

Studying the influence of technology on the social connectedness of students: A hybrid university learning environment (HULE)

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Abstract. Student social connectedness is indicated to be changing as universities are becoming more digitalised. Although social connectedness is shown to have a significant influence on the learning process, little is understood about the relationship between student social connectedness and the hybrid university learning environment (HULE). This empirical study aims to develop understandings by exploring student social connectedness in a hybrid-style class at a Swiss university. The study applies theories of placemaking and socio-materiality to explore students' self-reported and observed perceptions of individual social connectedness at the start of a university master's level course. The qualitative study is conducted using questionnaire data and observational data collected over the first month of a new course starting in the Autumn semester. The findings indicate that although students favour flexibility to design their learning space, they require the appropriate tools and guidance in which to make effective decisions for their social connectedness. Understanding the correct implementation of co-design for the HULE is therefore deemed important to facilitate social connectedness, this is particularly necessary for the liminal space. These findings are preliminary as part of a larger research project and offer a basis for further research to be developed. This study offers an innovative perspective of the HULE based on student social connectedness, impacting the existing pedagogical approach for university courses.

1. Introduction

1.1. Background

The social connectedness of university students is indicated to be changing following the development of hybrid university learning environments [1, 2]. This digitally-enabled style of learning is being favoured in universities following COVID-19 restrictions over the last 3 years and developments in digitalisation over the last decade. A digitally-enabled style of learning brings a more up-to-date and less rigid approach to the learning environment, with greater and constant access to knowledge and communication streams, and increased flexibility for students [2]. These benefits have encouraged the widespread mass adoption of hybrid learning at universities [3], with a growing movement away from traditional learning environments [2, 4]. Yet industry research has indicated that social connectedness is negatively impacted in the HULE as part of the overall university experience [1, 2, 4 - 7]. Social



connectedness is an unfolding concept within the HULE, taking on new meanings that are still being defined in the diverse environments of the digital, physical, and liminal spaces [8]. The perceived negative impact of reduced social connectedness is a finding that has emerged as the pandemic evolved and there has been little time to validate these findings or understand the impacts (for example, [1, 5, 7]). This is significant since learning is a social process and learning outcomes can be negatively impacted by reduced social connectedness, along with the development of depression or loneliness [9 – 12]. However, social connectedness is not straightforward to standardise, and this remains limited in a large-scale context [13]. Frieling et al. [13] bring some simplification to its irregularities by categorising social connectedness into socialising, social support, and a sense of belonging. This categorisation is applied in this study as it enables social connectedness to be tested in the HULE, yet we argue that the aspect of place remains overlooked. Subsequently, the study addresses this through the theoretical perspectives of socio-materiality and placemaking and the concept of ‘sense of place’ [14 - 16]. Exploring social connectedness through the aspect of place in the HULE helps expand on pedagogic research. Without addressing these concerns, it becomes harder to advise academic institutions, staff, and students on how to effectively manage for and encourage social connectedness in the HULE. In practice, this is leading academic staff and students to experiment or improvise as they operate, increasing stress, fatigue, and other associated health problems [5, 17]. Subsequently, further research is needed to aid academic staff and students in negotiating a new hybrid way of learning and manage for this environment.

