An exploration of the effects of synchronous and asynchronous learning activities on student nurse experience during the Covid-19 pandemic

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Abstract

The COVID-19 pandemic has presented a significant disruption to the Higher Education sector. This has been particularly evident within health and social care education, with the added need for both students and educators to support the frontline emergency workforce. Innovative remote teaching and learning approaches were urgently required to enable students to continue to achieve and succeed on professionally accredited courses, whilst learning remotely. This article presents student nurse perceptions and experiences of synchronous and asynchronous online learning activities during the peak of the COVID-19 pandemic. It explores themes around student engagement, attainment and future curriculum design. A mixed methods approach including both qualitative and quantitative measures was used in the action research study. Qualitative and quantitative data was collected using focus groups and questionnaires. Thematic analysis and frequency analysis were used to interpret data, with key emergent themes around: Lecturer engagement and interactive content, zoom fatigue, peer collaboration, self-direction, motivation and anxiety. During the action research process, and through analysis of data, results show that student experience is not reliant on a single approach to learning, but a wide range of elements influence and result in a successful online learning environment, for both the student and educator.

Key words

Engagement, synchronous, asynchronous, Covid-19, Peer-collaboration, student nurses, online learning

Link to article

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Introduction

The COVID-19 pandemic has presented the Higher Education (HE) sector with a range of challenges, predominantly due to the major pedagogical shift required to convert learning from the traditional face-to-face format to fully remote teaching and learning (Mishra *et al.*, 2020). Within nurse education, not only has an urgent adaptation to online course delivery been required, but a simultaneous change to curriculum design has been necessary to enable students to be part of the frontline emergency workforce (Jackson *et al.*, 2020). Barriers to student access to teaching and learning materials such as a lack of reliable wireless internet, access to a personal computer and up-to-date software to support video-enabled content has had the potential to restrict student success, with limited alternative options available (Morin, 2020; Karaaslan *et al.*, 2022).

When viewing the national response from healthcare students in relation to the online learning provided during the COVID-19 pandemic, only 43% of students found the online learning fulfilled the need for face-to-face contact, with 72% agreeing that they struggled to complete the learning outcomes in the context of online learning (HEE, 2021). Despite these concerns, there are long-term positives for HE with the potential to create a wider range of courses, delivered in a range of innovative ways, that traverse geographical boundaries (Ainsworth and McKenzie, 2020). However, to enable the delivery of courses to continue in some form of remote or blended delivery, it is essential to evaluate the quality of these quickly adapted courses for the long-term. This simple transfer to an online environment may not stand up to long-term high-quality outcomes (Carolan, 2020). The International Association of Universities (IAU) survey on the impact of COVID-19 on HE providers (IAU, 2020) supports Carolan's forecast, finding that the maintenance of quality in the emergency

transfer to distance learning has been variable internationally. The report identifies a requirement to further explore innovative pedagogical approaches in the delivery of a combination of asynchronous and synchronous learning.

This article identifies with these findings and, through the use of an action research study, aims to review changes made in response to the pandemic. The action research cyclical approach in the form of 'Plan, Act, Observe, Reflect' (Carr and Kemmis, 1986) was utilised to research and transform personal practice. This research study focussed upon one module of the theoretical content provided to first-year (HE level four) nursing students. Since the start of the pandemic, a flexible approach to teaching and learning has been adopted. Students access asynchronous materials, followed by synchronous encouragement of discussion, sharing of experience and a focus on individual learning needs (Blondy, 2007).

An analysis of the data collected through primary and secondary research provides an evaluation of the delivery adaptations that have been made. These results offer useful insights into student experience in order to inform future practice across all of the modules and will be of relevance to a wider audience teaching across a variety of subject disciplines. The main objective for this piece of research is to critically analyse student nurse perceptions of online synchronous and asynchronous learning activities in respect of student engagement.

Literature review

The requirements to social distance and reduce viral spread in response to the global COVID-19 pandemic has caused a rapid pedagogical shift to online distance learning within HE (Carolan, 2020). This shift has been an emergency response, without the time to consider and plan online curriculum design or effective teaching and learning approaches in advance. Termed by Hodges *et al.* (2020) as 'emergency remote teaching', they identify this unique approach as distinctly different to the well-established, comprehensively planned forms of online learning pre-COVID-19. Whilst necessary to provide an emergency response to continue teaching and learning for students in nurse education, it has been identified that more considered and systematically planned approaches are required for the long term (Morin, 2020).

