



Key Factors Needed for Developing a Higher Education Cross-Campus Learning Environment in a Nordic Context

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The use of digital technologies and online tools to support both students and educators has become synonymous with transforming learning within Higher Education, particularly within post graduate courses. It can be argued that the recent push for transforming Higher Education aligns itself with the notion that postgraduate students need more flexible learning opportunities while still retaining access to high quality, engaging and collaborative pedagogical approaches. This paper reports on an exploratory case study that focuses on cross campus/university collaboration and flexible learning opportunities for students studying a masters level degree in the area of Music, Communication and Technology (MCT) within a Nordic context. The research question guiding the study is “What factors do educators in a hybrid cross-campus learning environment identify as essential for providing a supportive learning experience for students?” A pedagogy, space and technology (PST) framework underpins the development of this program and forms the basis for its development. The findings from our research identify three themes that need to be considered when attempting to design and implement high quality learning opportunities for students studying a largely synchronous hybrid music, communications and technology program. These themes were flexibility, trust and the human element, and ownership. The findings also highlight the need for a renewed focus on pedagogical approaches that can be adapted and continually revised to meet the changing needs of students in a synchronous hybrid learning space.

Keywords: online learning, higher education pedagogy, music education, cross-campus collaboration, flexibility, learning spaces, digital technologies, learning environment

INTRODUCTION AND BACKGROUND

The nature of higher education is currently in a state of transition as many Higher Education Institutions (HEI's) place an emphasis on transforming current practices (Ashford-Rowe et al., 2014; Haugsbakken et al., 2019; Nykvist et al., 2022), particularly those associated with hybrid and online learning environments. Similarly, the increased demand for life-long learning opportunities and the changing demographic of students necessitates the need for learning environments that are flexible and responsive to student needs and provide “easy access to campus space, on- and offline environments, as well as 24/7 services” (Ninnemann et al., 2020, p. 28). It is anticipated that enrolments in higher education programs could grow by nearly 200 percent through to 2040 (Calderon, 2018) which will mean that universities will need to continue to adopt new approaches to

teaching and learning. Recent world events such as the 2020 pandemic have also seen an increasing demand from students wanting to change careers and pursue new degree possibilities (Zahneis and June, 2020) as well as young, disadvantaged people for whom online based degree programs could be the only way to attain an education at all (Nykvist et al., 2022).

Prior to Covid19, a large number of university programs still only offered a traditional face-to-face experience for students, though a growing number of universities are now opting towards programs that offer a mix of traditional face-to-face learning opportunities, blended, online and even hybrid learning experiences, where students can access their studies from multiple locations when it best suits them (Blundell et al., 2021). These new program offerings can be viewed as an attempt to transform higher education teaching and learning. Often the driving force behind transformation in HEI's is largely intertwined with the role that digital technologies play (Hannaway, 2019; Haugbakken et al., 2019; Støckert et al., 2019; Nykvist et al., 2022) and funding is often diverted to the purchase of digital technologies as part of the transformational process. In this study, blended learning is referred to as the combination of face-to-face and online learning experiences to support learning (Nykvist, 2008; Boelens et al., 2018; Bruggeman et al., 2021). The notion of hybrid learning takes on a number of understandings where in its simplest form it is referred to as a mix of online and offline learning (Mishra et al., 2020) or as the possibility for students to virtually attend face-to-face classes using synchronous technologies (Gleason and Greenhow, 2017). Raes et al. (2019) claim that synchronous hybrid or blended learning spaces are those where "both on-site and remote students can simultaneously attend learning activities" (p. 269). However, Hilli et al. (2019) stress the importance of hybridity as a "mixture and fusion of traditionally separate parts to create a new hybrid that is not a blend or something flipped, but something in its own right, something different" (p. 67). While there seems to be some disagreement in the literature about how hybrid learning spaces are defined, this paper acknowledges the term synchronous hybrid learning spaces where the focus is not merely on the notion of online and offline learning spaces, but also acknowledges the changing roles of teachers and students in these spaces and promotes student agency (Hilli et al., 2019).

