student participants from wanting to enrol in another HyFlex course as it seems from this study that the flexibility that was offered to them outweighed the community and social aspects of the course. We can see therefore that although there were negative aspects and perhaps lower satisfaction with the social learning and community within the course was lower than expected, it did not have a drastic overall negative effect on participants' satisfaction with the HyFlex course. Some research has found that the structure of a course can have more of an effect on overall student satisfaction within the course than other elements such as student-student interaction (Kim & Kim, 2021) which aligns with the learning community aspects not having a significant effect.

Again, we saw in this study that participants had mixed previous experiences with a flexible learning model and some even stated they were unsure if they had taken one before. It could be considered a disorienting dilemma for some but perhaps we can simply take the COVID-19 pandemic as something that fits that criterion and not the actual course itself as this study took place during the pandemic. We saw that students are overall positive

about the course but when it came to the pandemic, students and educational institutions were thrown into a scenario that they were perhaps not entirely ready for, and both were met with challenges of online and in-person classes and the social restrictions that forced one modality or the other. In other words, schools were forced to be flexible whether they were ready for it or not which may have been disorientating for students and teachers alike and perhaps now, as they both see that the technology is ready for this type of flexible learning. These courses, with the assistance of the pandemic, promote the transformative learning theory as described by Mezirow (2000) as the experiences throughout the pandemic may have shifted the views of students and teachers alike to which they possibly found a new perspective to how learning and learning delivery can be conducted such as in flexibility of delivery at the University of Iceland which may become even more solidified as the course delivery methods are refined.

Likewise in alignment with transformative learning theory, students, and teachers alike both may have moved towards a critical assessment of their previous and new experiences and perhaps saw that some assumptions on various new delivery techniques may have been wrong. Some also may have been right, or at least were now seen in a new light which again forced everyone to evaluate what they had known and the new reality they were now in. This assessment of the flexible course led students towards the next stage of looking at the options for new roles in not only themselves but looking at their peers and even the teachers. They were all in this together and as a group trying to best implement a strategy to work and learn within the limitations that the pandemic had forced upon them.

The students gained confidence in the flexible course overall as we saw in the results where almost all said they would enrol in another flexible course even if they had not taken one previously. Students noted that their way of working had to be adjusted as some were more prone to procrastination than others but saw it within themselves to work on that aspect and perhaps focus the modality of learning to one that suited their own needs.

5.3 Course Flexibility Satisfaction & Modality Choice

Course flexibility is really at the core of the HyFlex model as it allows students to choose what modality they wish to participate in each and every week (M. Abdelmalak, 2014; Beatty, 2007, 2019; Detyna et al., 2023). The results of this study indicated that the amount of flexibility offered in the course was very important to participants (89.3%) with the most common reasons reported for this were family and work with participants who elaborated on what flexibility meant to them mentioned that it helped them achieve a better work/life balance and experience less stress.

With a delivery model such as HyFlex, we are not only looking at a single modality but in essence three that run simultaneously (Beatty, 2019). Educators are tasked with developing a course which has equality between them with regards to learning outcomes and course content (Lakhal et al., 2014) which the literature shows takes additional time and effort to create effectively (Detyna et al., 2023; Padilla Rodriguez, 2022; Sanchez-Pizani et al., 2022). We then look at the students and see if they are ready to engage in a learning model such as HyFlex. We know from previous research that adults are more ready to learn when they feel it connects to them and how new knowledge can be applied to their own lives and current situations (Knowles et al., 2020) so the real question is, are students, and in particular this group of students, ready to learn in a new educational and learning model such as HyFlex?

Andragogy's second principle, the learner's self-concept, talks about the learner liking to be seen and experience themselves as self-sufficient and in control of their lives and their learning to which the initial thought on HyFlex was that this principle connected strongly to the flexible course model found in HyFlex as it provided students with the utmost control in when, and how, they would engage with the learning material and course (Beatty, 2019). The participant responses of this study are in alignment with this research as they were extremely satisfied with the level of flexibility and control they had over how they were able to interact with the course.