Online teaching and learning – a definition

Owing to an overlap of definitions and array of terms used, online learning is difficult to define. Singh and Thurman (2019) conducted a comprehensive literature review, concluding that online learning essentially: includes the use of technology, is time related in synchronous or asynchronous approach includes physical distance, and involves synonymous terms and concepts. Their research also identified missing elements around the learning techniques and outcome achievements gained from this type of learning.

Despite an increase in student enrolment for distance learning courses pre-COVID-19reported by the Higher Education Statistics Agency (HESA) (2020), student experience remains mixed. Bernard *et al.* (2004) conducted a comparative study on distance education versus face-to-face provision, finding variable student outcomes. Importantly, they identified the difficulty with comparison studies when online learning can be used in many different ways, such as to bridge the gap created by distance, or used to supplement face to face provision.

This difficulty in definition and limited comparative data may have contributed to the previous reluctance, identified by Dharwan (2020), of some HE institutions to fully adopt online learning. With this decision no longer being optional since the COVID-19 pandemic, providers have been required to rapidly respond with alternative provision that maintains high quality learning and provides innovative solutions (Ligouri and Winkler, 2020).

HE Providers must ensure they continue to adopt inclusivity in their online provision, as outlined within the Higher Education Academy (HEA) commissioned guide on inclusive curriculum design (Morgan and Houghton, 2011). An inclusive curriculum not only focusses on specific groups of students, such as those with identified learning needs, but provides a range of experiences that are suitable for all. This should reflect the range of student identities and diverse student population with benefits shown to improve retention, satisfaction and attainment (May and Felsinger, 2010). This was an important consideration during the response to the COVID-19 pandemic, as delivery needed to be inclusive and flexible to meet the needs of students with a range of childcare, financial, ICT device and WIFI-access issues (Morin, 2020).

Some of the challenges of online learning

Even before the Covid-19 pandemic, there has been a call for nurse educators to incorporate online learning into their courses to improve engagement and creativity in the learning process as part of a constructive alignment curriculum design (Stott and Mozer, 2016). Rossman (1999) outlines findings from the delivery of an online course that comprised of an asynchronous discussion forum and directed online study. Results found students developed skills in self-directed learning and personal leadership but that lecturers were required to encourage online engagement in the form of an 'e-nudge' and needed to heavily facilitate learning to ensure student participation and discussions took place. Yang (2008) also supports asynchronous online discussion forums, as their research found these types of forums enabled students to reflect, think freely and ultimately harness deeper critical thinking versus the restrictive nature of the traditional classroom. However, equally, Yang (2008) emphasised the requirement for facilitation to enable collaborative discussion online to ensure a successful student experience.

Hodges *et al.* (2020) identify the importance of learner characteristics within different modes of learning: adult students needing flexibility found in asynchronous sessions, whilst a younger undergraduate student may require the structure of mandatory synchronous delivery. However, an inclusive approach should be attentive to the range of student identities possible, not restricted by age alone (Grace and Gravestock, 2009). Lee and Choi (2011) also present concerns broadly with online delivery, citing issues such as student work commitments affecting motivation, difficulties with a perceived lack of feedback online and, significantly, the altered lecturer-student interaction impacting whether students remained enrolled on courses.

The lack of interaction online between lecturers and other students is commonly found in the literature (Yuan and Kim, 2014), with a direct link to reduced student satisfaction levels. This only improved when students felt less isolated and part of a learning community online (Pigliapoco and Bogliolo, 2008). Research conducted by Goodwin *et al.* (2022) also identified that students regarded interactivity as central to the quality of the learning experience, and that online learning did not offer the same level of interactivity as classroom-based.

The research suggests that, with either asynchronous or synchronous approaches, it is essential to ensure a high standard of facilitation to support the development of an online learning community for students, with regular opportunity for interaction with peers and lecturers (Karaaslan *et al.*, 2020).

Synchronous online classes have been positively received during COVID-19 teaching, with Junod Perron *et al.* (2020) finding that live online discussion forums improved student motivation, reduced isolation and enhanced engagement when compared with in-person seminars. However, it also found that whilst the live interactive use of technology was commended, those students considered shy would 'hide behind the screen'. Hall (2020) also explores this, confirming two types of students: the internal processors that need time to respond and reflect, versus the external processors that can respond quickly. This could evidence the importance of a mixture of both synchronous and asynchronous methods to engage all types of student, enabling those internal processors to reflect on flexible content, before attending a synchronous discussion forum. Hall (2020) also importantly recognises the issue of Zoom fatigue with synchronous sessions and the importance of breaks from the screen.