With an increasing number of hybrid and online program offerings, and the associated increase of students opting into these programs (Nash, 2015; Kebritchi et al., 2017), there is a growing concern with regards to the pedagogical approaches associated with these blended, online and hybrid learning environments (Gregory and Salmon, 2013; Kirkwood and Price, 2014; Salmon, 2014). According to Henderson et al. (2017), while digital technologies are clearly evident in the students experience of undergraduate university education, "digital technologies are clearly not transforming the nature of university teaching and learning" (p. 1577). This lack of transformation in teaching and learning practices reinforces the need for HEI's to focus further attention on developing highly effective pedagogical practices that meet the changing needs of learners, especially within these changing learning environments. In this study, we report on the

experiences of educators using the pedagogy, space and technology (PST) framework (Radcliffe, 2009) in a new hybrid master's program. The study is underpinned by the following research question, "What factors do educators in a hybrid cross-campus learning environment identify as essential for providing a supportive learning experience for students?"

Project Background

The research project discussed in this paper focusses on the development and implementation of a joint cross campus/university international master's degree in Music, Communication and Technology (MCT) between the University of Oslo and NTNU in Trondheim, Norway. The design of the program was set within a framework that considered the pedagogy, space and technology (PST) (Støckert et al., 2019, p. 2) from the initial planning stages of the program. The initial planning focused on ensuring that the pedagogical approaches adopted in the program were framed within student active learning (OECD, 2013; OECD, 2017; Ninnemann et al., 2020) with authentic project and problem solving activities. In order to facilitate communication and collaboration across campuses/universities, a hybrid space that has an infrastructure that supports many types of interconnections, interactivity, communications and collaborations was constructed. As a result, the shared physical-virtual learning environment, known as "The Portal", was designed and implemented to support students. The Portal can be best described as a high quality, low latency, permanently connected, audio-visual link between the two university campuses. The Portal is the shared physical-virtual workplace in which students and teachers work together each day.

In the program, emphasis is placed on how digital technologies can support innovative approaches in teaching and learning where students are dispersed between multiple campuses/universities. Real time synchronous learning activities, and in particular synchronous music activities, need to be conducted within an environment that delivers high quality, low latency audio-visual communication to obtain near real-life interactive experiences online. The significance of this project lies in its innovative approach to incorporating a mix of pedagogical approaches and high-end digital technologies that meet the needs of a diverse range of students. The innovation of the program is reinforced through the choice and ownership of learning that is embedded in authentic learning opportunities to engage students (Buchem et al., 2014; Schutte and Malouff, 2019; Thibodeaux et al., 2019; Buchem et al., 2020). The learning experiences for students were not focussed on traditional "lectures" (Lillejord et al., 2018) but rather on empowering the learner to define their own learning space. This learning space is extended through the use of digital technologies where students use initiative to choose the most appropriate tools to solve problems and work with the educators who guide them and provide timely support. The notion of choice and ownership underpins the motivation for students to be actively engaged in the learning experiences (Ryan and Deci, 2020). While the program has had a focus on being innovative, the focus of this study has been on how the educators support and collaborate

with students in the creation, use and maintenance of a shared learning space.

SUPPORTING LITERATURE

The Nordic Context

The need to change, adapt and innovate in new pedagogical ways with the option of new modes of study has been identified as a key factor to the increased satisfaction and retention of students (Nykvist and Mukherjee, 2016). As Norway sets its sights on becoming one of the most innovative countries in Europe (Norwegian Ministry of Education and Research, 2018), there is a need for education and research that interacts with the outside world and prepares future students to meet the needs of work-life and society. The Norwegian Government digitalization strategy for the higher education sector 2017–2021 clearly states that in the process of digitalization, it is crucial to foster the implementation of ICT solutions in Higher Education (HE) which enables and supports conducting research more efficiently and developing and facilitating smooth collaboration with actors outside the institutions, nationally and internationally (Norwegian Ministry of Education and Research, 2018).