Adult students like to be treated like adults and want to be in control of their lives and learning experiences and when the opposite occurs, we see a drastic change in satisfaction levels and learning effectiveness as mentioned in various research papers (Jiusto & DiBiasio, 2006; Lee et al., 2002; Shapley, 2000). In 2010 for instance, the University of Utah School of Medicine enacted a new policy that required students to attend every class activity and they saw from 2010-2016 after that change drastic drops in the levels of student satisfaction as a result (Lamb et al., 2020) with students having directly reported their dissatisfaction with the lack of flexibility that they were offered and even the fact they felt they were being treated as children rather than the adults they are.

This positive response to the flexibility offered in this study is directly in line with previous research studies that also found even with concerns or drawbacks from teachers or students on various specific aspects of a HyFlex course, the students overall find flexibility both the most attractive aspect of a HyFlex course and they noted high levels of satisfaction overall with both the flexibility and HyFlex model (Bakach, 2021; Koskinen, 2018; Miller et al., 2013; Rhoads, 2020)

This study also found that most participants attended the course in a mixed mode, meaning that they switched their learning modalities at least once at some point during the course. Those who did not switch modalities were found to have a variety of learning

modalities in which they interacted with the course with online synchronously being the most common followed by in-person learning, and then online asynchronously. Interestingly, the group of students who did not switch modalities all responded that they would enrol in another flexible course and in their free text responses that group mentioned the importance of the flexible course in their lives even though they didn't take advantage of the ability to switch modalities.

One of the participants responded that they felt the course flexibility was "extremely not important" and two respondents were "neutral" about it. As the participant who marked that it was "extremely not important" also stated they changed modalities and expressed that family and work obligations was what made it important to them, it is assumed that participant simply chose that answer accidentally as that view does not line up with any of the other responses they provided. That one participant is therefore excluded from being seen as negative towards course flexibility and as a result, none of the participants felt the course flexibility was not important. The two students who did state they were neutral about it did not switch modalities but other than that, there were no commonalities between them. They were both very different in age, different genders, studying at a different level with one as a bachelors student and one as a masters, one was satisfied with the level of participation in the course and the other wasn't, and many other contrasting responses. It's interesting to see here that it is perhaps not a course structure or learning model that is effecting student perception and perhaps even satisfaction, but maybe the individual student's own learning preferences.

We see this again with only one student responding that they would not enrol in another course that offers flexibly and that student also responded negatively to all learning modalities except in-person learning. Interestingly that student lived outside of the Reykjavik capital area during their studies at a distance that would be impossible to commute into the school. They had also mentioned that the flexibility offered was "extremely important" to them and they were the one respondent who was most dissatisfied with the online learning environment. The student also felt disconnected from the learning community and did not interact with other students equally in the various modalities.

As mentioned previously / above, open-ended questions on what participants disliked about the flexible course and why, or why flexibility was important or not, revealed many responses indicating the lack of a feeling of connections, this is in line with previous studies (Bakach, 2021; Detyna et al., 2023; K. T. Jones & Chen, 2008; Koskinen, 2018; Palmer & Holt, 2009) as although students in this study like the aspect of the flexibility, they found the largest hurdle to overcome in this type of course was creating a community of learners. This study saw that 29% of respondents mentioned a lack of social interactions and relationships

between their fellow students and lack of student engagement. Although 29% on its own seems not a massive number, it's important to see that this group is the largest among the negatives with the next highest grouping at 18% stating some aspect of self-discipline in the flexibility.

We can see that by the HyFlex model addressing the principle of the learner's self-concept and allowing them the opportunity to choose how they learn, we move the marker upwards on the student satisfaction levels. Allowing them the freedom to choose their own learning path and modality is seen by the participants of this study as something important, and even though a portion of students didn't even utilize it, they still felt that it was important to them.