Online learning and nursing students

The COVID-19 pandemic has had a substantial impact upon applications to pre-registration nursing courses across all demographics, with total applications increasing by 32% in 2021, up by 27% in the school leaver age group and with a 39% rise in those aged 35 and over (Universities and Colleges Admissions Service (UCAS), 2021). Considering the student demographic on the pre-registration nursing degree is of significance when planning online delivery. Previous academic experience and achievement has been linked to a reduced attrition rate on online academic courses (Levy, 2007). Utilising this information for the provision of course content for a non-traditional student cohort is crucial as those with limited prior experience may therefore struggle with online delivery.

Interactive and relevant learning activities have been highlighted as important for online learning to improve motivation, engagement and resultant achievement (Stott and Mozer, 2016). A recent study emphasised the positive use of social media and socially interactive content with peers during online learning, finding a positive

psychological effect for nursing students during COVID-19 remote delivery (De Gagne *et al.,* 2021). Whilst the positive impact of online interaction was identified, the analysis of discussion on social media also highlighted that many students felt unmotivated and less competent at self-direction online, further evidencing the necessity for the lecturer to stimulate motivation and support self-direction wherever possible. This requirement for interaction and facilitation further identifies the need for synchronous delivery elements to provide directed learning for those students with limited self-motivation and direction to engage with the asynchronous aspects.

Asynchronous sessions were preferred by nursing students in a recent exploration of their experiences during COVID-19 remote delivery, with students preferring the option to watch recorded lectures in their own time and pace (Wallace *et al.,* 2021). Furthermore, the researchers suggest the need to offer a combination of asynchronous and synchronous classes to enable flexibility, especially during uncertain times when students have increasing work demands in practical placements during the pandemic. This has been substantiated by Rafi *et al.* (2020), further establishing that recorded classes were the preference of most students in a medical course due to the convenience it provided.

Providing a flexible learning environment that brings convenience and choice with the ability for students to collaborate has been established as a key requirement for successful online learning. Sumuer (2018) states that the self-direction required of students to engage with a flexible online learning environment should be supported with scaffolding techniques. This ensures students have the technological and online communication skills to self-direct their learning appropriately when given effective assistance. Additionally, critical thinking skills are considered to inform deeper levels of learning (Biggs and Tang, 2011) and are an essential component of nurse education and registered nurse standards of proficiency (NMC, 2018).

Student attainment

Limited research has been conducted to establish causation between synchronous or asynchronous learning and student attainment. However, Nieuwoudt (2020) has recently focused on the attendance in synchronous and asynchronous classes and how this affects academic success. Interestingly the research finds that, whilst it is

important for students to attend sessions, there was no significant difference found between whether attendance was in a live synchronous or recorded asynchronous class. Importantly, there was correlation found between the number of hours of participation in online content and academic success. This identifies a clear implication for practice to provide varied online activities that engage and increase participation and interaction online, be it synchronous or asynchronous. Academics have corroborated this further in a commentary recently published by *Times Higher Education* (THE, (2020). Here, one academic recognises the benefits of more questions and engagement from students in online discussion forums versus live lectures, identifying that asynchronous modes have supported more student types and personalities. However, another academic anecdotally reports feeling a lack of any deep connection with their learners (THE, 2020). This may relate to academic confidence with online learning and is reflected in the student experience, with 52% of students feeling only somewhat or not at all confident with online materials (Office for Students) (OfS), 2021).

This literature review has identified the importance of lecturer facilitation, online interactivity methods and the support required for students to effectively engage with online content to ensure satisfaction.

Methodological approach and data collection

The main objective for this piece of research was to critically analyse student nurse perceptions of online synchronous and asynchronous learning activities in respect of student engagement. Educational Action Research (AR) aims to improve teaching practice through participation and reflection in a cyclical way, adopting experiential learning approaches (McPherson and Nunes, 2004). This is a simultaneous process focussing on personal practice and knowledge generation whilst initiating an action to improve learning (Swinglehurst *et al.*, 2008).

This AR study consisted of a lecturer-researcher examining one cohort of students, studying a level-four module at a university in Greater Manchester. The approach aims to provide deeper reflection on personal practice and to inform pedagogical approaches. Gibbs *et al.* (2015) argue that although this approach dominates most AR studies, the research process is often not transparent or clear because of the

subjective nature, making wider applications difficult. However, Mills (2014) outlines the difference in AR from traditional research is that it is not governed by traditional methodologies, but a strength lies in its flexibility to the context and needs of the student and lecturer. It does, however, remain important to determine the process followed, to improve validity and reliability.