This qualitative research offers a preliminary study of a hybrid university class consisting of 19 students in Switzerland to understand how student social connectedness is experienced in the first month upon starting a hybrid university course. The sample includes students from the same compulsory study class as part of a master’s cohort. Qualitative data was collected through a short questionnaire and participant observation over the period of 9 weeks at the start of the study period in Autumn 2022. Out of the 19 students in the class, the entire class were observed during observational data collection and 12 students responded to the online survey. As the research is funding from Norway, the data was collected in line with ethical agreements organised with the Norwegian Centre for Research Data, but further checks were done to ensure the study was in line with requirements in Switzerland. All participants were informed orally of the observation study before the start of class on three separate occasions, here they were told about the goals of the research and how their information would be used. While this led to a passive consent as there were no objections to the data collection, a signed consent was later requested from all students to allow for more identifiable data to be used in publications. Although students gave their signed consent, this is not enough to allow for identification of the university and the class and therefore all data is anonymised, and identifiable features are omitted. The research applies socio-materiality and placemaking theories to further understand student social connectedness in the HULE. It adopts a multi-disciplinary approach from pedagogy, social geography, and architecture to address the main research question: “*How could student social connectedness in the hybrid university learning environment (HULE) be implemented more effectively?*”. This responds to industry claims surrounding reduced student social connectedness in the HULE. The article does not intend to be exhaustive but offer an overview of preliminary findings on a student cohort’s experience with social connectivity in a HULE.

1.2. Research problem

Limited academic research exists on the impacts of the HULE on student social connectedness, despite social connectedness being identified by architectural industry experts as one of the biggest challenges of the HULE [18]. Such a finding is reflected in studies of different spaces, such as workplaces, retail, and care homes, where balancing social connectedness between digital and physical space is challenging and complex to manage for [14, 19, 20], and 2) social connectedness is deemed highly important in the learning process [21]. This is summarised in the two points below.

- 1) Balancing digital and physical social connectedness is challenging and not easy to standardise between people or places. In social media, it has been studied in questions such as, “Is Facebook making us lonely?” [22] or are people feeling “alone together” [23], highlighting the paradox of social media leading to dis-connectivity rather than connectivity [24]. For instance, Hesselberth

[25] also explores a ‘right to disconnect’, which challenges our culture of continuous and constant connectivity and recognises the importance of enabling opportunities to ‘opt in’ and ‘opt out’ from connection with social media and alternative types of connectivity. To some extent, the HULE has the potential to bring both connectivity and disconnectivity into the classroom through digital and physical interaction, making it challenging to address in a standardised way. Enabling these different forms of connection is a unique factor of the hybrid learning style and developing further research could widen the opportunity of ensuring student social connectedness is managed more effectively in the HULE.

- 2) Learning is deemed a social process by Okita and Schwartz [21] and integrating digital and physical interaction in the learning environment is understood as especially important through various forms of communication. Situated learning concepts further support this, suggesting that learning is situated in a particular social and physical environment [26]. Sharing information within a community helps with the learning process and social connectedness positively influences student satisfaction and success rates and even impacts student health [11, 20, 27]. Studies show that social isolation has significant negative effects on health, with university students being particularly susceptible to feelings of loneliness in their first year [11]. Further, liminal space is overlooked but significant when developing social connections, which is found by James and Busher [28] to be important in the learning environment. It accounts for the space in-between as a place of transition or waiting. Addressing this space in the traditional learning environment was typically made through large hallways, waiting spaces, or coffee areas, which is harder to address in online learning spaces and more research is needed to understand how to compensate for these changes [2].

With these two reasons supporting the need for addressing student social connectedness in the HULE, this article addresses the relationship between people, place, and technology in the HULE. This aims to expand existing studies on student social connectedness in the HULE beyond a pedagogic lens. In doing so, it hopes to generate deeper knowledge and guidance for academic staff and students who have been experimenting or improvising as they operate in emergency response, increasing stress, fatigue, and other associated health problems [5, 17]. From these understandings, the key research problem in this article is summarised as:

- **Research problem:** *Changes to student social connectedness in the hybrid university learning environment (HULE) are not well-understood.*

To address this research problem, this article applies socio-materiality and placemaking theories to bring order to the understanding of student social connectedness in the HULE. In this way, the HULE will be explored through the 3 proposed attributes of social connectedness: socialising, social support, and a sense of belonging [13]. By applying understandings from placemaking and socio-materiality, an innovative way of analysing social connectedness in the HULE is developed. This aims to uncover gaps in understandings of the HULE and propose a more relational way of understanding the social connectedness of university students. In considering these problems, this article attempts to answer the following research question:

- **Main RQ:** *How could student social connectedness in the hybrid university learning environment (HULE) be implemented more effectively?*

2. The theoretical way of thinking

This article considers the theoretical framework from socio-materiality and placemaking to develop research on the social connectivity of students in hybrid university learning environments. Socio-materiality offers a theory to understand how social aspects are embedded in material objects, which is important when considering the digital and physical space relationally. Placemaking brings a focus on the environment, which has often been overlooked by pedagogic research [8]. Drawing on the concept of ‘sense of place’, this article enables consideration of social connection to place, and it is possible to explore how people identify with a place, develop a sense of belonging or attachment, and develop identities and social mobility. These aspects are crucial to consider in the university student since learning is an ongoing process that both shapes and are shaped by the individual and their surroundings.

By addressing these theories, the article finds a new way of thinking about the hybrid university learning experience for students. This expands the research outside of pedagogy to include social geography and architecture when thinking about student social connectivity in the HULE.

2.1 Socio-materiality

Socio-materiality considers the social and the material as constitutively entangled in everyday life and acknowledges their multiple, emergent, and shifting assemblages which are an innate part of contemporary organising [16]. It emerges from a field of organisation studies and helps understand social aspects as embedded in material objects, which is important when considering the digital and physical space relationally [16, 29, 30]. This implies that living and non-living entities interact with space and help to shape the use, benefits, purpose, and effects of space [29]. This theoretical framework explains how digital and physical learning environments might interact differently across different places and times [30]. To understand the term socio-materiality fully, it is useful to break it up into 'socio' and 'material'. Socio in this sense refers to the social or human element. Materiality refers to both the physical and digital parts, such as technology. In socio-materiality, technologies are deemed to have certain material and institutional orders that can also transcend the context in which they are used. This theoretical framework can be helpful to explain how digital and physical learning environments might interact across different places and times [30].

Physical space has previously been assumed as distinct from human practice and thus impacting human behaviour, but it is frequently understood as part of a reciprocal network. Through socio-materiality it is possible to demonstrate that human practice also impacts physical space. Since socio-materiality accounts for the social and physical aspects of learning (including the role of emotion), it enables the research to account for the networks tying human interaction and the materiality of virtual and physical space together [29, 31]. This understanding has the potential to bring an innovative understanding of the social connectivity of students in the hybrid learning environment, which has not been done before. For instance, material space (digital and physical) could be reimaged to create more collaboration and better inclusivity in the hybrid university learning environment, particularly in informal communication areas [29]. Further, the social connectivity of students in the hybrid learning environment can be considered relational, enacted, and fluid through interactions between both living and non-living entities [29]. This understanding of the HULE considers human behaviour in a reciprocal way, where both people and place influence each other simultaneously, which will help unravel the complexities of the HULE in relation to student social connectedness.

2.2 Placemaking

The theoretical approach of placemaking adds a structure for unravelling the relations between people and place and explores how emotions emerge. Conceived initially as the perceived loss of a 'sense of place' during the architectural dystopia of the urban renewal era, placemaking is influenced by a variety of disciplines, primarily Jane Jacob's neighbourhood activism [32]. Placemaking can be thought of as a way of improving the quality of public places which have a community entwined, but it has also been applied in research outside of the public space in private places, for example, see [33, 34], which makes it a suitable framework to apply for the HULE [8, 15]. In the learning environment, placemaking has been applied by Poplin et al. [35] to help understand how students feel and describe certain places. The study adopts a particular focus on power places ("*places in which people recharge and feel at peace or exuberance, places that evoke positive feelings*" in [35] (p.76)) by mapping the emotions of students in certain places. This focus recognises the relation between place and positive emotions in students but tends to neglect negative student and place connections. Placemaking at university has also been considered from a geographical perspective by Swist and Kuswara [4] in their study of the 'new geographies of learning'. The theoretical approach is applied to explore the different depths, patterns, and modes of learning engagement in relation to place through a holistic lens.