Thus, it is imperative that further research is conducted to identify how all students in all modes of study can have the best possible learning experiences to succeed. The projects impetus described in this paper stems from the 2018–2025 strategy for the Norwegian University of Science and Technology (2018) that has at its core for education and learning, the realisation that “new technology enables stimulating and varied approaches to learning and assessment, and facilitates access to lifelong education” while it aims to “prioritize innovative and exploratory learning processes of high quality, grounded in research-based knowledge about learning” (p. 19).

Literature on multi-campus, cross-campus and hybrid learning environments in HE highlights how “digital technology makes it possible to connect students and teaching staff across geographical distances and therefore is especially attractive to multi-campus universities as a means to increase the selection of courses at each campus and, possibly, to merge similar ones offered at different campuses” (Hjelsvold and Bahmani, 2019, p. 1). However, high quality and successful cross-campus teaching is quite different from teaching in a face-to-face single-campus setting, both with regards to the technology used and the pedagogical approaches. Experiences from a local Nordic context has shown that in order to succeed, universities aiming at multi-campus and cross-campus teaching should offer a variety of technical solutions, better training of the educational staff in the use of technology and the use of pedagogical approaches that enhance active student learning (Læringsfestivalen, 2020).

Supporting Learning With Digital Technologies

Recent research (Norwegian Ministry of Education and Research, 2018) reinforces the notion that teaching practices deeply

embedded in the traditional university teaching paradigm, for example, live lecture capturing and streaming from one campus to other campus, is not adequate enough and in some instances, can be detrimental to student learning. A mode of study which has resonated well with students and has often become the chosen teaching and learning mode in cross-campus settings is that of blended learning, where students can participate in both face-to-face and online activities. In a recent study by Emmanuel et al., 2019, the authors noted that the online activities enhanced retention and performance amongst students that actively participated. The authors, though, drew caution to the fact that the overall effectiveness was dependent upon an orientation to the environment, good internet connectivity and the acceptance of the environment by the academics. Additionally, a recent longitudinal study by Dziuban et al., 2018 has identified three main areas that contribute to the success of a blended course (a mix of face-to-face and online). These three factors are:

- clear establishment and progress toward course objectives
- creating an effective learning environment and,
- the instructors’ effective communication (p. 11)

Even if blended learning has acquired popularity in universities, its practice is many and varied with numerous frameworks having been developed to guide academics from just placing content online to that of engaging students in relevant authentic activities that promote learning (El-Mowafy et al., 2013). Simply substituting digital technologies for prior pedagogical practice is potentially detrimental to students’ learning (Escueta et al., 2017), whereas innovative and transformative uses are potentially much more beneficial (Fullan et al., 2018). Blended learning, online learning or face-to-face learning, all have a place in learning in a cross-campus setting, though it can be argued that the use of each mode is dependent upon the course and specific subjects being studied. A study by Paechter and Maier (2010) that surveyed 2,196 students from 29 universities in Austria highlighted the different modes that students preferred and when they preferred these modes. Paechter and Maier (2010), (p. 292) claim that while students tend to prefer face-to-face learning from a social perspective for communicating and collaborating and for acquiring conceptual knowledge, online learning has the potential to “provide a clear and coherent structure of the learning material” (p. 292).

Over recent years a greater emphasis has been placed upon moving from a face-to-face mode of learning to either a blended, online or hybrid mode of learning. This transition to new modes of study is often associated with many challenges for a HEI, ranging from timetabling to student success and retention and, to the quality of the learning experience offered by each of the modes of study (Lee et al., 2016). In cross campus/university settings where high quality synchronous activities are necessitated for activities such as real time music performances, it can be argued that the challenges are much greater. While technologies and multimodal resources have developed considerably in recent years, especially with the emergence of new digital learning environments, careful

consideration needs to be given to the design and implementation of these courses. These technologies can play an important role in stimulating new pedagogical approaches that are intended to enhance and transform learning and teaching in higher education (Freitas et al., 2015), and it is within this context that the relationship between pedagogy, space and technology need to be considered.