Following Mills (2014), a timeline was produced to make clear the anticipated plans, outlining when and how the study would develop through one cycle. This also ensures transparency (Phillips and Carr, 2006) (Table 1).

Phase 1 (Jan – Feb)	Phase 2 (Early March)	Phase 3 (Late March – April)	Phase 4 (May – June)
Plan- Identify focus and review current literature on both action research approaches and around the identified issue of asynchronous and synchronous online methods. Explore researcher beliefs reviewing reflective blog posts. Write research question and objectives. Collect existing data on the problem and change already completed and decide modes of data collection.	*Act, Observe* - Collect initial data via recorded focus group with students and knowledge polls and quizzes following asynchronous and synchronous delivery. Continue this data collection to gain information on the curriculum modifications during online delivery toward goal for data saturation. Meet with supervisor and mentor to discuss progress. Recruit critical friend.	*Reflect, Evaluate* - Distribute student questionnaires to gain further insight from previous data collection. Analyse complete data set and reflect on findings. Publish full data sets in report to show transparency.	*Modify, start cycle again* – Make any modifications in discussion with wider team and present information to wider department. Plan for next cycle considering wider involvement of team.
One key question posed *'what will it tell me when I find it?* This ensures the data collected could help to address the identified issue and meet the required purpose to ensure validity and reliability (McDonnell and McNiff, 2016).	Focus group was designed to gain insight into the perceptions and experience**s** of students of synchronous delivery methods they had experienced thus far in their online modules. Students studied had experienced predominantly synchronous delivery methods only at this point in the AR study.	*Researcher designed Questionnaires* *Institution Module Evaluation Questionnaires (MEQ's)*	*Researcher diary completed*

Table 1: Research phases and planned tools used

Mills (2014) also highlights the importance of 'reconnaissance'; the reflection on personal values, educational theories that inform personal practice and the context of the wider socio-political landscape. Through exploring this, researcher bias can be

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reduced by making the personal position clear. Denzin and Lincoln (2011) similarly define this as the expression of the researcher's world view. Within this study, the researcher has an interest and commitment to the use of innovative technology to enhance inclusive learning for students. As the AR study is rooted in the individual context of personal practice and student experience, it would be incorrect to isolate these personal interests completely as they form the individual critical analysis of personal practice to bring about improvements. Positionality was completed as part of the planning stage through literature review and the review of critical reflective blogs developed on personal pedagogical approach. Furthermore, through reflective discussions with a critical friend at each research phase and maintenance of a research diary, the researcher was able to reduce potential bias through reflexivity and transparency of approach. Through the process of reflection, deeper insight into pedagogical practice can be gained, especially in the areas of student engagement and facilitation of learning (Gibbs *et al.,* 2004).

Parahoo (2014) outlines the importance of ethical implications in every part of the research process, relating this to the International Council of Nurses (ICN) four rights for participants (ICN, 2003). To enable student participants in this study to gain full disclosure of the study and maintain transparency, students were provided with a Participant Information Sheet with written description of the aims and purpose of the study, with their anonymity guaranteed throughout. Students were also given the opportunity to withdraw at any point. It was also made clear that any involvement in the study did not have any impact upon their success in the module of study. This is important to make clear to students, to ensure they are aware the role of lecturer and researcher is not blurred to the point that motives affect their learning outcomes (Parahoo, 2014). Informed consent was gained from all participants and the study followed the Code of Practice on Ethical Standards for Research involving Human Participants at the University of Bolton and gained ethical approval.

Purposive and opportunistic sampling took place as the study focussed on the researcher's taught modules and personal practice and therefore the students were directly approached to be part of the AR study (Table 2: sample information). The recruitment of participants was via email to all current students as well as verbal invites on timetabled Zoom sessions; an announcement on the Moodle module platform was

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also utilised to help to increase attendance and questionnaire responses. This does present risks where participants may feel a moral obligation to volunteer (Van Wissen and Siebers, 1993). To reduce this risk, an information sheet was shared and participants were regularly reminded that whether they participated or not, would not impact on their studies.

