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An inquiry into the learning environment preferences of
undergraduate design students:
What spaces encourage their motivation and engagement?

BY

Oisín MacManus

MA in Education, Learning and Development (QQI)

Faculty of Teaching and Learning

Griffith College Dublin

July 2023

Declaration Page

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of the MA in Education, Learning and Development, is my own; based on my personal study and/or research, and that I have acknowledged all material and sources used in its preparation. I also certify that I have not copied in part or whole or otherwise plagiarised the work of anyone else, including other learners.

Signed: 

Oisín MacManus

Dated: 14.07.23

Acknowledgements

This has been a wonderful journey of learning which would not have been so enjoyable and achievable without the guidance of my supervisor Dr. Cathy Peck. Thank you for all the conversations, my goalposts, reassurance when needed, and focus on the finish line. I am eternally grateful to the participants of this study, as without your valuable input this study would not have been possible. Thank you to the college, administration staff, and lecturers for your support and feedback – a special note to Peter Gillis for putting up with all my random questions. My partner for his continuous support with my sense of curiosity, and my children, especially my daughter for her little notes and pictures of encouragement left at my desk.

Abstract

The literature indicates that the physical design and built environment which students spend their time within has a direct influence on their wellbeing and subsequent engagement with their studies. Furthermore, a major shift in contemporary pedagogical approaches from traditional teaching methods to more active learning has also had implications on the physical design of space. In contemporary higher education institutions, new pedagogic approaches may not necessarily match room layouts and design. This research draws upon the personal experience of the researcher, who has worked within the construction industry as an interior designer for over twenty years, been a part time lecturer in higher education for five years, and engaged in substantial professional development as an educator. The researcher's combined perspective as a designer, lecturer, and lifelong learner revealed a possible conflict between pedagogical approaches and the physical environment of the classroom.

This qualitative, interview-based study aims to discover student preferences and to explore their personal rationale for these, as well as their perceptions of how the physical environment impacts their engagement and wellbeing while on campus. In addition, data collected on classroom layouts indicated the participants had diverse opinions on how they viewed the design of a learning environment. Analysis of the data indicates an association between student preferences and internal scripts (Kollar et al., 2014), which relate to our previous experiences, which in turn, can influence how we perceive a new environment. Physical attributes associated with indoor lighting/views, acoustics, and temperature were also found to be concerns with the participants. Moreover, access to college facilities and being able to navigate the campus easily was expressed as a dissatisfaction. This study provides insight into the implications of the built environment on student wellbeing and their sense of belonging. An implication of this study is: students could contribute to and inform the design of learning spaces which would enhance their on-campus experience.

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1. Introduction

1.1 Background

For higher educational institutions to remain sustainable in an increasingly competitive market, it is necessary for these institutions to acknowledge that learning and pedagogy are changing in line with 21st Century requirements (Hudson and White, 2019). Therefore, an institution's contemporary educational vision, can also be characterized by the built environment¹ that learning occurs within. If this factor is ignored, a misalignment between physical settings, paired with student and faculty expectations may emerge. This can in turn, result in frustration, or at the very worst pose as a barrier to education (Harvey and Kenyon, 2013).

Modern pedagogies suggest a change from passive to active learning. Active learning is a shift from teacher centred learning to student centred learning, where the student is not merely a passive participant who takes notes but is encouraged to be actively engaged. This can incorporate many methods to promote physical activity, sensory, cognitive, and collaborative engagement (Chickering and Gamson, 2010).

The literature indicates that traditional class-room layouts with rows of desks arranged facing the lecturer may not necessarily promote an active learning environment as this type of classroom design can reflect the superiority of the lecturer and the passive role of the learners, Simons (2008, as cited in Gordy et al., 2020). Historically, rarely was a physical learning environment considered as influential in program delivery or having an impact on students' learning outcomes (Perks, Orr and Alomari, 2016). However, Holec and Marynowski (2020, p. 141) suggest that classroom design in line with lecturers' pedagogy has a direct influence on "student engagement" and therefore these elements should be considered and aligned with each other to ensure a cohesive learning environment is maintained.

¹ Please note that built environment and physical environment are repeated throughout this dissertation – they are intended to have the same meaning.

1.2 Rationale

An example of classroom environments not being aligned with pedagogic practices was widely experienced during the COVID 19 pandemic. There is no doubt that Covid 19 has had an unprecedented impact on both students and lecturers. Quality and Qualifications Ireland (QQI) acknowledged this, stating that “QQI is aware that the evolving situation in relation to the COVID-19 pandemic is having a very real impact on the work and lives of our education and training providers, and students” (QQI, 2020). The pandemic also had specific implications for physical classrooms i.e., traditional classroom layouts were enforced to facilitate social and physical distancing between learners during a two-year period.

The application of the traditional layout in many classrooms during the COVID-19 Pandemic was widely applied in response to a public health emergency. However, in this researcher’s personal experience the traditional layout was already in place before the COVID 19 Pandemic and remained in place after COVID restrictions had been lifted. This is reflected in Fig 1. which displays two of the classrooms that this researcher normally teaches within, at the start of term September 2022.



Fig 1: (inclusive of both images)

Classroom; BK001 (pseudonym) September 2022

Classroom: BK002(pseudonym) September 2022

Note* Images only represent desk and chair orientation to ensure privacy of college is maintained – Pseudonyms are noted

Wheat et al. (2018) suggest that if a researcher is working within a specialist area that the chosen topic will also teach the researcher about their own practice to provide a deeper understanding of this area. This researcher is an Industry Professional who specialises in commercial interior design and works with first year creative studies learners (who represent mixed disciplines of fashion, graphic and interior design), plus final year level 7 interior design learners in Dublin, Ireland.

Furthermore, this researcher has been engaged with their own professional development, achieving a Post Graduate Diploma in Education and Learning (Pg.Dip Ed), and the Universal Design for Learning Digital Badge (UDL), within the last three years. Universal Design for the built environment

is a concept this researcher was already familiar with which aims to design physical spaces that are accessible for all people, regardless of age or abilities (National Disability Authority, 2020). In turn this fosters a deep sense of responsibility in the designer to ensure physical spaces are fit for purpose and wellbeing of the users. To compliment this approach UDL aims to enable educators to acknowledge the diversity of students learning needs and develop a toolkit of learning design that may facilitate these requirements (Universal Design for Learning, 2023). Subsequently, studying UDL facilitated deep reflection for this researcher on the physical and learning environment they work within.

Additionally, the Pg.Dip.Ed journey of learning allowed for personal reflection on teaching methods being used, the day-to-day benefits or disadvantages they posed, and how best to advance teaching practices for personal and learner benefit. Many of the teaching theories discussed during this learning were aligned with active and problem-based learning models.

Part of the focus within Pg.Dip.Ed included a module on Strategic Learning and Development (SLD) which allowed for reflection and the presentation of a plan for Future Practice Learning (FPL). Moreover, learning interventions and teaching strategies were topics discussed in the curriculum, with Fisher's (2005) research into identifying effective learning environments supplied as a resource to refer to.

As part of the FPL presentation, a perspective on the circle of influence and the circle of concern were included. The circle of concern is deemed as emotions which we care about and may affect us, but may have no control over, whereas the circle of influence is elements which we can control (Circle of Influence, 2022). One practical activity undertaken by this researcher, that demonstrated some support for these theories included a proposal to learners to reconsider the layout of a classroom as illustrated in Fig 2.

The learners were asked to re-arrange their classroom as they saw fit for purpose with no direction given from the lecturer. As the photos illustrate the learners did not opt for a traditional classroom layout as before, instead they arranged the desks in a variety of groupings mainly focused on a "U" layout as illustrated in Fig 2 showing the different layouts from September to December 2022. This physical change made by the learners is more akin to an active learning environment layout. This notion will be illustrated in the forthcoming paragraph with an example of a purpose-built classroom layout to promote active learning named as SCALE-UP (Beicher et al., 2000).

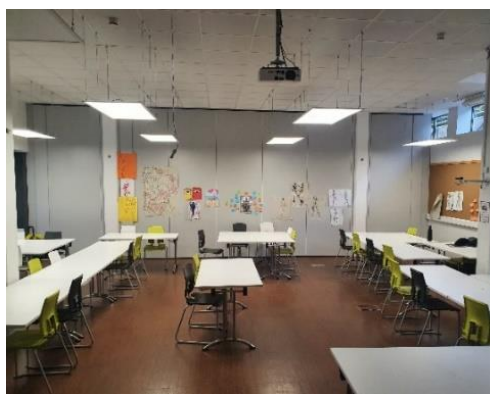
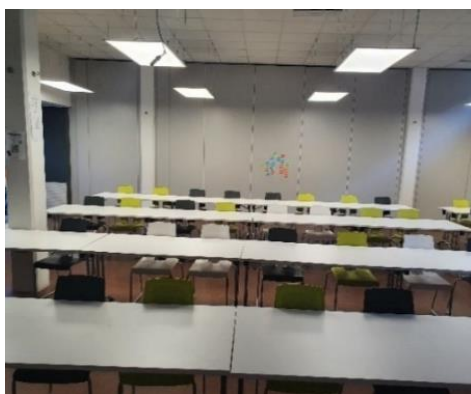


Fig 2: (inclusive of both images)

Classroom 2; BK001 (pseudonym) September 2022

Classroom 2; BK002 (pseudonym) December 2022

Note* Images only represent desk and chair orientation to ensure privacy of college is maintained – Pseudonyms are noted

Under the supervision of Professor Beicher et al. (2000), a model named SCALE-UP was developed, where an approach to bringing interactive and collaborative instruction to a physics courses was established. The study aimed to offer insight into how the physical design of a classroom can be adapted and designed for an active learning space. SCALE-UP has been chosen specifically within this research as a reference to illustrate an active learning environment as it has been regularly referred to within the literature as an innovative model (Beichner et al., 2000; Beichner, 2008; Brooks, 2010; Brooks, 2012; Harvey and Kenyon, 2013; Perks, Orr and Alomari, 2016; Holec and Marynowski, 2020; Gordy et al., 2020).