The Role of Pedagogy, Space and Technology

New learning environments for active learning need to be carefully designed to meet the needs of all users, and it is within this context that the interconnectedness of the learner and the learning environment, pedagogical approaches and social relations need to be considered (Oblinger, 2005; Goodyear and Carvalho, 2013; Knaub et al., 2016). This interconnectedness can be framed within the pedagogy, space and technology (PST) framework proposed by Radcliffe (2009), though it is important to note that the design of learning spaces “is challenging and under-researched” and “students often play an active role in adapting the learning spaces, tools and tasks that have been designed for them, to better match their own requirements” (Goodyear, 2020, p. 1046). It is within this context that this paper further explores the relationship between pedagogy, space and technology (PST) in the design and implementation of the MCT cross campus/university hybrid learning environment.

METHODOLOGY

Context

The MCT-master’s degree program, is framed within an innovative educational research project on cross campus/university collaboration between two large Nordic universities located in the south and mid of Norway. The cross campus/university collaboration was conducted from 2018 to 2020 and involved ten teaching staff ($N = 10$) and 24 students ($N = 24$) dispersed between each university and organised in mixed groups, with members from each campus. The student group was quite diverse consisting of multiple nationalities but sharing a common language of English and an interest in music, communication and technology (MCT). The MCT program was chosen for this research study due to its unique collaborative hands-on approach.

Music technology is at the heart of the joint University MCT Master’s program and many of the decisions made about how to design this program, needed to consider how both the practical and theoretical aspects of music, communication and technology could be effectively taught in new ways with new and emerging technologies without distance being a barrier. Recent research suggests that many attempts at taking music education online is still plagued by teachers trying to replicate face-to-face approaches by uploading curricular content in asynchronous learning environments (Cremata, 2018). There are many details to consider with such a unique program, especially where the practice of performing music collaboratively relies

so much on unique communication strategies not necessarily found in other university programs. Playing music together collaboratively (think of a performance by a band here) includes the building of trust between each of the musicians and providing feedback in verbal and non-verbal ways, sometimes using gestures and facial expressions for feedback or various cues. The many small nuances associated with performing together on a stage need to be preserved within a technical online environment where participants may be located on separate university campuses or even in different countries. The MCT program is designed to test the possibilities and limits of technology when communicating and interacting in real-time with the participants at both universities.

Students were made aware of the cross-university perspective and the trial of new approaches to teaching and learning and were informed upon enrolment that they would be required to actively contribute to the development of their own learning areas/spaces as part of the program requirements. Students were enrolled across two large Nordic universities with 50 percent of the student enrolment being international students. From a pedagogical perspective, this innovative learning environment is different to the traditional teaching and learning environment that is still predominately found in universities today (Lillejord et al., 2018). This learning environment is inspired by a social constructivist learning theory (Dewey, 1916) and elements from the community of inquiry framework (Maddrell et al., 2017) where the flow of knowledge is intended to be a shared partnership between both the teacher and the student that allows for creativity and a strengthened bond between each.

Data Collection

For this exploratory case study (Creswell and Poth, 2018), a qualitative approach for the research design was adopted, that is informed by grounded theory methods (Thornberg, 2012). The data were gathered through semi-structured interviews from six educators ($n = 6$), out of a total of 10 that were approached and volunteered to be interviewed. The interviewed educators were all experienced teachers who had previously taught music technology, however, five ($n = 5$) were novices in online teaching. Each of the interviewed educators in the course were male, and were at different stages of their academic career, though all had worked as educators in higher education for several years. The data were gathered in two stages with three ($n = 3$) participants in each stage of the data collection. In the first stage, three educators ($n = 3$), who initially designed the MCT course were interviewed as a group. This group included the educator who had several years of experience with online learning and who is also a co-author of this paper. The role of the experienced educator was to provide practical, pedagogical and technical expertise to the teaching team. The semi-structured interview questions focused on topics such as communication, collaboration and co-working, culture and context, and the role of digital technologies with the emphasis on the collaborative study of music, communication and technologies (the core components of the MCT program). The interviews were transcribed and analysed to identify concepts, categories, sub-categories and how they relate to each other through a process of open

coding (Corbin and Strauss, 2008). Validation of the analysis is provided by three randomly chosen students ($N = 3$) from the MCT program and checked for reliability with each of the participants. The students who validated the findings have read through the research findings providing feedback and validation of the results. The findings have then been adjusted in accordance with the comments made by the students and the educators. The students who validated the findings had completed all compulsory subjects and were completing their final dissertation.