Sample information	Number
Sex	
Male	5
Female	14
Age	
20-24	3
25-29	3
30+	13
Total Students	19

Table 2: Sample information

Data gathering and the methods used

Data has been gathered throughout the seven-week period when the module was being delivered, enabling the iterative cyclical process (McNiff, 2013). A mixed-methods approach was utilised throughout the different phases (Tabe 1). Qualitative methods, such as a focus group and free-text Module Evaluation Questionnaire (MEQ) responses, were utilised, alongside quantitative methods found in the questionnaire MEQ set questions.

Focus groups enable understanding instead of inference, providing some insight into experiences in relation to personal teaching practice (Parahoo, 2014; Krueger and Casey, 2015). The focus group was one hour long and took place via Zoom, utilising the recording feature. Nineteen students were actively involved in the discussions during the one-hour focus group. All these participants had been taught theoretical content solely online, synchronously, since the start of their degree programme. They

therefore had no experience of module delivery in the traditional classroom setting during their BSc course. The group was facilitated using simple prompts and questions to guide discussion (Table 3), with the researcher being mindful not to bring bias, only prompting to ask questions or to intervene to avoid dominant members only discussing their experiences (Smithson, 2000). A transcript of the focus group was produced and themes were gained from discussions. This was developed through the process of thematic analysis, a common method used to identify patterns within the discussions (Wiggins, 2004).

Focus Group Questions
How has your satisfaction been with your online learning since you started the course?
Starting the course fully online during lockdown, how do you feel?
(in response to a discussion) So you feel you have missed out on things?
Can you explain the ways your lectures been delivered so far, almost a year into your course?
Have you had discussion sessions scheduled in your modules so far?
You have all mentioned collaboration, what are your views on Zoom and the ability to collaborate?
Do you access Moodle (Open-Source Learning Platform) to access the self-directed aspects of your module content?
In flexible sessions (asynchronous), when you have had quizzes to test your knowledge, how does this impact your learning?
(in response to a discussion on mature study and technology use from a learner) Do you think technology can affect anxiety levels then in this case?
If you were able to design your own module of learning, what would it be like, how would it be delivered do you think?

Table 3. Focus Group Questions

A Questionnaire was created using the themes gained from the focus group, with ten Likert-type closed-ended questions, implemented during 'Phase 3'. The questionnaire aimed to explore student perceptions of their online learning experience after they had experienced both the synchronous and asynchronous delivery methods through the module.

Module Evaluation Questionnaires (MEQs), created by the organisation provided both qualitative and quantitative data. This was given to students at the completion of the module, so reflected both synchronous and asynchronous sessions and therefore was not session specific.

Validity and reliability

Participant validation was adopted following the focus group data analysis by means of validating and checking the key themes with the participants. This enhances rigour through verification and accuracy checking (Stringer, 2014). Multiple-choice questionnaires used in the AR study have a good level of reliability, in that they are structured and objectively scored (Haladyna, 2004). Furthermore, the questionnaire produced was aligned with the key themes from the focus group to enable further verification and quantifiable responses to confirm findings, improving validity.

A critical friend-colleague was used which brought an alternative insight when considering the data initially (McNiff, 2013). This reduced the chance of biased assumptions by seeing the process from a different viewpoint. Baskerville and Goldblatt (2009) refer to this as a reframing of current practice, which is also considered a key goal of action research.

Limitations of the research

Due to time constraints, the questionnaire was not piloted to gain internal reliability scoring, as suggested in research literature (Polit and Beck, 2017; Parahoo, 2014). Equally, by involving colleagues to support this process, content validity, face validity and construct validity could have been established, thereby improving the quality and trustworthiness of the data gathered (Considine *et al.*, 2005). The questions, whilst well considered, could have been improved through the process of piloting. On

reflection, as per the suggestions outlined by Sharp (2012), questions could have been shorter and clearer to avoid ambiguity. Positively, through the use of self-designed questionnaires in addition to institution set MEQs, validity of this data is improved by recognising similarities in both data methods.

Interpretation of the data

The main researcher has a particular interest and commitment to the use of innovative technology to enhance inclusive learning for students. It is through this lens that the data has been interpreted and analysed.

Data was gathered from this study after an action had already been implemented: the emergency move of combined asynchronous/synchronous online delivery during COVID-19. Therefore, the data gathered was to primarily ascertain the possible effects of this change on student satisfaction and attainment. Data was utilised both formatively, to inform changes to the design or delivery of sessions, and summatively in the form of AR findings (Mills, 2014).