The concept of 'sense of place' could further unravel the relations between the individual and the place, exploring how certain emotions emerge and produce different experiences. The concept is centred on a background in social geography and through the definitions of Massey [36], Cresswell [37], and Swist and Kuswara [4], as a feeling that is produced when human and non-human qualities bring

meaning to space. It can be positive or negative and it changes or develops continually [4, 36, 37]. This conceptualises relations felt between human and nonhuman actors and the ways they are perceived in the body in a multisensory approach [38]. This theoretical and practical approach is generally underutilised in research on the HULE when thinking about student social connectedness.

3. Methodology

3.1 Research design

This qualitative research is based on a master's level student cohort of 19 students (approximately aged between 20-30 years old with primarily more males than females) at a university in Switzerland. The sample is small to enable a more in-depth analysis of individual student social connectedness in a hybrid-style university course. The university is spread across several campuses and there are students from different countries studying at the university. In the course, the teaching language was English, but all students also understood the colloquial dialect of Swiss German. Data collection and analysis were conducted within the guidelines of the NSD ethics agreement granted by the Norwegian Centre for Research Data (NSD) in Norway, as previously mentioned. This ensures that all participants remain entirely anonymous by anonymising individual students, the course, and the university. The observational study of all 19 students was conducted both in-person and online and this involved the observations of student interaction, both visual and vocal. A total of 12 out of the 19 students responded to the online survey, which took approximately 10 minutes to complete and included 23 questions. The questions were a mixture of open and closed questions based on the student's experience with social connectedness in the course. The survey was anonymised and there was a section at the end of the survey for participants to generate a unique code whilst remaining anonymous to ensure that their results could be compared if another survey were to be conducted at the end of the course.

3.2 Data collection

The data was collected by the leading author using field notes and audio recordings. It was collected over a time period of 9 weeks, which included weekly classes that lasted a period of 3 hours each. The research began at the start of the course, where students were advised when to be present physically and when to be present online. Although this advice was mostly followed, there were the occasional exceptions. The teaching in-person was undertaken in the same classroom each time. The classroom layout changed between classes and sometimes during classes, with high tables used in some classes around the outside of the room, and a more traditional style of tables in rows used in other classes. The online survey was designed using Lime Survey and a link was sent to students via email at the start of the course for the first 4 weeks, with reminders sent during the 4 weeks. The survey included 3 main sections based on the 3 attributes of social connectedness: socialising, social support, and a sense of belonging. Questions were a mix of tick-box or short answer questions based on the frequency, mode, and extent of student experiences with social connectedness. Most responses were made towards the end of the 4 weeks. The data was recorded and stored on the servers of the two universities in Norway and Switzerland, where the data can only be accessed by the leading author. The researcher took steps to ensure reflexivity and consistency in the study by maintaining regular meetings with the other authors to ensure bias was reduced. Further, data collected through the surveys was anonymised which ensured no biases were drawn.

3.3 Data analysis

The data was analysed thematically under 3 key themes, which were developed by the 3 attributes of social connectedness: socialising, social support, and sense of belonging. These themes were then considered in relation to learning environment quality, which was also inspired by placemaking and the development towards quality places, likened to the development of quality learning environments [41]. Placemaking was used since it offers a way of improving the quality of places and focuses on the role of the community and individual's lived experience in relation to place and their sense of place [3, 4]. In focusing on the student's relationship with the learning environment as a specific place, these values are reflected in the results. The survey data was analysed using Lime Survey's online statistics software, which generated percentages with any single 'tick-box' questions. The short answer questions were

coded and grouped based on keywords or themes used frequently between the answers. There were 12 responses for the survey, leading the results to focus on descriptive statistics with the purpose of getting an overview of the class perspective of social connectedness. Since just under two thirds of the class responded it is fairly representative, although the results could have been richer and more representative with data from the entire class.