In the second stage of interviews, the remaining three ($n = 3$) participants were interviewed individually as opposed to a group interview. These educators had started teaching in the second year of the MCT program. Consequently, the semi-structured interview questions related to the themes that emerged from the initial data collection in the first stage. The interviews were transcribed, and a phenomenological analysis (Moustakas, 1994) has been conducted. The condensed text created from the analysis described information related to each of the themes that emerged from the initial data collection in the first stage. Thereafter, the text was further condensed across informants until we had one single description for each of the themes. This text will represent our findings presented in the section below, where the focus will be the teacher-student relationships in a new learning environment, as seen from the teacher's point of view. As an additional marker for trustworthiness of the data, further internal validity occurred between each of the researchers and was confirmed by an observer (Sikolia et al., 2013; Nowell et al., 2017). The role of the observer was to conduct a confirmability audit to assess "how well the findings were supported by the data collected" (Bowen, 2009, p. 315) and then resolve any differences with the researchers.

FINDINGS AND DISCUSSION

Drawing on the analysis of the case study data, the following three themes have emerged as success factors to be considered in the design and implementation of the hybrid cross campus/university Music, Communications and Technology (MCT) program. The themes that emerged from the data in the first stage (and were subsequently confirmed in the second stage of the data collection) are: flexibility, trust and the human element and ownership. These themes are all intertwined and support the overall goal of developing a safe and supportive hybrid learning environment that is conducive to learning. The themes are elaborated upon here in the context of the analysed data and also discussed in light of current literature in the following section.

Flexibility

The first theme that emerged from the data was that of flexibility. The flexibility in the MCT program referred to the planning and variation in learning activities and the choice of digital tools (Buchem et al., 2014) that students could use to complete a task and collaboratively solve real world "wicked" problems. The educators indicated that they provided options for the students to choose learning activities and topics linked to their prior

learning experiences, or to choose an area that was new to them. Often this involved a lot of additional "just-in-time" work to meet the needs of the students, however they saw that this was an important part of empowering the students to take control of their learning (Buchem et al., 2020). The educators also noted that they provided variation while attempting to ensure that the activities were authentic in nature with an aim to drive student motivation and engagement. The MCT portal offered students choice which allowed for "a spectrum of learning approaches and contexts, including a variety of languages, cultural settings, pedagogical strategies, and technologies" (Rizvi et al., 2020, p. 164). Student choice has the potential to engage students and drive intrinsic motivation (Marzano et al., 2011), whether this is in a face-to-face, blended, online or hybrid learning environment. The aim of the educators in the program was to ensure that students were engaged in the learning activities and motivated to actively participate.

The findings further indicated that each of the educators employed pedagogical approaches that could be aligned with the notion of design thinking, where the focus was on bringing together students with diverse backgrounds to solve real world 'wicked problems' (Brown, 2008; Anderson et al., 2014; Wrigley et al., 2018). The educators were also adamant that the students worked collaboratively on open ended problems and that the criteria for success were clearly defined from the beginning. This resonates with the work of Wrigley and Straker (2015) who claim that "design projects should involve authentic, hands-on tasks; possess clearly defined outcomes that allow for multiple solutions; promote student-centred, collaborative work and higher order thinking" (p. 383).

While there was a need for flexibility in the tools that the educators and students used to create a common learning space there were some limitations and challenges. There two main challenges/limitations identified in the data were;

- Being able to provide all students with authentic and meaningful tasks in the course due to the diversity in students' backgrounds
- Not being able to fully support hands-on activities in a hybrid environment where senses like smell and touch cannot be shared.

These challenges/limitations were often outside the limits of what the educators could control. They indicated that this was largely due to time constraints and the limitations of technology in a virtual learning that could replicate a true face-to-face experience.