With regards to the survey responses on learner modality preferences, although participants were able to answer that they preferred more than one learning modality, the preference is seen to be highest for learning at their own time which in essence relates to the overall flexibility provided by the HyFlex course and allowing students to choose when and where they engage with the learning. This was followed by in-class and in-person learning, and then lastly online learning. The participants who strongly disagreed with the online learning preference were also found to be less satisfied with the online learning environment, less satisfied with the participation during online sessions, less satisfied with the participation that occurred on the Canvas LMS discussion boards, and half of them suggested they would not enrol in another flexible course. This dissatisfaction with an online learning modality is in line with the research outlined by Koskinen (2018) and Miller et al. (2013) who both saw the lowest preference for online learning in a HyFlex environment.

We saw in this study the importance of flexibility for the students and that seemingly that flexibility and learner control over their learning experience had what seems to be a large effect on the overall satisfaction with the course and the HyFlex model. Some of the participants who were strongly opposed to online learning and wanted nothing but in person classroom session still rated the flexibility offered in the course as extremely important to them. It's interesting that some students preferred only one learning modality and didn't change modalities yet wanted that control.

It may be that the students simply like being in control of their own learning. One student even went as far as to say that in other courses they attempted (now that they knew of this HyFlex model) to have other teachers provide them with some level of flexibility they were experiencing in this study and their class to which their request for flexibility was rejected. That student noted that although their participation in this study was focused on the in-person modality, they see not only the value in the flexibility they were offered and

wanted a teacher who looked at and developed courses with a more student-centred approach rather than, as one participant put it, the “faculty being stuck in their ways”.

5.4 Student Satisfaction

It is at this part we begin to look at the satisfaction of students as a whole across all aspects of the course and the survey responses. If we look at the desire to enrol in another flexible course as a major satisfaction marker, we see that overall, 89% of respondents would do so. If we further take this 89% satisfaction and compare it to the University of Iceland’s own statistics on student satisfaction, we find that while the flexible course has 89% while the University has student satisfaction at 79% for the same educational level students (University of Iceland, 2020a). The high overall satisfaction levels as noting by the simple example of students wishing to take another course is in line with many studies explored throughout this paper (Bakach, 2021; Koskinen, 2018; Miller et al., 2013; Rhoads, 2020).

Looking at the satisfaction levels of the various modalities and the participations of each, we see that 64% of students were satisfied with the in-person participation levels, 64% were satisfied with the level of participation during the online synchronous sessions, and 43% were satisfied with the amount of participation in the online discussion boards. For those same modalities, looking at what responses were either “disagree” or “strongly disagree”, we see that only a single student reposted dissatisfaction with the level of participation that occurred during in-person class sessions, 11% were dissatisfied with level of participation that occurred during online synchronous sessions (n=3), and 21% were dissatisfied with the level of participation that occurred on the Canvas discussion boards (n=6).

We also find that 68% of students felt they were a part of a learning community in the course with one student who did not feel part of the learning community commenting that they felt a flexible course made it too easy for the other classmates to disappear from the course and ignore any comments or online posts from other students which although is not a high percentage, much like research outlined by Bakach (2021) and Koskinen (2018), did not appear to have a significant impact on their satisfaction levels overall on the HyFlex course.

Although many students reported on aspects of the flexible course they found extremely beneficial, there was a fairly even split on the aspects they disliked. Personal self-discipline was the largest pitfall gathered from the responses, followed by a lack of social interactions and relationships, lack of student engagement, and then technical issues. Many of the concerns participants in this study indicated mimic concerns found in previous research outlined in the literature review (Bakach, 2021; Detyrna et al., 2023; Koskinen, 2018) but the end result is apparent that most students were satisfied with the flexible learning model and

expressed that they would take another course like it in the future. The satisfaction levels are seen to be extremely high for some participants as the response from one shows they attempted to get this flexibility in another class but was met with resistance from the other teacher and the student was seemingly very frustrated with this. It's encouraging as a researcher to see that something a student experiences perhaps for the first time they want to have expanded in their learning across multiple courses. The excitement and sheer passion that this student had for the flexibility was not only limited to the sheer mechanics of how a flexible course works, but they were under a realization that the teacher for this flexible course focused on student needs and revolved learning around the students whereas their other course they felt the teacher was stuck in their old ways and designed the course to be in a way that was the easiest for the teacher and not focused on student needs.