Holec and Marynowski (2020 p. 142) suggest that SCALE-UP was possibly the first example which indicated that the “classroom environment, pedagogy and students’ outcomes” go hand in hand. Beichner et al. (2000) were able to document that there was a considerable improvement in both student engagement and achievement in their new environment as opposed to their peers in traditional lecture based classes. However, it should be noted that Beichner et al.(2000) findings compare two different classrooms, in different locations. Arguably, it would be beneficial for future researchers to ensure that the location and orientation of both classrooms that are being considered are proven to be relatable to each other in design, spatial demographics, and overall atmosphere to increase the reliability of findings.

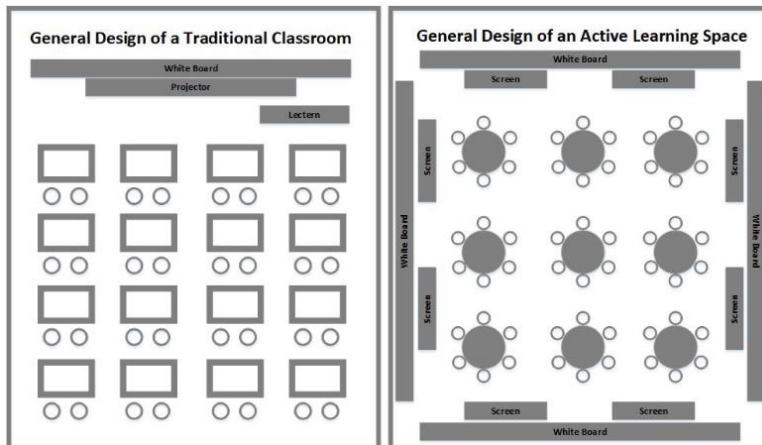


Fig 3 (inclusive of both images): General Design of a traditional classroom and a SCALE UP active learning space

As illustrated in Fig 3. (Gordy et al., 2020) the SCALE-UP active learning space classroom layout differs from the traditional classroom with desks in rows, to teams sitting around circular tables, with the lecturer in the centre of the room working actively and collaboratively on designed activities. Since its inception the SCALE-UP model has been utilized in various other higher education institutions in the United States which include Massachusetts Institute of Technology, University of Minnesota, University of Iowa, as well as colleges in Canada, Korea and China (Gordy et al., 2020). Fig 4. offers further photographs of classrooms that were changed in line with the SCALE-UP model across the United States (Beichner and Jeffery, 2003).



Fig 4: SCALE-UP classrooms at American University, University of Central Florida, MIT, and University of New Hampshire.

However Gordy et al. (2020) suggest that there is limited research into the interactions which are happening within these active learning environments and their effect on students. They believe that

further investigation is required by educators to understand if student behaviours differ from an active learning classroom design as opposed to a traditional layout. Subsequently, this should aid better designed spaces that match correctly with the preferred pedagogical approaches. Although these studies have made a significant contribution to theory and practice, they were focused in the United States. To the knowledge of this researcher, at the time of this study being undertaken, the literature does not indicate that comparable studies have been conducted in Dublin, Ireland, where this study is based. Beichner (2008) also advocates for studies of the effectiveness of active learning classroom designs in different contexts, which would provide insight into how they vary across different types of institutions, content being delivered, and student demographics.

A purpose-built active learning space similar to what has been illustrated in the SCALE-UP model in Fig 3 and Fig 4 was not available to this researcher when this study was undertaken. Initial dissertation proposals included swapping out the furniture in classroom 2. BK002 (pseudonym), illustrated in Fig.2, with furniture that would be deemed more appropriate to facilitate active learning. Initial discussions with Irish Steelcase representatives had confirmed they would be able to lend furniture on a short-term basis for this study. Steelcase (2023) were considered as the most appropriate furniture company as they have dedicated teams of researchers who aim to develop research based suites of furniture to facilitate human centred and active learning spaces in higher education. However, initial informal discussions with the proposed faculty advised on some limitations concerning the proposed study that this researcher had overlooked. Firstly, the proposed classrooms were part of a shared faculty, and the change could have undesired effects on other lecturers that taught within these spaces. The rooms were also required for additional activities other than teaching and that sometimes required the furniture to be fully removed to facilitate this. Additionally, it was viewed that supplying furniture short term that the students may have opinions about, whether positive or negative, could possibly be deemed as unfair and unwarranted. Specifically related to furniture that the students may become attached to, which would then be removed.

Interestingly, this initial setback offered itself as a positive to this study in relation to the initial literature review undertaken. There appeared to be an oversight in relation to engaging with learners' opinions on their preferred learning environment before any changes were made. In the main, the literature concentrates on the aftereffects of the modifications made by a third party with a notable exception by Fisher (2005) and Bosch (2019). A study of student learning was deemed by this researcher to require a more extensive and long-term study that could be conducted over subsequent terms and assessed accordingly. Due to time restrictions, exploring the rationale underpinning student preferences was deemed more appropriate and achievable, and also responds

to calls for further research on student relationships within the classroom (Gordy et al. 2020). It is clear that the Irish Higher Education Authority holds student wellbeing as a priority for their success, and aim to understand how best to support an engaged and positive experience (O'Farrell, 2019). However, to this researcher's knowledge, at the time of this research being undertaken, no similar enquiry focusing on student preferences in their physical environment, has been conducted within a design faculty, in higher education, in Ireland. Therefore, embracing the call by Beichner (2008) for different institutions, content delivery and demographics to be considered.

1.3 Research Aim and Objectives

Aim

The aim of this study is to identify if there is any evidence that supports the theorized influences of physical space within the learning environment among undergraduate design students in Ireland. Several studies (Beicher et al., 2000; Wolff, 2003; Fisher, 2005; Barret et al., 2015; Steelcase Learning, 2022; Holec and Marynowski, 2020; Bosch, 2021) have collected data and assessed learning spaces that suggest distinct but similar frameworks of people's needs and requirements. This inquiry will gather current and localised information to discover if the physical layout and design of the classroom affect undergraduate design students' self-reported perceptions on engagement and wellbeing in alignment with these theories.

Although the classroom was used as a primary focus, other spaces that learners are drawn towards outside of the classroom were explored, including whether they avail of facilities on campus to assist with their studies.

Objectives

- Identify if there is evidence to support or challenge established theories related to traditional layouts versus active learning environments.
- Discover participants perception on their most preferred physical space for engagement and wellbeing for their studies while on campus.
- Gain an understanding of the rationale for respondents' preferences on their most preferred layout and physical space while on campus.

2. Literature Review

2.1 Overview

There is a growing understanding that education for an evolving workforce of ongoing change is essential (Hudson and White, 2019). The World Economic Forum (WEF) (2016, p1) estimate that “65% of children entering primary school today” will be working in completely new jobs that do “not even exist yet”. The skills that are being predicated by WEF (2020, p1) for the future workforce in 2025 that should be addressed include: “problem solving, self-management, working with people, plus technology use and development”. Furthermore, the Organisation for Economic Co-operation and Development (OECD) (2016) observed that numerous educational facilities appear the same today as they did a generation ago and have not progressed with modern day pedagogies to meet the requirements of twenty – first century learners. Therefore, design of space where learning occurs to provide for a twenty first century learning experience must be developed (Bosch, 2019). Consequently, Hudson and White (2019) argue that it is important to create learning spaces that do not rely purely on the teacher – to – student distribution of knowledge, but allow for environments which encourage different behavioural patterns for everyone so that student -to -student interaction plays a more important role in the learning development. Miller et al. (2019) claim that these skills will continue to evolve and change and that learning how to learn, should be placed as a priority for students to adapt to the changing needs and pressures throughout their careers. Sir Robinson (2010) reiterates this by conveying that in order to meet the challenges ahead we must re-design educational spaces to foster the creativity in all of us.

The study of physical spaces matched with modern day pedagogical approaches appears within the literature to have gained academic attention primarily to assess its impact on student learning. Supporters of active learning pedagogical approaches call for the re-design of physical spaces to be more in line with the requirements of an active learning space which differs from a traditional learning environment especially concerning furniture, materials, and equipment provided. The suggested negative impact of transformation, and associated cost of changing the physical space is deemed to be outweighed by the associated benefits for students and educators (Brooks, 2010).

2.2 Pedagogy and Design of Physical Space

Active learning aims to instil recommended 21st skills through an educational experience. As highlighted previously (section 1.1 pg 1) active learning seeks to promote physical activity, sensory, cognitive, and collaborative engagement (Chickering and Gamson, 2010). The trend towards a more student centred learning approach in higher education has been a consequence from many

researchers challenging the traditional lecture-based institutions adequacy as a competent pedagogical approach (Perks, Orr and Alomari, 2016). The traditional layout therefore acts as a stark contrast to current prevailing pedagogies which emphasize learning by doing, active learning, and problem-based learning which puts the emphasis on the learner as the creator of knowledge rather than a consumer of transmitted information, and our learning spaces should look to support this (Kelly and Padden, 2018).

Another advocate for educational change is Freire (2016), who is generally regarded as a leading intellectual voice calling for a more critical pedagogical approach to education. Freire argues that traditional education focuses on a teacher-student dichotomy with the teacher at the top of the classroom hierarchy representing the sole authority of knowledge while the students are required to sit passively in rows orientated towards the teacher. Ferrell (2017), lead author on the UK Higher Education Learning Space Toolkit, echoes this belief, deeming the design of lecture theatres and traditional classrooms is built on a pedagogy which highlights that one person who is the tutor, will be able to transfer information to students, who will be able to absorb the data at the same rate, by focusing on the tutor at the front of the room.

Perks, Orr and Alomari (2016, p. 54) suggest that although traditional layouts of the physical classroom design are not fully “insurmountable” in order to facilitate a learning environment, many educators would agree that the physical design of classrooms is not exactly ideal. Additionally, according to Lindbald (2000, as cited in Wolff, 2003) the traditional box-like layout and features of classrooms, inhibits the ability to create a diversity of environments to support an active learning experience.