4. Findings

This section outlines the findings of the online survey and observations of the hybrid university student cohort. The findings are categorised into the 3 attributes of social connectedness as this is how the data was collected and organised. Although findings from both forms of data collection are mentioned in each section, some categories were more suited to observational findings and some categories were more suited to self-reported findings, hence the uneven spread in each category regarding the different forms of data collection.

4.1 Socialising in place

The online survey found that students typically favoured ‘very often’ contact with student colleagues in their course (n=7). In contrast, contact with academic staff on their course or others (students and/or staff outside the course but within the university) was less, with ‘sometimes’ being the most common response. Students also favoured in-person communication for contact with all groups. When observing students in-person during the class sessions, students were highly social with each other and the academic staff when entering the room, with nearly every student greeting both the class and the academic staff. During the class, students typically only communicated with each other and in smaller groups with those closest to them. This was often made through quiet whispering during the class, or students would take breaks with each other during the class.

Communication with the academic staff was limited, with low student openness to talk during class discussions, although this increased during the last observed class session. The first session involved 5 spoken interruptions and the final session involved over 15 spoken interruptions (interruptions involved students asking questions to the lecturer, which occasionally also led to other students’ involvement). Visual cues towards the lecturer, such as head nodding and smiling, were frequently reported during in-person class sessions, these being most frequent when the classroom layout featured tables in rows that faced the lecturer. When observing students online during the class sessions, socialising was found to be significantly lower than during in-person class sessions. One student frequently switched their camera on, but class sessions typically involved between 0-3 students with their cameras switched on at any one time. This did not seem to be influenced by the researcher testing between switching their own camera on or off. Further, if the majority of the class participated in person, the presence of the student(s) online was somewhat non-existent beyond their online profile on show. Subsequently, visual social interaction was not present in most online sessions, and spoken social interaction was limited. When students were asked in the online survey to explain the benefits of in-person communication, they mentioned it offering greater ‘connection’, being more ‘personal’, more ‘memorable’, and the opportunity to speak with other student colleagues to ‘make friends’, ‘generate ideas’, and ‘exchange experience’. In contrast, when asked in the online survey to explain the benefits of online communication, they frequently mentioned less ‘travel’ and greater ‘flexibility’.

4.2 Social support within space diversity

In the online survey, students reported that they received support from student colleagues more frequently than they received support from academic staff or other colleagues (who are outside the course but within the university), with ‘very often’ being the most common response (n=5). Students were also asked if they can think of a time when communication technology increased how supported they felt in the course, with 4 students signalling ‘no’ or mentioning that they are unsure of how to conduct this effectively. In contrast, 6 students signal that they have experienced more support and that it is easier to ‘reach someone’ when off campus. Further, some mention that they felt supported in the first week of introductions (which took place in-person) but this has reduced.

Next, the students were asked if they could think of a time when communication technology reduced how supported they felt in the course. The responses were somewhat less diverse, with 8 students signalling that they felt less supported. This was either because they spend less time with their student colleagues, 'participation' is lower in online lectures making them more 'boring/reduces the quality', being afraid to 'miss something', or being 'lost' and the lecture does not realise. Only 3 students signalled that they did not feel less supported, indicating that the ability to contact others for support and help was beneficial, despite the physical distance. During the observations of students in-person, giving feedback towards students from the lecturer was more common than when observing students online. The reason for this was that students were more open to giving visual or spoken cues and thus the lecturer could respond appropriately. Support between students online was difficult to observe since it is unknown whether students might also communicate with each other outside of the online lecture using other forms of digital communication, such as WhatsApp. WhatsApp was mentioned in one response on the survey as a means of staying in contact even when off campus, thus it is possible that students could also be using this outside of the lectures to seek support from each other.