5.5 Summary

When now revisiting the research questions, for research questions one which asks about how the HyFlex model effect student satisfaction, the survey results and analysis show high participant satisfaction levels across almost all aspects of the flexible course in this study. We saw this high satisfaction level even when some of the participants disagreed with various aspects of the course. For example, two participants disagreed with the statement that the learning objectives were conveyed clearly at the start of the course, and one even felt the course materials did not cover all the information needed to meet the learning objectives and although disappointing, those two students did express that they not only saw the value in the flexible course but stated that would enrol in another HyFlex type flexible course.

This notion that some participants were dissatisfied with various aspects of the course and yet they would still enrol in another flexible course design shows that any challenges or barriers participants faced did not have a significant negative effect on their perception of the flexibly aspects of the course. We can also see the opposite however as some students who were extremely satisfied with the information presented to them and felt the learning objectives and course materials were clearly conveyed at the start stated they would not enrol in another flexible course.

For research question two which asks: "How does flexibility in students' participation in a course impact student satisfaction?", we see from the data that although two participants were "neutral" on the importance of flexibility, the rest stated it was either "somewhat important" with the majority stating it was "extremely important". This in conjunction with the open answers provided show that although flexibility alone is not the single marker for

satisfaction, but the learning experience seemed to have met if not exceeded their expectations which according to Diep et al. (2017) is a critical part of the definition of satisfaction.

For research question three which asks about what can students' engagement with a HyFlex course and the various modalities offered can tell us about student needs or preferences when it comes to the organisation of university courses? We very clearly see that the participants highly favoured the ability to choose how they engaged with the learning materials. We also see from the data that participants varied in what modality they preferred, but overall, it was the learner choice of what modality they used and when that seemed to be the most critical factor rather than a single modality providing any real conclusions on student needs. The end result however, is that this study clearly tells educators as they are developing future courses to keep in mind and develop a course that features learner choice and flexibility of modalities as those two aspects meet the needs of students with each student having their own preference for each given week.

6 Conclusion

This thesis was built on a small study into the satisfaction of two groups of students at the University of Iceland on their satisfaction with learning under the HyFlex model of learning. The sample size was small and therefore it does not allow for any generalizations about satisfaction levels, but it does provide an insight into students' experience with the HyFlex model, the alignment of student satisfaction within a flexible delivery model at the University of Iceland and previous research, and thus provides faculty with insight into the student preferences about flexibility as well as some challenges facing students learning through a flexible course delivery model.

We saw that students came from a variety of backgrounds and across different educational levels but yet ended with almost all noting high satisfaction with the flexibility offered and stated that they would almost all take another flexible course should it be available to them. Some students even were attempting to attain a greater level of flexibility in other courses they attended during this study. This indicated how positive an impact it had on some students and how much this benefited them in one way or another.

The study was not focused on researching if the HyFlex model resulted in better grades for the participants compared to a non-flexible course or actual learning comprehension, but simply if students were satisfied with a flexible delivery model. This study also didn't compare the satisfaction levels against a typical course and therefore there's no information gained within this study on whether this flexible course scored higher in satisfaction levels or not against other course delivery types. We do however see that the satisfaction levels of this study's participant group is higher than that reported overall by students at the University of Iceland (2020) and therefore we can state with some degree of confidence that there is an increase in the satisfaction level against other courses.