In order to be able to visualise the requirements of these spaces that look to support active learning, Hudson and White (2019) offer a template for design illustrating spatial trends in line with these suggested prevailing pedagogies in order to promote creativity and movement as illustrated in Fig 5. (Hudson and White, 2019 p15). This template would not be a definite list of classroom design but aims to offer an understanding between the importance of matching pedagogy with the design of learning spaces. As shown, many of the recommendations on the physical space suggest that there is choice, paired with a variety of furniture options, and alternative zones that can cater for paired work, group work, and privacy.

Designing the pedagogy of space: spaces to encourage creativity and movement

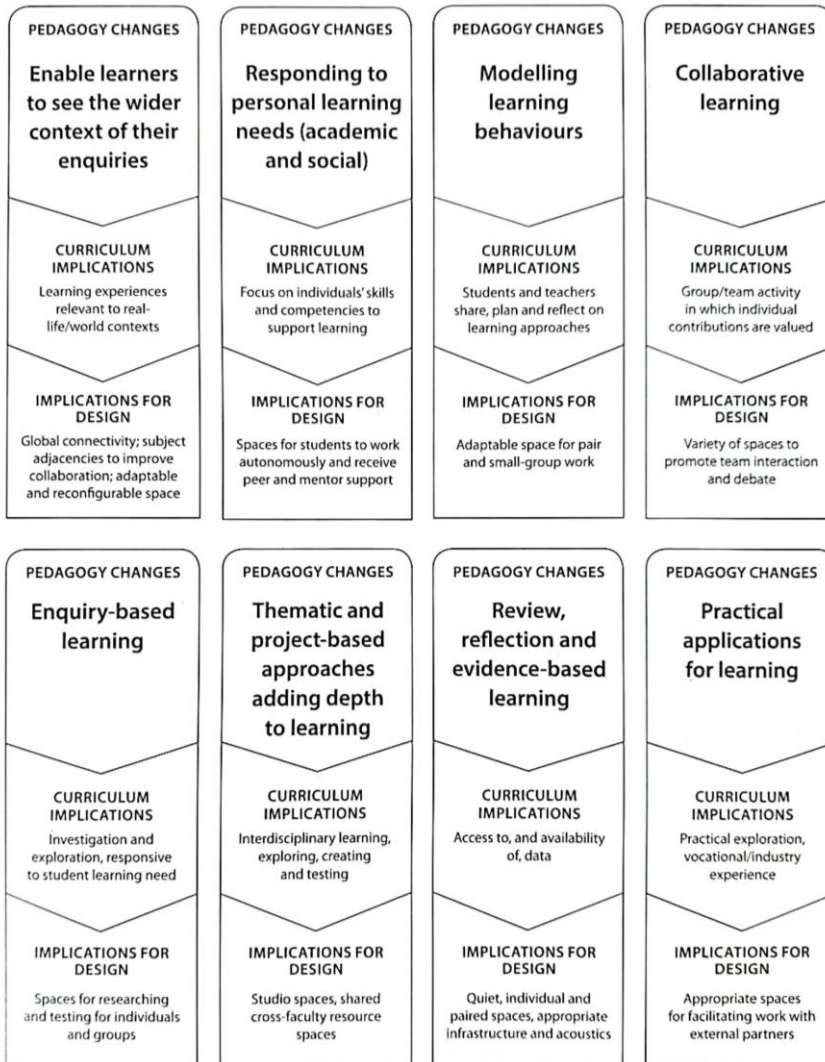


Fig 5; Spaces to encourage creativity and movement

Barret et al. (2015), of the University of Salford UK, wished to explore the classroom environment further. His studies took over eight years to conduct a survey including “3,766 children, in 137 classrooms, from 27 very different schools” (Barret et al., 2015 p5), to eventually provide evidence that the physical features and design of the classroom were responsible for 16 per cent of the learning progress. This study was conducted at Primary School level and although it was not done in higher education it does offer a concise guide and holistic approach to classroom design for both educators and design professionals (Barret et al., 2015). The study was conducted in the UK and as this research is being conducted in Dublin, Ireland, it was deemed appropriate to link with a similar demographic to gain further insight into the studies between the physical and learning environment.

Bosch (2018) also believes that the buildings we work, live, and learn in, have a direct influence on wellbeing and our ability to learn. Bosch considers many educational institutions are out of date with current pedagogical practices sharing the views with several other research studies (Freire, 2016; OECD, 2016; Ferrell, 2017; Lindbald, 2000, as cited in Wolff, 2003). She advocates for early learning spaces in primary and secondary school to respond to the diversity of students that may inhibit them using design as a tool to develop more effective learning scenarios to motivate and energize both the learners and educators. In response Bosch has designed a set of six principles to assist in the composition of learning spaces that offer choice and movement within a learning space. These include the “mountaintop, cave, campfire, watering hole, hands-on, and movement” that aim to connect learning situations to a physical framework (2021, p 44). Each principle allows for a degree of learning and contact with peers depending on the activity required. For instance, the spatial concept of cave is aimed for times that require personal space and direct concentration, while mountaintop, campfire, and watering hole facilitate larger groups and peer interaction. Alternatively, hands-on and movement are designed to harness the student’s energy through sensory and physical activities. Bosch seeks to challenge established culture and norms offering design tools for innovation and change (Bosch, 2021). Similarly to Barret et al. (2015), these studies are focused predominantly on primary and secondary school environments but aim to highlight how the traditional method of teaching and learning is being outdated by pedagogies that are more akin to 21st century requirements. The case studies are predominantly in Europe, supported by academic research that aim to highlight the impact of the physical space on education. Additionally, architect Hertzberger (2019, as cited Hudson and White, 2019) believes the design of school for children has the greatest impact on shaping their lives. He advocates that as adults, we are shaped by our early childhood experiences and built environment, so in turn the responsibility on parents, architects, and educators is to provide the best possible spaces for children to grow and develop both intellectually and emotionally.

To compliment Barret et al. (2015) and Bosch (2018) extensive studies at primary and secondary level, Wolff’s (2003) report on physical learning environments was conducted at Ohio State University, which identified similar principles to Bosch. Wolff’s literature review indicated that there was a need for change in the learning experiences of students to prepare them for the diverse roles and skill requirements of the 21st Century. Within this, project-based and collaborative learning was identified as a supporting pedagogy. The study then moved onto the physical learning space that might best support the learning process to meet these new roles and responsibilities. Thirty-two design features were acknowledged during the research and placed into six categories to support collaborative, project-based learning. Those factors included a “home base, collaboration incubator,

computer lab, caves, staff nodes and laboratory suites” (Wolff, 2003, pg 34) . The essence of the findings suggested that there was a clear interrelationship between people and their learning space. However, Wolff suggests further investigation is required into the relationships between people and space to support collaborative learning, identify the core elements of the physical design of the classroom, and research into how colleges can implement active learning approaches.

Miller et al. (2019) looked to explore this notion further and conducted a roundtable study with leading representatives from UK Universities, UK Architectural practices and UK Research Consultancy Firms to investigate learning environments in higher education. Their findings suggest that the design and development of space should also consider the experiences and motivations of individuals. This is supported by a Global Workplace Trends survey conducted by Miller et al. (2014), which found that people are motivated by their sense of engagement, connection and belonging. They suggest that campus planners must consider both the physical and psychological needs of individuals.

Strong evidence across the literature suggests there is a growing trend and realization that as teaching and learning develops, so too should the physical spaces this occurs within. This has resulted in a heightened interest among researchers to ascertain the connection between certain pedagogical practices and classroom design (Perks, Orr and Alomari, 2016).

Drawing upon insight from the Miller et al. report (2019), the headings of both the psychological and physical needs of individuals will be used to further explore the literature.

2.3 Psychological Needs

Maslow, one of the founders of humanistic psychology, theorized that people are guided by their needs, and once one need is satisfied, they progress onto the next. He also believed that some needs may have priority over others. Maslow created a hierarchy of needs in line with what he believed marks the five stages of human growth to include physiological needs, security and safety, self-esteem, self-actualization and belonging (Mcleod, 2023). O’Donnell et al. (2014) believe that the fulfilment of Maslows’ hierarchy of needs for children on their own, or with the help of family and friends can lead to a strong foundation for adulthood. However, any deficiency in these needs can hinder a child’s performance in school, at home and in their adult life. Mau et al. (2014) believe that feeling safe is paramount and should be a priority in our environment as only when we feel safe, secure, and our needs are met, can we be ready to learn. Mau et al. (2014) study could look to supports Barrett et al.(2015) extensive eight year study that was able to document evidence that the

physical learning environment accounts for 16 per cent of the learning process at primary school level.

However, without clear guidance these new learning spaces could be prone to failure. Samura (2018), a professor in the Attallah College of Educational Studies at Chapman University US, warns that even when new classrooms are designed carefully, both students and lecturers can return to practices which they have learned in the past. In essence, unless clear direction is supplied people tend to revert to practices that they are most familiar with. For example, educators may promote collaborative learning in class by re-positioning furniture, however, without a continued effort to foster collaboration, the class including the lecturer and students, may revert to the default lecture-based traditional layout.

Fisher et al. (2009) in collaboration with Steelcase Learning, considered a similar query to ascertain how teachers and students use their redesigned learning spaces in line with an active based or problem based pedagogy at higher education. Several of their empirical studies found that both students and lecturers can have serious problems in recognizing the benefits of their new learning spaces, with the main reason being the lack of experience or support on how to use the space. Another factor that transpired was an emotional reaction from students who felt like they were being forced into an unfamiliar environment.

Kollar et al. (2014) believe this is due to lack of prior experience of a new learning space both physically and instructionally. In essence as these spaces are new - the participants do not have “internal scripts” to guide them in these new learning space (Kollar et al. 2014, p 8). Schank (1999, as cited in Kollar et al.) argued that the development of an internal script is related to a series of repeated experiences in adequately similar situations. Without clear direction the participants may not succeed in making use of the new opportunities being offered.