The process of data analysis and interpretation within this study has followed standard procedures to maintain methodological rigour. Quantitative data from the questionnaires and MEQ's has been thoroughly reviewed and analysed descriptively by means of frequency (Parahoo, 2014). Qualitative data gained from the focus group was analysed using the Colaizzi (1978) thematic analysis method (Colaizzi, 1978 as cited in Morrow *et al.,* 2015). The focus group transcript was read a number of times to get an overall view of the discussion. Next, significant statements were extracted from the discussions and meanings were formulated from these statements. These meanings were then clustered together to create key themes, which were written in a list to share with participants to verify and validate the data (Cresswell and Cresswell, 2018). The final themes were then further explored by creating questions based on the key themes for the questionnaire to enable deeper exploration of the main points raised. Seven main themes were identified (Table 4), which are explored in this section of the article.

Key themes arising about synchronous-only online learning
Lecturer engagement and interactive content
Zoom fatigue
Peer collaboration
Self-direction and motivation
Anxiety

Table 4: Emerging themes from the data, gathered during the focus group

Results, discussion and analysis

Although students were asked what their satisfaction had been during synchronous online delivery, some students predominately associated this with achievement of their end goal, with less concern about the journey toward that goal, other than gaining registered nurse status. This correlates a link between attainment and satisfaction generally, but also highlights that some students felt that attainment resulted in satisfaction and not necessarily satisfaction resulting in attainment. They felt that their understanding and knowledge of the content was improved when the lecturer was engaged. It was therefore apparent that students strongly linked their satisfaction and experience to the way the synchronous session was delivered and how involved the students could be with that process. This contradicts the idea that it is only through attainment of the qualification that results in satisfaction.

Lecturer engagement and interactive content

A consistent finding was the importance of interactive content for students. Students felt that the way an online session was delivered, synchronously, by the lecturer was of importance. This related to the student perception of the way the lecturer engaged with the students during the sessions, particularly around the session being fun and the lecturer demonstrating enthusiasm.

> Student 1: "I think it's how it's…delivered as well by (). They can really get you engaged and you know, make it fun"

Students reported the need to have interactive quizzes to both motivate them to complete asynchronous sessions but also to check that they fully understood the

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content through formative feedback. Some students reported this as essential to identify error as opposed to achievement, identifying this as important when lecturers are not with them, as found in the traditional classroom. Research carried out by Stott and Mozer (2016) and Goodwin et al. (2022) also highlights the need for interactive elements to aid motivation and achievement. The research data correlates this claim as students reported the need for interactive elements during synchronous sessions to keep their attention and to give them a reason to complete self-directed elements.

> Student 2: "…I definitely think I would find it easier if like the presentation was split up a bit and we went into an interactive activity and then came back to the presentation, just to keep us going…"

The participants also valued opportunities to bring their own experiences to the learning environment, particularly through group work and discussions.

> Student 9: "I really felt really supported because the way the lectures were done, he did lecture to us and we did group discussions as students and we were given time to share our views…"

However, if the lecturer and the session content was not delivered in an engaging way, the participants felt as if they were teaching themselves.

> Student 7: "…I find that a lot harder at home, with all these distractions in the background, I think I was teaching myself, she wasn't teaching us…"

> Student 4: "…but I found as well with a lot of the learning it has kind of just been like here's a PowerPoint we're going to read to you…"

Questionnaire data revealed that almost 90% of respondents equally found interactive elements to be important or extremely important in knowledge development during synchronous sessions. Furthermore, 32% of respondents reported synchronous sessions as preferable in relation to knowledge development on the module.

The importance of effective lecturer facilitation/engagement was identified in the initial data, supporting Yang (2008) who emphasised the importance of effective facilitation to ensure a successful student experience. In the same study, Yang (2008) highlighted

the deep critical thinking skills of students following asynchronous sessions. This was echoed in this AR study in researcher observations, finding students displayed deep learning through reflection following asynchronous/synchronous discussion sessions, which could have the potential to improve student attainment.

Self-direction and motivation

A concern regarding student motivation and their ability to self-direct their studies was identified early in the study, with students reporting they were easily distracted by competing interests with family life and commitments. Lee and Choi (2011) identify these aspects as serious attrition risks with online study. As the synchronous/asynchronous combined method requires self-directed asynchronous sessions to be completed, this presents a risk of students either dropping out of the course, or not completing the content which could affect ability to pass. This not only can affect attainment, but students linked their satisfaction with achievement, meaning the two were found to be inextricably linked.