That all being said, there are too many other variables to take into account when describing student satisfaction. We cannot narrow it down to simply being the flexibility (although students were overwhelmingly satisfied with that), we must look deeper into if perhaps it was the individual teacher who played a role in the satisfaction levels. Perhaps the teacher was one whom students overall were highly satisfied with regardless of the flexible course or not. We see an example of this with one student having mentioned they had hoped another teacher would be more like the one from this study.

With that being said, again we can state that based on the responses of students, even though there are many factors we can look at as having an influence we did see that overall satisfaction levels were very high in these courses and that student participants rated not

only the flexible course as being highly important to them but they also rated high satisfaction as a result across many aspects of the course.

The biggest challenge of this study and the results is of course the timeline in which this study took place, right after almost 2 years of COVID lockdowns and distance learning and ironically right before another wave of COVID hit Iceland and resulted in more restrictions once again. The questions that should be asked at this point are if the COVID-19 lockdown had an effect on the student perceptions of the course. Were they accustomed more to online learning, or perhaps even more ready to escape the lockdowns and restrictions imposed over the pandemic and were eager to return to the classroom and socialize. It's impossible to know for sure in this study alone but with that uncertainty in the air, additional research on the HyFlex model is warranted to determine if there was that external factor influencing the student satisfaction levels. I do believe that based on the data gained and the responses from students that a more flexible approach is something that raises the satisfaction of students, and that faculty and educational institutions should investigate adding into their course offerings.

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Appendix A: Survey Questionnaire

1. Gender
 - a. Male
 - b. Female
 - c. Other
 - d. Prefer not to disclose
2. Nationality
3. Age
4. Level of Study
 - a. Bachelor's degree
 - b. Master's degree
5. What City did you live in during your studies?
6. Are you currently employed?
 - a. Yes
 - b. no
7. If you are employed, what is your workload?
 - a. full-time
 - b. part-time
8. Did you require student loans in order to attend your studies?
 - a. Yes
 - b. No
 - c. Prefer not to answer
9. Course structure (strongly disagree, disagree, neutral, agree, strongly agree)
 - a. The Course material was presented in a well-structured way
 - b. The learning objectives were conveyed clearly at the start of the course
 - c. The course material was arranged in a logical sequence and was understandable
 - d. The course materials covered all the information I needed to meet the learning objectives
 - e. I participated during every class week either online or in person
 - f. I often have my webcam active in online sessions
10. How important for you, was the amount of flexibility offered in the course? (extremely important, somewhat important, neutral, somewhat not important, extremely not important)
11. Why was it [not] important to you? (free text)
12. Describe what the course delivery flexibility meant for you (free text)
13. Which mode of participation did you plan on using during the semester?
 - a. face-to-face only
 - b. online only synchronously
 - c. Online asynchronously

- d. a mix of online and face-to-face
14. Did you switch between participation modes throughout the semester?
- a. Yes
 - b. no
15. If you switched modes throughout the semester, how many times did you change from one mode to another?
- a. 1-2
 - b. 2-4
 - c. 4-6
 - d. 6+
 - e. Did not switch
16. Have you previously been enrolled in a course which offers flexibility in how you participate week by week?
- a. Yes
 - b. No
 - c. Not sure
17. Given the chance I would like to be employed while studying at school
- a. Yes
 - b. No
 - c. Not sure
18. Satisfaction (strongly disagree, disagree, neutral, agree, strongly agree)
- a. I am satisfied with the online learning environment
 - b. I prefer leaning in a structured classroom environment
 - c. I prefer learning in an online environment
 - d. I prefer to learn independently at my own chosen time
 - e. I am satisfied with the level of participation that occurred during in-person class sessions
 - f. I am satisfied with the level of participation that occurred during online synchronous sessions
 - g. I am satisfied with the level of participation that occurred on the Canvas discussion boards
 - h. I interacted with other students equally in both online and in-person (in-class or synchronous) settings
 - i. I feel I am a part of the group and the learning community of the course
 - j. I would enrol in another class offering participation flexibility
19. What did you like about a flexible course? (free text)
20. What did you dislike about a flexible course? (free text)