In order to avoid failure in these new learning spaces Fisher’s (2005) research into identifying effective learning environments proposes that students should act as the researchers to ascertain the relationship between pedagogy and the design of their physical space. He suggests using a similar approach as the BREEAM Assessment Method (2022) for both students and teachers to assess and evaluate their environment in order to arrive at a conclusion that involves both parties in the design process of their learning space. As this researcher is also an industry professional in the construction industry this concept poses as an interesting approach. BREEAM is a tool used to assess a buildings performance with a strong emphasis on environmental design, sustainability, and local biodiversity. It uses a series of categories to assess how a building performs with its energy use, day to day maintenance, building user health, wellbeing, and access to site. BREEAM is required to be

accredited by an approved third-party assessor, however it would require to be actioned in the early stage of a project construction by the design team and client. Ultimately BREEAM (2022) looks to have considered construction and design, that reduces the environmental impact and performance of buildings, while ensuring the wellbeing and health of the users that may inhabit them. Central Bank of Ireland, Gibson Hotel Dublin, and Diageo's New Brewery Dublin all have BREEAM accreditation – to the knowledge of this researcher, at the time of this research, there are no educational facilities in Ireland with BREEAM accreditation to date (2023).

Similarly, Bosch (2021) also originates from a construction background being a qualified Interior Architect. She echoes Fisher's (2005) recommendations by indicating the significance of students being more involved in their own learning, and believes that considered interior design can engage and motivate, so that all students can accomplish their potential.

It is clear that student engagement and wellbeing is placed as a priority by The Irish Higher Education Authority (2023), Teaching and Learning Authority (O'Farrell, 2019), Irish Universities Association (2023), Union of Students Ireland (2023) and many institutions within Ireland (Collins et al.2016). The focus appears to be primarily on how institutions can develop a sense of community and support students academically and mentally, thus providing a seamless integration to employment, which is undoubtedly a critical factor. To the knowledge of this researcher, at the time of this research being undertaken, a study within a design faculty at an Irish higher education institution which includes the physical environment (classroom and campus) has not yet been published. The following chapter will elaborate upon the physical design of higher education environments in more detail.

2.4 Physical Needs _ Issues that impact design

As introduced in earlier chapters (section 1.2, and 2.2) – the physical design of the classroom is suggested to have an impact on the learning, motivation, and engagement of the students with corresponding pedagogical practice (Perks, Orr and Alomari, 2016; Kelly and Padden, 2018; Hudson et al., 2019).

Holec and Marynowski (2020) suggest that research into learning environments and the idea of matching pedagogy to room styles is a fairly new endeavour. In order to examine this further, inspiration from the guidelines addressed in Planning Learning Spaces - a practical guide for Architects, Designers and School Leaders (Hudson and White, 2019) are used as headings to explore each item with additional literature to support.

The headings include:

Indoor Environment_ Classroom

- Views
- Light
- Temperature
- Acoustics
- Flexibility

Outdoor Environment _Campus

- Sense of Belonging
- Wayfinding

2.5 Indoor Environment_ Classroom

Views

The School Design and Planning Laboratory (SDPL) research team developed by Tanner (2009) USA, found in their early studies that classrooms which provided views towards outside life were deemed to have a positive effect on the learning environment.

Over a period of several years, conducted in seventy-one schools, based in the United States, they were able to condense their findings into five guidelines which include:

- (1) "Views overlooking life. Students need vistas to the outside world that are not overlooking a wall or parking lot. "(Tanner, 2009, p. 386)

Furthermore, Lee et al. (2015) argue that taking breaks within nature, paired with direct views of the natural environment can restore and extend students attention. Their study included a cohort of one hundred and fifty university participants with whom they compared the effects of two different views, one with a green roof natural environment, and one view of a bare concrete roof. In order to assess the participants they used an adaptation of the Sustained Attention to Response Task (SART), developed by Johnson et al. (2007). The natural green roof view was observed by participants as being more restorative and improved their attention. While the respondents who perceived the concrete roof displayed deteriorating attention levels throughout the task.

- (2) "Unrestricted views. Windows should be available within the classroom, and when glare is not a problem, without obstructions such as posters and curtains. "

(3) "Living views. From the classroom, not necessarily from the sitting position, students should be able to view some indoor spaces and outdoor spaces such as gardens, wildlife, fountains, mountains, and the sky." (Tanner, 2009, p. 386)

Additionally, Li et al. (2016) conducted studies to assess the impact of school views on students' ability to recover from stress and mental fatigue. Five public schools were selected in the US within urban, rural, and suburban environments. Learners were asked to sit in identical orientation and distance to a window where available. Rooms without windows were also considered. Classroom activities were conducted, and each session was assessed after thirty minutes. Their results suggested that there was a possible link between greener campus areas with classrooms providing views of nature in compared to classrooms with no views or views towards urban environments. At the end of each break, students with a view to nature completed basic tests substantially better and displayed greater recovery from stress, compared to students with no view or a view onto an urban environment.

(4) "Functional views. Doors and windows should allow the student to easily see at least 50 feet outside the classroom."

(5) "Green areas. It is important for the student to see outside spaces, close to the school building, having trees, grass or gardens. There should be few views of parking lots and roads" (Tanner, 2009, p. 386)

Point four and five could be deemed to have connection with the theory of Biophilic design, which seeks to connect our intrinsic connection with nature within the built environment and was introduced as a concept by Wilson (1984), a prominent biologist and University Research Professor at Harvard (Team, 2018). Biophilic design draws on humans' innate attraction to nature by strengthening this connection through a set of carefully designed guidelines and patterns. Heath (2023), who is a renowned UK-based interior designer and architect offers solutions for spaces to promote human centered design and wellness. His studio specializes in transforming living, working, and learning spaces into places of wellbeing using Biophilic Design as an integral part of the process. The studio's design solutions are research based, demonstrating that an improved connection to nature has the ability to improve people's capacity to perform tasks, and overall experience of space. Heath's educational case studies include the garden school Hackney UK, Uppingham school Rutland UK, and university Manchester UK (2023), which have all incorporated elements of Biophilic Design to improve the users' wellbeing.

Webb, an Irish based Interior Designer also advocates for the use of Biophilic Design to improve wellbeing with a dedicated resource to wellness interiors. Even though Webb's projects tend to

concentrate on residential projects, a concept design for a Dublin based school is included to support an educational environment (2023).

Light

After food and water, light can act as one of the most important environmental factors to affect our bodily functions. Different coloured light can have an effect on blood pressure, respiration and brain activity Wurtman (1975, as cited in Tanner, 2009). Classrooms with poor light can cause students to develop a daily form of jet lag, with some forms of florescent lights being responsible for mild seizures (Lee et al., 2015). Tanner (2009) completed a survey of seventy one schools across the US examining the impact of artificial and natural light in classrooms. The outcomes were shown to prove that good lighting substantially influenced science test scores and reading vocabulary.

Additional Li et al. (2016) believe that the amount of daylight within a classroom can also effect student performance. They considered the theory of Seasonal Affective Disorder (SAD) which is often associated with seasonal depression causing sadness, loss of interest, and inability to concentrate (Beauchemin and Hays, 1996). They argue that student performance can be affected by SAD and classroom design needs to ensure good natural daylight is provided to avoid these negative characteristics on the students. Furthermore, Barrett et al. studies (2015) that were conducted over an eight year period found that of all the design factors they considered, they found that lighting had the greatest impact on students.

Temperature

Barrett et al. (2015) also found that teachers wished to have control over the temperature of their classroom, which subsequently proved to be a major factor in the comfort levels of their rooms. Mendall at al.(2005) conducted studies to ascertain the associations between the indoor environment quality and impact on student performance. They found that as the temperature increases, students' attention span decreases due to the associated temperature discomfort. In addition, a UK survey conducted by the teachers' union NASUWT (2012) also found that temperatures of over 30 degrees celsius were being observed within classrooms, and a cooler environment was seen to be more conducive for a better learning environment (Wargocki and Wyon, 2007).

Acoustics

Good classroom acoustics are important for learning for all students in general, and can be especially prevalent when English may not be your first language or for learners with impaired hearing (Noise Pollution Clearing House, 2018). Poor acoustics and noisy classrooms can inhibit the

motivation of even the most talented student to be able to absorb and excel in their studies (Wetherill, 2002). Similarly, Crandell et al. (2000) focused on studies with children in schools and found that the acoustic environment can be a major factor in the psychological and academic achievement of students. However, Barrett et al. (2015) report claims that acoustic comfort was not an important factor in their findings. They believe the reason is that their studies were focused on moderate sized classrooms, where sound can be controlled, and in general the teacher can always be heard. Barrett et al.'s (2015) studies were conducted over an eight year period and are quite substantial in their review and reports, however it should be noted that acoustics are part of the Irish Building Regulations for both dwellings and buildings under the guidance of the Department of Education. The overall objective of the performance standards in the guidance for schools at primary and post primary level is to provide acoustic conditions in schools that:

- Facilitate clear communication of speech between teacher and student, and between students.
- Do not interfere with study activities (Department of Education and Skills, 2003, pg 2)

There is clear guidance which relates to the specification and installation of materials to provide acoustic comfort in teaching spaces, study spaces, circulation zones, corridors, entrances, and stairwells. Even though the Technical Guidance Document notes primary and post primary settings, it is understood within the design industry and especially with acoustic specialists that the guidance refers to educational settings including Universities (ICAN Acoustics, 2020).

2.6 Basic Needs _Physical Movement

In a recent post covid study by Steelcase Learning (2022) in higher education they have found that people wish to have more control over their environment. The Learning Environment Evaluation (LEE) study reports that 92% of learners often or always move furniture to support their learning while 42% of instructors also wish to move their furniture into new layouts. However, they suggest that further consideration must also be given to design for safety, effectiveness, inspiration, and flexibility. Flexibility allows for students to easily work in groups or teams seamlessly, however, furniture and poor design that may prove difficult to move is likely to cause irritability, annoyance or even anger at not being able to perform the task appropriately, and thus, interrupting learning engagement (Eugene et al.2013).

According to Miller et al. (2019) students' sense of ownership over space can be a predominant feeling that can contribute to students' feelings of belonging and confidence. Bearing in mind the campus may act as their primary area of residence for their studies it could be beneficial to allow for

some comfort, that they may also feel at home, by allowing for flexibility and freedom to move and adapt their environments to suit their needs.