Students are expected to engage in flipped learning opportunities, during the module, known to them as self-directed aspects of their learning. Students reported their experiences of self-directed content as being directly related to their motivation levels.

> Student 3: "…Speaking for myself, as soon as you say 'self-study' or to go off and do something, I will do everything but that."

However, the majority of respondents (64%) reported feeling motivated or very motivated to complete asynchronous sessions. Motivation to complete prior, asynchronous learning was improved if the session content incorporated an element of interactive content. Additionally, motivation was also increased if they thought their learning would be 'checked'.

> Student 6: "…So when you do the quizzes…that gives you a bit of motivation to do it. But when we go away and do it and don't come back and talk about it, that is when I am likely to think 'well no one is going to have a clue whether I went away and did this'…"

This was further evidenced in the questionnaire, with the majority of students (78%) stating they needed a task that is checked to support asynchronous sessions. It was also identified that interactive elements like quizzes, helped students to gauge their understanding when they got incorrect answers, directly feeding into their perception of attainment.

> Student 16: "I agree, I like them, it makes you a bit more accountable, you feel like you have to do it. I learn best…getting it wrong as well. You realise you don't know it when you thought you did."

The environment where the student studied was also linked to their motivation to self-direct their learning. Whilst some students found they had the motivation to complete self-directed elements of learning, with some preferring this over other aspects of their learning. The type of task was also raised as key to their motivation.

> Student 8: "…when I am at home and I go to self-study, I get distracted by something else…I just don't have the motivation and do the flipped learning and stuff."

> Student 18: "…I find myself getting distracted at home. The hoovering needs doing, what is in the fridge for tea. I do find myself getting distracted…"

Peer collaboration

Peer collaboration was predominantly related to student experience with online learning in general, emphasising the importance of relationship building and interaction as a group. Students within the study reported positive experiences of lecturer engagement and enthusiasm during the combined delivery method. They reported feeling they were missing out on a key aspect of their learning if group work was missed out from their synchronous sessions.

> Student 1: "…I think it's the interaction with your group…we haven't been able to interact with each other…and I think that makes a huge difference."

> Student 4: "…group work… I found that really difficult to miss those kind of things…that's where you get, you know, your reflections."

Studies have found that the isolation students can feel online is further magnified when lecturer interaction is low, improving only when a collaborative learning environment is established (Pigliapoco and Bogliolo, 2008). This was also identified by students with the emphasis on the need for peer collaboration during asynchronous and synchronous sessions, improving student satisfaction. Students were inspired to arrange 'study groups' to complete asynchronous tasks together, enhancing their satisfaction and also providing opportunity to share experience and knowledge online.

Zoom fatigue

Students discussed feeling disengaged after a period of time online, relating this to both their experience and attainment. Students identified fatigue with live synchronous sessions.

> Student 2: "…I feel within an hour with being online I am gone, I am somewhere else and I cannot bring myself back…because my brain is just not engaging"

> Student 8: "…that I kind of lose concentration after a bit, whereas when you're in a classroom you've got the interaction…"

This prompted a change in delivery to ensure that students were given regular breaks in any synchronous sessions. Having regular breaks was viewed as a positive experience, breaking up the session when online, leading to an improvement in their experience and ability to retain information. This supports findings by Hall (2020) where satisfaction was improved when students had regular breaks.

> Student 3: "…I switch off after a certain amount of time…the breaks are good"

This was further substantiated within the questionnaire data. 50% of all respondents agreed that one hour was about the right length of time to continue to be engaged and enable retention of information whilst in live synchronous sessions on Zoom.

> Student 8: "…I feel like I don't retain…on Zoom, it is quite hard…I don't know, I struggle learning the Zoom way…"

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Anxiety

Students reported anxiety related to online learning in general, related to the use of technology and assessments delivered synchronously. It is important to consider this in relation to the synchronous experience of students due to the potential psychological effects this could have on the ability to learn.

> Student 9: "…I was very anxious…the links and it gets to you… and it was bringing you stress."

> Student 6: "We were told we might have to do our exam online -we were all frantic…but what if my internet was to play up?"

> Student 19: "I have really struggled with the technology…being on Zoom, you feel like people are staring at you the whole time…would add extra anxiety."

However, the data collected from the questionnaire contradicts this with the majority of respondents (68%) denying any stress related to the use of technology within synchronous or asynchronous sessions. This could therefore be a minority of students and warrants further investigation. When asked specifically whether live synchronous sessions alone created anxiety around technology use, 11% of students reported this versus only 7% reporting this in asynchronous sessions. This may be due to the pressure and time sensitive element of live sessions. This remains a minority.