4.3 Sense of belonging in meanings of place

The online survey found that the majority of students felt 'satisfied' with how well they know or feel connected to their student colleagues on the course or the academic staff on the course (n=5). The majority felt 'neutral' when thinking about student colleagues outside of the course but within the university (n=7). Students typically seemed to seek connection with other students, with communication technologies chosen most commonly as 'often' (n=5) or 'very often' (n=4) supporting this. When students were asked if they felt like they belong in the master student cohort at the university, only 5 students responded. Only 2 signalled 'yes', with no further expansion. The other 3 suggested that they did not feel as though they belonged. The key reason mentioned is that they felt a lack of time and expect that this will evolve over time. It was also mentioned that there are no social events with other students, and this could also contribute to a lack of belonging. In the observations of students in-person and online, it was noticed that the university logo is prominent in both the lecture slides and in the university building. This was not mentioned by students but could subliminally enforce recognition and familiarity with the university over time. Further, although it was not mentioned in the online survey, many of the students gave feedback to the lecturer and, also in their group research projects about the layout of the classroom being significant to them. The high tables were a strong point of interest for many of the students and seemed to create a novel and engaging experience for the students. The high tables were accompanied by a whiteboard for every two tables and high seats (similar to bar stools), with the seats being plastic and brightly coloured with various colours. Many of the students spoke about this classroom layout among each other and it seemed to form a sense of identity or unification between the students, the room, and the course. Students were advised by the lecturer that they could move the tables if they desired. Students did not move the tables at first but chose to move the tables during the session to be closer to power cables, to bring themselves closer to others, or to orientate themselves more directly towards the lecturer. This movement was made during break time when students were in a liminal space of waiting. When the high tables were not used, the students faced the front of the class. Although this seemed to encourage more students to engage with the lecturer, there seemed to be less engagement with the class as a whole and the students did not move the furniture at any point. These aspects of familiarity and identity that the high tables brought could help to shape the 'sense of place' in students as they connect with the room in a more flexible and self-constructed way, but this would need to be further investigated through deeper research of the classroom layout and co-design in the HULE.

5. Discussion: Co-design and liminal space

These preliminary findings of a master's student cohort in Switzerland taking a hybrid learning course offer an insight into the changes that students are experiencing in terms of social connection in a HULE. The analysis finds that although co-design offers a solution to designing the HULE, understanding how it functions remains premature, especially in the liminal space. Without a wider understanding, it is challenging to manage for student social connectedness in the HULE using a co-design approach. This section expands on the findings surrounding co-design and liminal space to help address the main

research question: “*How could student social connectedness in the hybrid university learning environment (HULE) be implemented more effectively?*” and link with the aspects of socio-materiality, placemaking, and the concept sense of place.

Firstly, the findings indicate that being online or in-person has both benefits and drawbacks for students, both of which vary between students and so the offer of both enables students the flexibility to decide. This offer of flexibility has been recognised in the research on the HULE as a benefit [2]. However, for social connectedness, it seems that guiding and supporting students to make the right decisions for their learning remains important. This is found in the study, as despite students mentioning that switching their cameras on during online learning makes it less ‘boring’ and more ‘memorable’, most students chose not to switch their cameras on. This implies that students felt uncomfortable with their cameras on, bringing a reduced feeling of social connectedness. Yet, whilst in-person, students were open to engaging with their class and expressed more desire to engage (e.g., increased visual and spoken cues). Offering a structure or the tools that encourage students to be in-person or switch their cameras on during online learning could therefore be beneficial for student social connectedness, depending on individual preferences. This would help students to make personal choices over the extent, frequency, and mode of contact that they desire. By offering more opportunities to engage, such as the lecturer advising students to move the high tables if they require, it is more likely that the students will be aware of their choices and feel more comfortable making these choices. This is supported by [42] as they recognise that co-design enables students to become more empowered to use and alter the space accordingly to fit their needs with online and in-person learning activities. The guide by Van der Meer et al. [2] on the social connectivity of students in blended learning environments further supports this with a ‘willingness to participate’ design principle. Participating in designing the HULE ensures that users have a level of understanding of new technologies or processes. Increasing understanding could also transfer to feeling more included and connected and help shape a sense of place, identity, or attachment.