In anticipation of the findings of this study, the literature discussed in the preceding sections is noteworthy as it suggests that changes to the classroom physical factors and design should be considered in relation to the wellbeing and engagement of the users.

2.7 Outdoor Environment _Campus

Sense of Belonging

Addressing the classroom physical environment remains important. However, looking further outside these walls to review what happens outside the classroom would serve to give a better overview of the student experience. The campus can assist in a sense of belonging by considering opportunities for collaboration within the class and the key adjacent social areas that can foster and build a community (Miller et al., 2019).

Re-enforcing the notion of Biophilic Design, Bratman et al's (2015) research aimed to ascertain how the built environment can stimulate students' creativity. Part of their study included research into Biophilic Design and how when merged with the built environment it can promote physical, social, intellectual, and psychological well-being. One of their studies conducted at Standard University US suggested that taking a walk in nature has positive effects on the brain, which in turn, can help to reduce "rumination (repetitive thought focused on negative aspects of self)" (Bratman et al. 2015, p 8567), a possible risk for mental illness. Their studies found that after a ninety-minute walk through a natural environment participants reported lower levels of rumination. Correspondingly the studies reported reduced neural activity in the area linked to mental illness, from those who walked through an urban setting. This could aim to support the idea that key adjacent areas on campus should have natural environments included as opposed to an urban built environment only.

Samura (2018) advocates for these social spaces outside the classroom to be nurtured as rich sites for student belonging to be fostered, as these zones can be actively associated with a students' ability to form new relationships and towards feeling part of a wider community.

Tate (2023) acting Director for Tate + Co Architects advocates for these spaces, referring to them as third spaces that could be better utilised for informal interactions on campus. The third place is a term that was coined by Oldenburgh (2017), an urban sociologist, which refers to places that people would spend time between their home – the first place – and work – the second place. The third place acts as a location where people can have social interactions, spend time, and ultimately build relationships and form a sense of community.

Way Finding

It is important to consider the role of wayfinding to facilitate these informal spaces outside of formal learning zones. Buildings that offer a variety of functions and activities can sometimes lead to complex wayfinding. Educational buildings tend to offer a variety of facilities to both students' and staff which can include classrooms, canteens, sports facilities, and accommodation. Due to the nature of these activities, a requirement for these facilities to be separate from each other may be necessary, and therefore this requirement can sometimes lead to an environment that presents complex wayfinding (Iftikhar, Asgar, and Luximon, 2020). This situation could pose a day to day challenge and sometimes even a danger when life threatening events such as a fire or similar states of emergency would hamper peoples' ability and perceptions of space (Hidayetoglu, Yildirim, and Cagatay, 2010). This could be emphasised for people visiting campus for the first time, which could either be as a first year student or visitor (Wiener, Büchner, and Hölscher, 2009).

Buildings that have wayfinding, orientation, or a high level of complexity issues have been reported by Hidayetoglu, Yildirim, and Cagatay (2010), to have a significant problem for the users. In turn this could inhibit someone's perception and overall reputation of the institution Passini (1992, as cited in Iftikhar, Asgar, Luximon, 2020). Good wayfinding that allows for ease of movement can aim to benefit the users and their ability to access the institutions facilities (Iftikhar, Asgar, and Luximon, 2020).

When a "whole institution approach" (Universities UK, 2023, p.12) is adopted, this may allow students to connect themselves both physically and emotionally to their new environment. Subsequently, this could assist with students' sense of safety, protection, and belonging. The Universities UK Steps for Change (2023) initiative, reports that one of the most significant aspects of student experience is the physical environment to enable student growth.

Samura (2018, pg 23) reiterates this belief by reminding us that:

"...without serious consideration of space, many student's needs (and desires) will remain unknown and unaddressed"

According to Gailford et al. (2019) report on student mental health and wellbeing, the importance of creating the correct culture, wellbeing, and sense of community cannot be overstated.

3. Methodology

3.1 Design

The research is grounded in a qualitative and interpretive paradigm. Whitaker and Fitzpatrick (2021) recommend that an interpretive perspective draws upon an underlying qualitative methodology, which employs methods for collecting data including observations, and in-depth interviews. These techniques are utilised to gain a deeper understanding of the reality experienced by the respondents, and what meaning this brings to their actions. The qualitative methodology adopted for this study is interview-based and applies an interpretive perspective to the analysis of data collected. This is deemed appropriate as this study aims to understand students' individual preferences and rationales for their preferred learning environment based on their feelings and perspectives.

A researcher's position can influence their own perspective, thus it is essential for them to consider their preferences in order to adopt the most useful tools for the associated research purpose (Crouch, Christopher and Pierce, 2012). In this respect, as previously outlined (section 1.2 pg 2), this researcher brings their own observations and rationale to this study based on the experience gained through personal development (PG.Dip Ed, UDL), designer industry experience, and working as a part time lecturer in higher education. Furthermore, although the exercise described in section 1.2 conducted in classroom 2, BK002, as illustrated in Fig 2, offered some insight into student preferences on classroom layout, it did not allow for discussion, or the reason why students may have particular preferences.

Interpretive research is grounded on the premise that perceptions of reality are shaped by social environments and human experience, which are important considerations to understand human behaviours (Pervin and Mokhtar, 2022). Therefore, an interpretive approach lends itself well to a small, targeted sample population, situated within a design faculty, at a higher education institution in Dublin, Ireland. In contrast, quantitative research is often associated with a post-positivist paradigm, aimed at large scale research, with the production of numerical data which is seen to be separate from the researcher (Cohen, Lawrence and Keith, 2017). Student engagement and experiences seem to be more qualitative than quantitative since learning is perceived as a process and not an outcome (Borba, Alves and Campagnolo, 2020). Qualitative research methods involving interviews and observations were deemed appropriate due to the nature of the research questions, as they sought to acquire a deeper understanding of the experiences and perspectives of the participants (Dingwall, 2020). Additionally, interpretivism is built on the premise that people cannot be researched in the same way as the natural world. Natural sciences are deemed to have no

consciousness, however people are shaped socially by their beliefs, motivations, and the meaning this brings to the world around them (Whitaker and Fitzpatrick, 2021). Consequently, this study wishes to gain further insight and understanding of the reality experienced by the participants of this study within a design faculty in higher education.

A limitation that may arise within this paradigm choice is that it focuses on small groups, and the findings cannot be interpreted or generalised as a true representation of larger populations (Sarantakos, 2013). As data is collected through interviews and observation as opposed to a measured quantitative study, validity and transparency has been addressed in this study by adopting the constant comparative model (Whitaker and Fitzpatrick, 2021). Data was analysed from each interview after completion and compared with the emerging themes to identify if it was corresponding or challenging (Silverman, 2017). The data was compared with findings from previous studies discussed in the literature review, to identify if the data gathered from participants, either confirmed or challenged the outcomes of previous work. This also resulted in new questions being posed that had not been identified earlier in the study (Creswell and Creswell, 2018). Detailed and rich descriptions to convey the findings have been adopted with the intention of providing a realistic setting of the data and analysis (Creswell and Creswell, 2023). Face validity was addressed by ensuring that each question within the questionnaire had a logical link with the objectives and the topics explored within the literature review (Kumar, 2005). Validation for participants has also been included in the questionnaire and illustrated in Table 7, Appendix 9 with participant responses.

However, Sarantakos (2013) argues that any limitations or criticisms of qualitative research should be seen as strengths and not weaknesses as the study is contextual, and the guidelines for qualitative research should be observed as different, not inferior to those used in quantitative research.

3.2 Participant Recruitment

The data upon which the findings are based were collected from undergraduate, full time, design students over eighteen years of age. Representing the design faculty of Dublin College of Design (pseudonym), thus creating a small, targeted sample, which may be considered representative of the population studying design related disciplines, who use the campus facilities daily. It is a college of higher education with a mixed cohort of students from both Ireland and abroad.

To identify a cohort of students this researcher does not work with, an informal discussion was conducted with the program director of the faculty, regarding the design students proposed

participation in research study. It was agreed that upon being notified of ethical approval it would be acceptable to approach the students. The head of the faculty was also notified.

Upon receiving ethical approval from the institution's Ethics Committee (28th February 2023 – refer to Appendix 1 to 6) an email was sent to the students through their program director as an introduction to the study. They were informed about the study, guaranteed confidentiality, provided with data protection information, and reassured that their participation was voluntary. Both the program director and head of faculty also received copies of the information sheet by email directly. The information sheet may be found in Appendix 2 and Appendix 5. Note any identifying information has been covered to maintain the anonymity of the college and students on both the ethics form and information sheet.

Subsequently, with permission from their program director, a meeting towards the end of their class was agreed (09th March 2023). This allowed for a face-to-face opportunity with the students to fully comprehend the information sheet previously sent by email and ask any questions about the study. Hard copies of the information sheet were supplied, it was reiterated that participation was voluntary, and participants could withdraw from the study at any time with no reason supplied. While students were gathering their belongings after the discussion, the atmosphere of the room became more informal. The students relaxed, and it proved to be a valuable few minutes, during which they approached this researcher with additional queries on location and context for interviews. During the formal discussion, this researcher stood at the front of the room, however when getting ready to leave, this researcher shifted position to one of the students' tables. This was an interesting observation in the context of this study as it could imply that the students' were more comfortable to ask questions, and approach someone, when they were not at the front of the room representing a figure of authority, Simons (2008, as cited in Gordy et al., 2020).

Five students chose to take part. They have been given the pseudonyms of Ina, Luke, Alan, Yasmin, and Noel. It was intended to have small sample sizes in the hope of stimulating rich, deep descriptions, and explanations. However, it was anticipated that between eight to ten students would participate. An additional follow up email was sent to the intended cohort, but unfortunately no further students volunteered. Another department within the design faculty was contacted in hope of gaining more support, however no response was received there either. Perhaps, to facilitate increased participation, it could prove beneficial for future researchers to conduct their studies earlier within the term before end of year exams become more vital for the students.