Overall satisfaction

Overall, the asynchronous/synchronous delivery method had excellent satisfaction results from the questionnaires and feedback received. However, this could be unique to the group studied. It is also important to note that the process of being part of the study may have increased motivation for this type of delivery, causing a 'researcher effect' to affect participant behaviour (MacNeill et al., 2016). Even if this were the case, it could call for more student-led discussions about delivery method, making them active partners in their learning, aiding them to realise their own learning goals (Blondy, 2007) and, in turn, improving student engagement and experience.

Overall, 60% of students reported being either satisfied or very satisfied with synchronously delivered modules. However, almost 30% of respondents remained neutral and did not relate satisfaction either way to these delivery methods. This could either mean students do not feel strongly about the method of delivery, or that they are undecided.

A large majority of students (85%) were satisfied or very satisfied with the module overall. This correlates with the responses from the MEQ's where 100% (n=38) of students reported that they strongly agreed or agreed that they had been satisfied with the module. This was a very positive response particularly as this module was delivered in a combined synchronous/asynchronous manner.

The MEQ data also ifinds that 95% of students agree or strongly agree that the module allowed them to explore ideas or concepts in depth. Equally, 94% of students agreed or strongly agreed that the learning materials enhanced learning. This was also confirmed through observation of the sessions, that students showed real depth of discussion with complex concepts in the module. This correlates with literature, where deep learning is identified as a benefit of synchronous/asynchronous delivery (Yang, 2008; Biggs and Tang, 2011).

43% of students preferred synchronous/asynchronous delivery in relation to their learning achieved. Furthermore, 50% of students reported this delivery method as a positive experience overall when related to their perceived ability to learn the content. However, almost 30% of students reported they felt the method of synchronous versus synchronous/asynchronous had no effect upon their ability to learn.

Conclusions and recommendations

The AR study outlined within this report evidences one cycle, with plans to continue this research in further cycles. The research participants joined the university during the Covid-19 pandemic and had therefore, due to government restrictions, only experienced online delivery. The study's objective was to develop deeper understanding of the effects of a change in online delivery methods upon student experience. The review of asynchronous/synchronous methods was based on the researcher's interest in flexible and alternative online methods that have the ability to

promote deep learning and skills such as self-direction, as discussed in the review of literature.

Through the process of investigating the issue outlined, deeper understanding of the range of aspects informing a student's online learning experience, has been gained. Initially, the focus group was designed to gain insight into synchronous-only online learning, but it was quickly made apparent that information gained from their synchronous experiences both informed and strengthened the argument for a combined approach. As a result of the research, interactive quizzes were incorporated into the synchronous/asynchronous sessions, becoming part of the experience for students and providing regular formative feedback on their knowledge development. One recommendation moving forwards is for practitioners to ensure that they include interactive content within synchronous sessions and provide opportunities for learners to engage in discussions and online collaborative groups. This research has shown that this leads to greater motivation and increased engagement by students.

This research study aimed to establish if a change in online delivery method had negatively impacted student attainment and experience. It became apparent that it is not simply about the method, but about a wide range of components that inform a successful online learning environment. It was also found that there is no one answer – students and lecturers are unique in their experiences, learning and teaching methods, and the journey to successful online learning is a continuous learning process.

On the one hand, whilst students reported favour for the flexibility found in asynchronous/synchronous combined approaches, this could be weakened by lack of motivation, difficulty in self-direction and perception of reduced formative feedback opportunities. Another recommendation for practitioners is to recognise some of the issues around self-motivation and provide clear and regular feedback to students, as the research has shown that this has a positive impact on student engagement. Research conducted by Karaaslan *et al.* (2022) found that a large proportion of the participants did not have access to adequate technology, or suitable areas to study. This negatively impacted on their experiences of distance learning. Although our research study did not find this to be the case for students in the UK, the topic of

student competency when using online platforms and software is an area that would benefit from further research, particularly for mature learners who may not have these skills.

Moving forwards, student attainment is an important aspect of this study that would benefit from further research. It is recommended that such research explores whether online delivery supports success on the module and evaluates the impact that achievement has on long-term satisfaction.

Online learning will continue after the COVID-19 pandemic, as this has shown to bring many positives for both academics and students. It is therefore important, to continue to improve this emerging practice to ensure students get the best experience and outcomes with this adapted online or blended approach.

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