Although not indicated in the survey, observations of place identity or a ‘sense of place’ in the HULE were found in the study both online and in-person by the incorporation of the high tables. The changing of the high table classroom layout supports research indicating that students also play an active role in adapting their learning space to match their requirements [43]. As previously discussed, this could help students to feel more connected or attached and develop a stronger ‘sense of place’, but it also brings a level of uncertainty and complexity when designing. This personalisation is more challenging for universities to manage [4]. Beyond the technologies used, this is particularly true in the physical HULE, where it becomes increasingly more complex to satisfy numerous individuals. We support research by Raes et al. [6] and Bülow [5] in suggesting that more research is needed beyond exploratory and descriptive studies to provide a more empirical and practice-led understanding. For instance, Bülow [5] indicate that more research is needed on the qualities of the set design (physical and technological ‘set-ups’ required (e.g., microphones, reliable internet connection), social design (both physical and virtual social networks), and epistemic design (teachers adjust tasks accordingly and flexibly). Beyond these categories, we also emphasise the specific importance of the surrounding building design, especially in the ‘in-between’ liminal space that emerges between physical or digital space as students transition to the start of the class, wait during the breaks, leave the class, or in the time between classes. This liminal space contains important social interactions, found in the study by the greeting of student colleagues and academic staff during in-person class sessions or uniting to take breaks, alongside the absence of these interactions in the study during online class sessions. The earlier research by James and Busher [28] recognises the struggles experienced by a hybrid learning community in navigating the liminal in-between space as it is challenging to address and easy to overlook, yet little research further expands on this topic. Kohls et al. [3] support this finding, suggesting that relationships need to be considered in the non-defined zones, or spaces in-between of the HULE. Guiding, encouraging, and providing the tools for students to adopt decisions that improve their social connectedness is vital in the HULE to ensure effective co-designing decisions are made. Moving towards this type of management in the HULE that encourages social connectedness aims to avoid an incapacity of current design approaches which are likely to have caused academic staff to be experimenting as they operate [42]. This is supported in the study, for instance, by offering students the opportunity to change their classroom layout with the high

tables. However, more research is needed to understand these student perceptions and experiences with social connectedness. Developing the research on liminal space within the HULE could help better address the formation of relationships and a sense of place, which might lead to a better understanding of social connectedness in university students.

6. Conclusion

The aim of this study was to take an innovative approach to exploring student social connectedness in the HULE and expand beyond a pedagogic approach. The lack of academic research is a major shortcoming of the topic and a key reason for the need and emergence of this project. This article uses the theories of socio-materiality and placemaking with the concept of a ‘sense of place’ to highlight how social connectedness could be more closely linked between people and place. This aims to address the research question: “*How could student social connectedness in the hybrid university learning environment (HULE) be implemented more effectively?*” and bring a more in-depth understanding to the management of the HULE. Alike Acton [29], Bülow [5], Goodyear [43], and Kohls et al. [3], innovative approaches to exploring the research can help unravel the complex topic of student social connectedness in the HULE.

This article is a preliminary study and is not exhaustive, only claiming to offer a basis for understanding the topic and aid further in-depth research. It is limited by the small sample size of 19 students and the further limited responses in the online survey. Further, the study only explores the first 9 weeks of the course, and the survey was only taken from the first 4 weeks of the course. By extending the time frame and exploring students’ self-reported and observed perceptions of social connectedness over the entire duration of the course would be valuable. Further, it would be important to test other student cohorts in different disciplines and in different universities. However, the flexible and explorative approach of this study aims to expand ways of thinking, which will be followed by more in-depth and rigorous data collection. It is hoped that the impact of this research will expand awareness of the topic, encourage further research on student social connectedness in the HULE, and inspire technology developers to continue to develop new technologies that support university students both now and in the future.

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