Students made contact by email to indicate their interest. An agreed time and date when the student would be free, and not under pressure to attend class, was confirmed by email. Following this, they

were supplied with the interview questions and consent form by email for review. No data was collected until the signed consent form was received. Printed copies of both were also supplied by the researcher at the interview.

3.3 Interview Procedures

The interviews were conducted face to face on Dublin College of Design campus in two separate rooms between mid-March to mid-April 2023 during term two of the college calendar. Interviews lasted between thirty to forty-five minutes. Microsoft word dictate was used as a tool with a voice recording also – it was explained to participants that both tools were being used as word dictate is not 100% reliable and that the researcher would listen back to the recording to ensure the transcript was correct. Observations were noted during sessions. Data was transcribed and analysed after each interview. The recordings are held within a password protected file on the researcher's password protected laptop and are to be deleted one year after the project is complete. A transcript of interviews with all identifying information removed are stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick. Information gathered as part of this research will be destroyed after graduation or in 24 months, whichever is sooner.

Before the participants arrived, all equipment was prepared. To assist with the participants feeling comfortable, a few minutes were taken before the interviews for an informal conversation and then the topic was introduced again (Thomas, 2017). That participation was voluntary, and participants could withdraw at any time without having to provide a reason was restated before moving onto review and signing of the consent forms. Two copies of the consent form were created, one for the participant and one for the principal investigator. It was emphasized to the participants that there was no right, or wrong answer, and the research was focused on their personal experiences and opinions. When the interview was over, a few minutes were taken to informally wrap up before leaving the room (Creswell and Creswell, 2018).

3.4 Format of Interview Questions

The intention of the interview was to provide semi – structured, open-ended questions. The purpose of semi- structured questions was to elicit individualised participant views and opinions (Creswell and Creswell, 2023). Questions were aimed towards feelings, perceptions, and seeking directional information that could assist in uncovering new questions or future research (Sarantakos, 2013). Refer to Appendix 6 and 7, for questionnaire copies.

The structure of the questions included:

Beginning with a warm up question – also referred to an “ice breaker” (Creswell, 2009, p. 125) is intended to be a question that can be easily answered and put both parties at ease with each other (Harvard University, 2022).

For example:

Can you tell me how long have you been studying at this institution?

Followed by more specific questions (Thomas, 2017):

Could you describe a situation where you felt comfortable and at ease within a classroom environment?

Inclusive of follow ups (Harvard University, 2022):

Can you tell me about the atmosphere in this classroom using the below headings as a guideline?

- a) Light – Natural + Artificial
- b) Temperature
- c) Noise
- d) Materials (walls, floors, ceilings)
- e) Furniture (seating, tables)
- f) Views out of the window

Structuring was used to move onto a different topic (Miles, Huberman and Saldana, 2013):

For example:

I would now like to introduce a different topic.

Including respondent validation (Creswell, 2009):

How did you find the interview questions related to the theme of preferred learning environments that encourage motivation and engagement using below headings as a guide?

- a. Were they hard to answer?
- b. Had you thought about these things before?

- c. Did they make you reflect upon your preferred physical environment in relation to your studies?
- d. Did you think the questions were clear?

Closing questions and wrapping up questions were used to end the interview (Brinkmann and Kvale, 2018):

Thank you for your time, are there any more things would you like to say before we end the interview?

The content of the questions were guided by the research objectives and the topics that were gained from the literature review. The themes under which the questions are organized include:

Part 1_The Classroom Themes

Part One concentrated on The Classroom with 10x questions (including sub-questions)

- Classroom environment
- Engagement with studies
- Sense of Belonging/ Ownership
- Physical Movement

Part 2_Outside the Classroom (on campus) Themes

Part Two discussed outside the classroom with 4x questions (including sub-questions). Part Two also included a question for respondent validation and a clear wrapping up of interview.

- Facilities and access
- Sense of Belonging/ Ownership
- Validation

3.5 Ethical Considerations

3.6 Ethical Clearance

Researchers may start their literature reviews but are unable to start gathering data until clearance has been received by the Ethics Committee for their proposals (Wheat et al., 2018). An ethical approval form was submitted to the institution's Ethics Committee on 10th February 2023. A response from the Ethics Committee was received on 17th February 2023, with some advice on the wording of the GDPR warnings to be revised correctly in line with the college procedures. Some typographical errors related to ensuring that anonymity of participants was protected were also

suggested. Revisions were made and re-submitted on 18th February 2023 with approval received on 28th February 2023. A copy of this form can be found from Appendix 1 to Appendix 6 including ethical approval form, participant information sheet, data protection, consent form, faculty information sheet, and research instrument.

3.7 Code of conduct

According to the British Education Research Association (BERA, 2018) educational researchers' should show respect for any persons, including themselves, that may be involved in their research study. Dignity should be maintained with no form of prejudice ever be given to the context or participants. It is important and necessary that researchers protect their research participants and ensure that the integrity of their research is guarded against misconduct which may reflect on their participants or institutions (Creswell and Creswell, 2018). According to the Department of Health, Education and Welfare (1979) persons under the age of eighteen are considered minors in Ireland and ethical issues such as informed consent, anonymity, and confidentiality need to be obeyed throughout the entire research process.

The cohort was undergraduate learners over eighteen years of age whom the researcher does not lecture. However, it was important that power relationships between the researcher and participants would not be a factor, either in inhibiting the participants from responding honestly, or resulting in them feeling under pressure to take part in the research study (Whitaker and Fitzpatrick, 2021). This was addressed by recruiting participants from student cohorts that the researcher does not work with.

As previously set out in section 3.2 - to identify a cohort of students this researcher does not work with, an informal discussion was conducted with their program director, regarding students proposed participation in research study. It was agreed that upon being notified of ethical approval it would be acceptable to approach the students. The head of the faculty was also notified.

Researchers should be aware of the time and effort participants need to dedicate in order to be a part of a research study and look to mitigate any concerns (BERA, 2018). The intended timeline for conducting interviews was proposed as Mid-March. It was important to start as close to the date when ethical approval was received as this researcher was conscious that the students would start to have impending deadlines of their own as term was coming to an end. The interviews finished in mid-April 2023 during term two of the college calendar. More than one option was suggested for dates and times when students confirmed their interest by email to avoid them being under pressure to attend class, or other personal commitments.

According to the institution's ethics guidelines, under which ethical approval was received: participants should be made aware that consent is voluntary, they can withdraw at any time, and no pressure should ever be exerted upon them to participate (Institutional guidelines, 2023). As previously set out in section 3.2 - upon ethical approval being received an email was sent to the proposed cohort through their program director to ensure the researcher did not have access to personal emails. The email acted as an introduction to the study. They were informed about the study, guaranteed confidentiality, provided with data protection information, reassured that their participation was voluntary, and that they could withdraw from the study at any time without giving reason. Both the program director and head of faculty also received copies of the information sheet by email directly. Information Sheets may be found in Appendix 2 (participants) and Appendix 5 (head of faculty and program director). Subsequently, with permission from their program director a meeting towards the end of their class was agreed (09th March 2023). This allowed for a face-to-face opportunity with the students to fully comprehend the information sheet previously sent by email and ask any questions about the study. Hard copies were supplied, with reiteration that participation was voluntary, and they could withdraw from the study at any time with no reason supplied. It was made clear that no incentives were at hand and there was no direct benefit for students to take part. It was also stated that confidentiality would be retained, and in the event of the interview triggering any emotional event the researcher would stop the session.

As previously set out in section 3.2 - students made contact by email to indicate their interest. An agreed time and date when the student would be free, and not under pressure to attend class, was confirmed by email. Following this, they were supplied with the interview questions and a consent form by email for review. No data was collected until the signed consent form was received. Printed copies of both were also supplied by the researcher at the interview.

3.8 Confidentiality and Anonymity

One approach to ensure privacy and protection from harm is to provide anonymity to the participants. The principle method to ensure anonymity is to remove any aspect of identification by applying pseudonyms to participants and the context of where interviews were conducted (Cohen, Manion, and Morrison, 2017). Pseudonyms have been applied to the participants, the institution they currently or previously attended, and the venue of where the interviews were held. Their country of origin is noted as international or domestic with no details on exact locations or regions. No address or date of birth details were taken.

In this study, interviews were used for data collection and analysis. Denscombe (2010) suggests that the success of an interview is to establish a climate of trust and to this end a crucial factor is to

ensure confidentiality, so that members are assured that if they choose to reveal a personal feeling or some aspect of their personal lives, it will be treated as confidential. This has been addressed in the consent form and was reiterated before the recordings began. As explained in section 3.7, procedures to reassure participants regarding confidentiality was taken before the recording took place, reiteration of the consent form, and the devices that were being used throughout the interview explained.

3.9 Data Security

Data protection must also be adhered to and while it may not be necessary to inform the data commissioner with respect to one's research it is good practice to comprehend the principles and abide by them (Malone, 2023). The Data Protection Commission (DPC) (2023) includes eleven principles under which it advises on:

Access and portability, accountability obligation, lawful processing, transparency, data protection by design and by default, risk based approach, data security, breach notification, data protection impact assessments, data protection officers, controller and processor relationships (DPC, 2023, pg 1)

These principles aim to supply guidance on the most common questions in relation data protection law and the underlying requirements of data protection. They are aimed towards data subjects, and data controllers and should be read before any requests are made to the DPC directly or data controllers (DPC, 2023).

Data protection information was included within the information sheet for the participants in Appendix 3. The legal basis for processing participant data is Article 6(1)(e) of the EU General Data Protection Regulation stating " 1(e)processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller" (GDPR hub, 2023, pg 1)

Furthermore, the institution from which ethical approval was received from places great importance on General Data Protection Regulations (GDPR) with a data protection officer and data committee in place to ensure best practice by all students is maintained (Institutional guidelines, 2023).

3.10 Analysis

Data was gathered through words within a qualitative and interpretive paradigm. Unlike a quantitative study these words were not converted into numbers, but instead were used to gather understanding and insight (Thomas, 2017).