Trust and the Human Element

The second theme to be identified from the analysis of the data is focused on the notion of "trust" and the "human element". Trust and the human element are referred to here as the interaction and building of trust between students, and with academics, as they work in both online and face-to-face environments. It considers the role of the academic and the student in building and maintaining communication and collaboration in a hybrid learning space. In the MCT course the educators reported

encouraging students to take an increased responsibility for their learning and placed them at the centre of the learning. Students undertook collaborative team based and project-based learning tasks across both physical and virtual spaces, where each of the educators highlighted that the MCT program required special attention to build good working relationships. According to Tseng et al. (2019) “building trust among team members has become a necessary step for a successful collaboration experience” (52), and it was within this context that the educators saw the need to build trust early in the course (Cheng and Macaulay, 2014; Kleinsasser and Hong, 2016). The teaching team (educators) also focussed on facilitating in-person student socialisation (where possible) in the early stages of the program.

An analysis of the data reveals three distinct elements for promoting successful trust relationships in the MCT course. These are referred to as:

- Ensuring that there is an informal area for social activities.
- Developing a learning culture that is focussed on learner centred teaching approaches that promote student-teacher responsibility for learning, collaboration, authentic real world learning experiences and constructivist learning theories.
- Transparency in assessment where student success criteria is well defined.

The social aspects considered here by the educators resonates with the work of Tseng et al. (2019) who indicated that there were “positive correlations between learner-centered instructions and trust, between learner-centered instructions and social presence and trust and social presence” (p. 52). The educators organised social activities, inspired by experts in teams-methodology (Madsen, 2017) and team-building attitudes, to create an environment of trust where students felt safe to work on common grounds of understanding. Students and teachers together were learning how to learn and interact in this hybrid environment where failures and successes were celebrated (Nykvist et al., 2022).

The data highlighted the importance of trust being developed through collaborative online teamwork within an environment where students felt safe and supported to contribute to the learning process. Successful online teamwork was directly related to team trust (Cheng and Macaulay, 2014; Taylor et al., 2013). This was further reinforced through a common understanding, and transparency of assessment associated with the course. The educators indicated that the assessment was purposeful, and students understood exactly what they had to do to complete the assessment tasks. This resonates with the work of Absolum (2006) who claims that “for students truly to be able to take responsibility for their learning, both teacher and students need to be very clear about what is being learnt, and how they should go about it” (p. 76). This includes students having access to assessment criteria and understanding this at the beginning of the course. It is within this context that the authors argue that many of the principles such as transparency in assessment, the need for authentic real world learning experiences and taking responsibility for your own learning should be reinforced and

promoted in all learning environments whether they be face-to-face or online. The findings revealed that the challenges faced by the educators in the hybrid environment were focussed on adopting new ways to replicate the social interaction and informal spaces needed to develop trust. To make this work in different learning environments there is a much stronger emphasis that needs to be placed upon human relationships and interactions. It is in this sense that the technology is just the medium to connect each of the learning locations.

Ownership

The third theme to emerge from the data was that of ownership. This section presents a discussion of the findings related to how teacher and student ownership to learning was deliberately prioritised as a part of the design of learning experiences. While it is closely aligned with each of the previous themes, it emerged as a theme on its own. In the context of this research, ownership of learning refers to learner motivation, engagement and their ability to be self-directed and regulated learners (Conley and French, 2014). Student ownership of learning is also focussed on the student learning to learn and understanding what they want to learn (Beardsley et al., 2020).

The educators observed that the following characteristics contributed to building student ownership of learning in a digital learning environment: establishing good communication, social interaction, engagement, self-directed and -regulated learning and regular reflective practice. They also noted that ownership was related to scaffolding and supporting a “culture of inquiry”. According to Stichler (2018), “a culture of inquiry is an organizational culture and environment where there is a zeal for questioning and learning” (p. 10). In designing the learning experiences for students, the educators reported on the need to engage learners through collaboration, critical thinking, communication and creativity (Blackley and Walker, 2017).