The constant comparative method was used during data analysis, a method widely used for qualitative analysis in order to ensure validity (Silverman, 2017). The first interview was transcribed with analysis of emerging themes, which identified a possible weakness in the interview questions. This triggered a return to the literature review to gain more insight, resulting in prompt questions being included with the questionnaire – a copy of interview questions are included in Appendix 8 which highlights the inclusion of the prompt questions.

The goal of this researcher was to comprehend and gain insight into the commonalities and differences between the participants (Dudovskiy, 2023). This required transcribing each interview once complete to ascertain if emerging themes and data were similar or challenging (Whitaker and Fitzpatrick, 2021). The literature review remained constant throughout this process, with development of the topics in line with the emerging categories after each interview.

First Stage

Immersion and engagement with the data was done through careful re-listening to the recordings and reading through all the data on numerous occasions to ensure familiarisation. Observations were noted during this process.

The questions posed during the interviews were used as an initial framework for analysis. The data was initially noted paying particular attention to the important features which emerged. This allowed for recurring ideas within the data, from each participant, to start forming as themes. Tables outlining the emerging themes were used to start gathering the information. Similar quotes related to reoccurring topics were grouped together.

Second Stage

Upon review of the initial themes the entire data set was reviewed to produce a thematic map of the analysis. Data reduction began with any temporary concepts that were not reinforced by further data being put to one side. These temporary concepts proved to act as differences within the participants' opinions and have been illustrated as such in the findings. Data was compared and connected, focusing on where similar ideas were related and then clustered together. This allowed for the emerging themes, and relevant sub-categories, to become more clearly defined.

The definitive list of themes which emerged has been illustrated within tables so they can be clearly identified. The main themes and relevant sub-categories are presented as a discussion including illustrative quotes from the participants.

3.11 Introduction to Participants

This section offers a brief introduction to the participants of the study.

Ina

Ina is an international student who has been studying design at the Dublin College of Design for four years. Having been raised with a strong heritage and cultural background, she believes it may influence many of her choices as a young adult.

Luke

Luke is a domestic student who has been studying at Dublin College of Design for three years. He has previous experience of studies at another Design led institution in Dublin. Drawing on this previous experience in comparison with his current studies, he can assert strong opinions on his preferred learning environment.

Alan

Alan is an international student who has been studying at Dublin College of Design for four years. Due to cultural differences and how English is spoken in Dublin he found the language transition very difficult and preferred to spend time alone during his first year especially.

Yasmin

Yasmin is a domestic student who has been studying at Dublin College of Design for two years. She has previous experience of studying at another design led institution in Dublin that left a positive impression on her, which in turn, helped to inform her decisions on spaces that make her feel comfortable and at ease for her studies.

Noel

Noel is a domestic student who has been studying at Dublin College of Design for four years. Even though he has some strong opinions on the wayfinding of the main campus he is generally happy with the layouts and atmosphere related to his current studies.

4. Findings and Discussion

The purpose of this study is to identify if there is evidence to support or challenge several established theories (Beicher et al., 2000; Wolff, 2003; Fisher, 2005; Barret et al., 2015; Steelcase Learning, 2022; Holec and Marynowski, 2020; Bosch, 2021) and to explore participants' preferred layout within the built environment for their engagement and wellbeing on campus, both in and outside the classroom.

Analysis and findings are discussed under two themes that emerged within the findings. These are:

- The impact of Basic Needs within a classroom for student wellbeing
- The impact of Basic Needs outside a classroom for student wellbeing and sense of belonging

4.1 The impact of Basic Needs within a classroom for student wellbeing

Under the theme of indoor basic needs, the participants were asked to express their opinion on their preferred classroom layout, classroom activities, the furniture including materials, views, and overall atmosphere that influenced their engagement and wellbeing with their studies. They have been grouped into sub-categories to include: classroom layout, classroom activities, furniture, materials and atmosphere.

4.2 Classroom Layout

Four visual aids depicting classroom layouts were used as discussion prompts. These are illustrated in Fig 6. (Drew, 2019). Layout A is deemed to be more akin to a traditional layout with the tutor focused at the top of the classroom and the students facing in rows towards the front of the classroom reiterating the opinions of both Freire (2016) and Ferrell (2017). Layout B, C and D differ from a traditional layout and would be more akin towards the SCALE UP model offered by Beicher et al. (2000) that aims to promote a more collaborative space amongst both learners and educators.

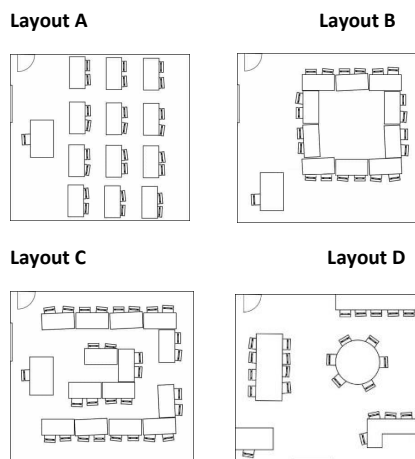


Fig 6. Classroom Layouts

4.3 The impact of internal scripts on preferred classroom layout

Across the participants, there was a diverse response to the question on preferred classroom layouts with a variety of styles being chosen to suit individual needs. It was evident within the interview data that the preferences of the participants are influenced by previous learning experiences from secondary school, previous academic experience, and cultural heritage. According to Kohler et al. (2014), internal scripts guide us in our decision-making process based on previous experience.

For example, Luke had previous and positive experience in another higher educational environment and was able to draw on this knowledge for comparison with the classroom environment for his present studies.

"...the current place I'm at it - you can't really collaborate with anyone and I guess it would be good for a classroom setting or maybe more of a business degree where you're sitting down and you're just taking information in - but with design, which is what I study, it doesn't really lend itself well to them"

Similarly, to Luke, Yasmin was able to refer to a positive experience in another educational institution to assert strong opinions on her current studies. Even though she expressed opinions on the illustrated layouts Fig 6, she felt none of them were in line with her needs.

"...none of these layouts is 100% ticking all the boxes.."

She finds the layout and atmosphere of her current studies quite challenging to work within and prefers her home environment for studies.

"... I found that I cannot do any work in the classroom - I usually come here for lessons and I leave with the same amount of work - I can't do anything - and I just cannot concentrate on work like at home "

Ina's educational experience during primary, secondary and college, has for the most part been within a traditional layout. She once experienced a different layout for an art class during college and even though it felt unfamiliar it prompted her to consider what other possibilities may be available. However, based on her previous educational experience and associated comfort with familiarity, she remains somewhat ambivalent about a new layout.

".....so it just made me think - how else would other layouts be because right now I haven't experienced - how it would change - maybe it might be better than from ones I'm used to - but yeah it depends"

Noel was generally content with the classrooms he spent time in, with the room of his favorite subject being his most preferred.

“ I really feel comfortable in all the classrooms - my favorite classroom is the computer classroom - I just like the best - but I feel comfortable really in all of them”

However, when the discussion on classroom layouts was approached he had strong opinions on layout A traditional layout due to previous school experiences.

“...I think it's probably because the least like secondary school - I hated that – you're all sitting looking one way it's very organized - I never really liked that”

Alan found the classroom layout challenging which was amplified by concurrent other challenges related to cultural differences and how English is spoken in Dublin, Ireland.

“... basically of course it was very tough for me - because new environment - new people - like everything was new for me - totally new - so like during that time my comfort space was being alone”

Alan’s feelings during that first year could support Mau et al. (2014) theory which is based on Maslow’s Hierarchy of Needs that place feeling safe as being paramount. This should be a priority in our environment as only when we feel safe, secure, and our needs are met, can we be ready to learn.

During these initial discussions it became apparent that without guidance, students could be prone to failure when introduced to a new learning environment. Fisher et al. (2009) undertook empirical studies to find an emotional reaction can occur where students can feel forced into an unfamiliar environment unless they are given clear direction and support on the potential benefits available.

4.4 Layouts overview

The participants choice of preference to classroom layouts is illustrated in Table 1 with further detailed information in corresponding Tables 2 and 3. Layout findings section 4.5 will discuss these opinions in more detail to support.

Layout A is given an independent subheading to illustrate the opinions offered on a traditional layout while Layout B, C, and D are combined with the opinions on collaborative learning illustrated.

	Layout A	Layout B	Layout C	Layout D	
1 st	Ina	Yasmin	Alan	Luke, Noel	
2 nd		Alan	Ina, Luke, Noel	Yasmin	
3 rd	Alan	Ina, Luke, Noel	Yasmin		
4 th	Luke, Noel, Yasmin			Ina, Alan	

Table 1: Participant Preferred Layouts Overview

Layout A

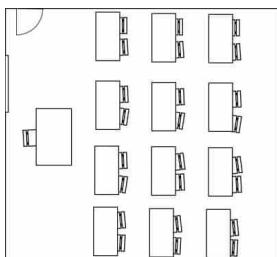


Fig 7: Layout A Traditional Layout

Layout A Fig 7 (Drew, 2019), is based on a traditional layout which places the tutor at the front of the room representing a figure of authority with the students facing in rows in the same direction signifying a more passive role (Freire, 2016).

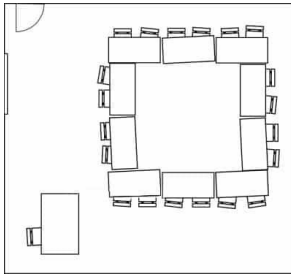
Each participant confirmed that the classroom they spent most time in their current studies, is similar to layout A. Their opinions and comments on this type of classroom layout are illustrated in Table 1 and discussed in more detail in layout findings section 4.5.