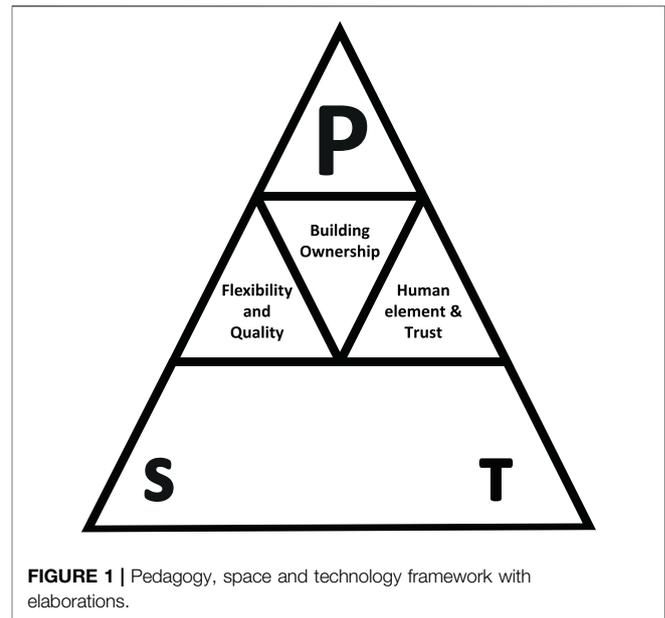
To encourage student ownership of learning the educators placed an emphasis on personalising learning and student-centred learning where each student had the opportunity to develop agency. The educators reiterated that the idea was to transform the pedagogical approaches used within the MCT program to inclusively meet the needs of all students where the focus was on the learning, and in particular engaging students in the learning process through self-directed and -regulated learning (Coutts, 2019). In this context an important move was the regular reflective practice where students were challenged to reflect over own learning practice and outcome. In the MCT portal the educators acted as guides to scaffold the learning in a way that they were seen to be present and available to support students. Similar to a MOOC learning environment, the findings indicated that the MCT Portal fostered students to be self-directed and self-regulated learners (Maldonado-Mahauad et al., 2018). Working in hybrid environments where any face-to-face or even synchronous communication can be difficult to achieve presents many challenges for the educator and this is where many learning cues, that are often taken for granted in a face-to-face environment, can

be overlooked. While learning analytics can assist in capturing data that can then be used to inform and enhance learning (Donoghue et al., 2019) there are some cues that can't be captured, even though the field of learning analytics is continually growing.

Adding to this challenge is the need for a unified collaboration between institutions that must be anchored from top to bottom, so that important practical issues are dealt with efficiently from the beginning. First and foremost, the educators and the students need to share a similar vision about how to build and share knowledge, whilst also taking ownership of their learning and teaching. The educators noted that a shared understanding and teacher ownership were integral to the design of the MCT program and the associated learning experiences as educators endeavoured to continually revise and transform pedagogical approaches. According to Saunders et al. (2017), teacher ownership is often referred to “as a key factor in the success, or failure, of an improvement effort” (p. 1). It is here that the direct link between the themes in this research is highlighted, and an understanding of the importance of trust and the personal element, and flexibility come to the forefront. Perhaps the largest challenge for educators as they sought to create a shared understanding of learning and take ownership of their teaching was that of time. The notion of time was associated with educators feeling rushed and unable to more collaboratively discuss, develop and share pedagogical approaches as they adapted the learning environment to meet the needs of the students.

Focus on Pedagogy

The MCT program had a focus on providing rich learning experiences aimed at engaging all learners. To achieve this, the learning experiences were designed within the broad framework of pedagogy, space and technology (PST). In accordance with the work of Radcliffe (Radcliffe, 2009), who stated that “pedagogy seems to be the logical first element, then space and finally technology” (p. 14), the educators collaboratively decided that pedagogy should be at the forefront of all decisions and that the focus be on student active learning. Subject content was supported with videos and reference to scientific papers and books, while the activities involved authentic hands-on and theoretical problem-solving activities. As part of this student active learning approach the educators decided that the students should build and maintain the “Portal” during the first year of the program. Early in the start of the first year of the course, it was clear that the construction of the portal was very complicated, both from a technological and physical (space) perspective, with a blurring between the notion of what both space and technology is in a hybrid environment. This blurring seemed to be a result of the symbiotic relationship between space and technology, where the space was both physical and virtual and each space was dependent on the technologies to support them. In this sense both space and technology shared an equal importance where space was also viewed as existing in both the physical and virtual worlds, where the intersection of technology made it possible to create an environment that was conducive to learning. During the remainder of the first year, the educators shifted their focus from pedagogy to that of space and technology to ensure that there was a supportive learning environment for the students. Once the portal



was able to adequately support the students (at the end of the first year), the educators shifted their focus back to pedagogy.

The analysis of the data found that when the focus shifted back to pedagogy, flexibility, trust and the human element and ownership were the main priority. These elements, according to the educators, were supported by a focus on authentic tasks, meta-reflection and self-regulation of the learning process, and a focus on informal social interactions. In a similar context to the work of Manciaracina (2019), who proposes sub-frameworks for the PST framework and an actor relationship with the user at the centre of the framework, we suggest that the PST framework should include elaborations to include factors such as flexibility, trust and the human elements and ownership as shown in **Figure 1**.

The findings indicated that the educators drew upon elements from various fields to make the best, informed decisions with regards to learning approaches that would best engage their learners. Finding the best pedagogical approach to use in this hybrid environment can be a challenge, and according to Howard et al. (2019) “much has been written of the inability of 19th and 20th century education structures, approaches, and pedagogies to meet the demands of twenty-first century realities” (p. 3). The educators did not want to be limited by these inabilities, they wanted to explore the potential offered by new approaches to learning and the protean nature of digital technologies that could be embedded within these transformative practices.

CONCLUSION

The vision for universities in the European context is one that is hybrid in nature and recognises both the physical and virtual spaces as one and highlights the need for a holistic approach to designing teaching and learning spaces that caters to a diverse range of learners (European University Association, 2021). The

findings presented in this paper highlights the need for a focus on the educator having a deep understanding of pedagogical approaches that are flexible and adaptable to new and changing learning environments – in this case environments that are highly dynamic in nature. In the broader context of transforming university programs and ensuring high quality learning experiences are a priority, there is a need for universities to focus on professional learning opportunities and support for educators as they move to new ways of working. Consequently, time needs to be given to negotiating a common understanding of the goals to be reached, and resources that must be spent on training and supporting academics. In a similar way, students need to also learn how to learn in new ways and this should be considered at the onset of all programs.

If flexible and agile learning spaces are to be part of the future educational experience for students and teachers, then there is a need to ensure that both students and teachers are adequately prepared for these new ways of teaching and learning. The pedagogy, space and technology framework has provided a strong foundation for the work in the MCT program though there is a blurring between the elements of space and technology when considering a hybrid learning environment. It is in this context that the MCT hybrid program has seen the necessity to focus on how best to support the user, through a blending of both the elements of space and technology, that will meet the needs of such an active environment that is conducive to learning. Both students and teachers often have deeply embedded ideas associated with what they think teaching and learning is, and thus, there is a need to consider this in all endeavours to transform existing teaching and learning practices. There needs to be a shared understanding at all levels of the organisation related to the vision and goals of transforming learning to ensure that all students have access to high quality learning experiences. This will result in not only high-quality learning outcomes for students, but also impact upon dropout rates and the recruitment of students. According to Binet and Carter (2018) “the real digital revolution will occur only when we stop treating “online” and “offline” as two discretely different worlds. Then we’ll be able to measure its true potential” (p. 297).

LIMITATIONS

This study relates to an intentional design of a music, communication and technologies (MCT) master’s degree

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within a Nordic university. The design is modelled on the PST framework and encourages students to exercise learner agency through active learning. As such, the findings are specific to a small study area where student numbers are limited and may not relate to other higher education approaches and contexts. Due to the innovative nature of the program and subsequent exploratory use of technologies the program may not be identified as a mainstream application in a Nordic context. However, the findings can contribute to a further understanding and development of hybrid learning spaces. The other limitations are associated with the data source. These findings are exploratory in nature and are based on the responses of a limited number of educators who taught in the program, one of whom is the author of this paper. These findings identify emergent meaning (Lincoln et al., 2018) as the basis for future research.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because data may be identifiable in some cases to certain people. Requests to access the datasets should be directed to dag.atle.lysne@ntnu.no.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Norwegian Centre for Research and Data. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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