	Layout A	
1 st	Ina	<i>"...I would choose layout A simply because it's what I've been used to right from primary school - where I'm from going through nursery school secondary school that has always been the layout so to go from anything outside that to something else - it's uncomfortable - stick to layout A just because that's what I'm used to - it's comfortable..."</i>
2 nd		
3 rd	Alan	<i>".....layout A it seems like everyone it's not very connected you know - and I think this is one of the problems where new students might face"</i>
4 th	Luke	<i>".... layout A would be my least favorite and reminds me about school"</i>
4 th	Noel	<i>'...I think it's probably because the least like secondary school - I hated that - you're all sitting looking one way it's very organized - I never really liked that"</i>
4 th	Yasmin	<i>".....layout A there's no space to move around really and that's very classic layout of tables and not everyone gets it - not everyone gets the same attention - I think more the front that are at advantage and also not everyone wants to sit at the front..."</i>

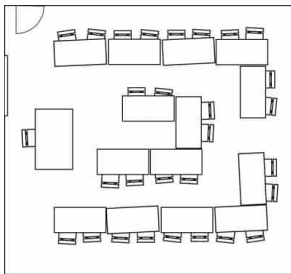
Table2: Preferred Layouts Participant Opinions on Layout A

Layout B, C, D_ Collaborative Layouts

Layout B



Layout C



Layout D

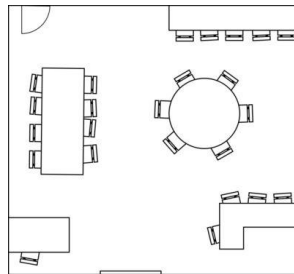


Fig 8; Layout B, C and D Collaborative Layouts

Layout B, C and D differed from layout A and suggest a more student to student approach with the tutor removed from appearing as the sole figure of authority as illustrated in Fig 8 (Drew, 2019). The objective is that they should promote a more collaborative space amongst both learners and educators (Beicher et al., 2000).

Their opinions and comments on layout B, C, and D are illustrated in Table 3 and discussed in more detail in layout findings section 4.5.

	Layout B		Layout C		Layout D	
1 st	Yasmin	".....so in layout B I like the way that nobody can see your laptop from behind.."	Alan	"I would prefer Layout C - out of these four layouts"	Luke,	".....you have options for collaboration on the circular table - but then you also have the option on the top right to kind of work on your own..."
					Noel	"..... probably because I just didn't really like secondary school - so maybe it's because of that - I like being completely opposite to it."
2 nd	Alan	"..... layout B I really like but it seems like the most important person in the classroom is the lecturer and I don't think she's like connected with the students.."	Noel	"....there was one or two classes that did something sort of like C without the middle bit it'll just be this kind of like U shape or C shape which was nice - because teachers - you have a full few of them and it wasn't like you were behind like three or four rows of people.."	Yasmin	".... I haven't seen a classroom like that before it's more like an office layout..."
			Luke	"...and I guess C and B are quite similar to me hmm I guess maybe C first because on the B layer you're quite far... I guess maybe C first"		
			Ina	"... but if I was to choose another one I think I would stick to layout C just because I still have that layer of A in it and I can still like retreat to the back if I don't want to like see anyone - cause that's just what I'm comfortable with.."		
3 rd	Ina	"...and then next B.."	Yasmin	"..and layouts C third.."		
	Luke	"...and I guess C and B are quite similar to me hmm I guess maybe C first because on the B layer you're quite far... I guess maybe C first"		"..there isn't much space to move around.."		
	Noel	"..B and is similar to C in a way -I'd feel really awkward to be looking like directly at someone.."				
4 th					Ina	"...and then lastly would be D"
					Alan	".....so it seems like we would be like dividing the students amongst separate groups - it doesn't feel like it's connecting - because I feel like in the college we have people from various backgrounds - from various countries - and it seems if I'm from this place I would prefer to stick with that people you know - it's like a closed group - so I feel layout D might have that kind of close group"

Table 3: Preferred Layouts Participant Opinions on Layout B, C, and D

4.5 Layouts Findings

A strong theme that emerged from the discussion on layouts was the theory of internal scripts that help guide us in our decisions based on a series of repetitive previous experiences Schank (1999, as cited in Kohler et al., 2014). This was particularly apparent with Ina, Luke, Noel and Yasmin. Ina was very cautious with the notion of changing any classroom layout away from the traditional, as this is what she had been used to since primary school. Even though she said she may be open to alternative layouts - her cultural upbringing had always taught her not to question authority and she found the idea of change somewhat uncomfortable. Furthermore, Ina had good experiences related to a traditional layout being the most familiar and relatable, thus her internal script was adhered to through a positive association. However, both Luke and Noel's rejected their internal script towards a traditional layout as it was associated with a negative school experience and therefore felt layout A would be their least favourite for their current studies. This would support Bosch (2018) and Hertzberger (2019, as cited in Hudson and White, 2019) who believe early childhood experiences and the built environment can shape our adult lives, and through informed design choices, architects, parents, and educators can provide the best possible spaces for children to grow both intellectually and emotionally. Furthermore, the OECD (2016) report on educational institutions advises that institutions need to adapt and change to provide students with the requirements they need to succeed in an unknown and changing future, however many institutions appear the same as they did a generation ago.

Yasmin's internal script was related to a very positive previous academic experience in another institution which helped inform her views on her current studies, and even though she did choose from the list of layouts in order of preference, she still felt none of them would be exactly ideal.

Alan did not indicate an internal script based on previous experience; however, he offered an interesting perspective on how the layout of a classroom could help or hinder the opportunity for students to feel connected to each other, and how challenging it could be for new students to make friends or not. Alan's view on collaborative layouts B,C and D challenges the research of Gordy et al. (2020) on spatial equity in active learning environments. They found that a similar layout would promote a non-hierarchical learning space by allowing groups to form and sit together, which in turn, they deem would offer a positive psychological atmosphere conducive to learning. They also believe that this type of environment would break down homophily – a circumstance in which students tend to make friends with others from similar backgrounds, social, behavioral, and demographic (Alder et al. 1995). In their student interviews, they did receive positive comments from students who felt the new environment offered an opportunity to make new friends. However, it cannot be overlooked

that in this study a participant believes that this would cause the opposite, promoting closed groups sitting together with less collaboration amongst peers, and the ability for new students to make new friends. Alan’s view lends support to the recommendations of The National Forum for the Enhancement of Teaching and Learning report on students transitioning to higher education (2016). The report proposes that much research is still required to understand students’ perspectives on entering higher education who have come from previous educational experiences.

Correspondingly, Ina, Yasmin and Alans views can look to support that clear guidance on how to use a space should be provided to avoid them being prone to failure, students feeling like they are being forced into an unfamiliar environment (Fisher et al., 2009), or lecturers’ and students’ reverting to old practices (Samura, 2018).

4.6 Classroom Activities

Although the participants had a varied response to their preferred classroom layout it was surprising to find that they were somewhat united in the opinion, with the highest agreement expressed, on which layout best suited certain classroom activities that were required by their tutor, or when collaboration was required with their classmates as illustrated in Table 4. For on screen presentations, one to one discussions and working in pairs the traditional layout was deemed appropriate. Luke felt the traditional layout did not support practical demonstration if they were being held at the top of the room as it would hamper students’ line of vision and could prove quite disconnected from the lecturer. The rest of the participants believed it was appropriate. Despite this, they all believed the traditional layout was not conducive to working in groups and did not allow for flexibility or freedom of movement within a classroom. This could suggest that two different types of activities are required in the same room, and it might be worth considering that the more active based learning would be better suited for a workshop/ studio themed space.

During Class time with tutor/ lecturer in room Does Layout A Traditional Layout work well for:	ON SCREEN PRESENTATIONS	PRACTICAL DEMONSTRATIONS	ONE TO ONE DISCUSSIONS
YES	Ina, Luke, Alan, Yasmin, Noel	Ina, Alan, Yasmin, Noel	Ina, Luke, Alan, Yasmin, Noel
No		Luke	
During Class time when collaboration or group work is required Does Layout A Traditional Layout work well for:	WORKING IN PAIRS	WORKING IN GROUPS	ALLOW FOR FEXIBILITY AND FREEDOM OF MOVEMENT WITHIN ROOM
YES	Ina, Luke, Alan, Yasmin, Noel		
No		Ina, Luke, Alan, Yasmin, Noel	Ina, Luke, Alan, Yasmin, Noel

Table 4: Participant opinions on Classroom Activities

The participants' views correspond with Lindbald (2000, as cited in Wolff, 2003) who claims that a traditional layout inhibits the ability to create a variety of learning environments that aim to promote active learning. They also resonate with Hudson et al. (2019) who recommend that there should be an understanding of the complementary between pedagogy and the design of learning environments. This is reinforced by Holec and Marynowski (2020) who argue that research into learning spaces that match pedagogy to room styles is a fairly new endeavour.

4.7 Furniture, Materials, and Atmosphere Overview

Further discussions with the participants explored basic needs, including furniture, materials, noise/acoustics, and temperature. A table of these findings is illustrated in Table 5 p.43, with further description included in below headings.

Furniture

The choice of furniture was discussed with reference towards the tables and chairs supplied. In general, there were no strong opinions expressed on the furniture supplied except that for paired or group work the tables could be too small, and for extended periods of time Noel and Yasmin felt the chairs could become uncomfortable. However, considered concurrent to the participants' preferred layouts for distinct tasks being performed by either the tutor or classmates, this supports the prominence of having classrooms with flexible layouts. Flexibility of furniture can facilitate with students being able to work in groups or teams, which support some of the modern-day pedagogies of active learning, problem-based learning and team-based learning (Eugene et al.2013). Furthermore, the Learning Environment Evaluation (Steelcase, 2022) study in higher education, reported that 92% of learners often or always move furniture to support their learning while 42% of instructors also wish to move their furniture into new layouts

Acoustics

When personal concentration was required within a classroom all participants noted using headphones. Proximity to adjoining classrooms with poor acoustics was found to be a distraction when content was being covered by their tutor. Ina and Noel also referred to noisy flooring posing a distraction in some of their classrooms. Wetherill (2002), and Crandell et al. (2000) reinforce this theory in their reports on student performance being attributed to acoustics. However, this would challenge Barrets et al's. (2015) report that supposes acoustics not to be an important factor in their findings for classroom design. The Irish Department of Education (2003) offers clear guidance on acoustics that should be adhered to in an educational setting to enable effective teaching and learning. Given that all of the participants in this study expressed some form of distraction related to

acoustics, it could offer a rationale for future researchers to consider acoustics for student comfort and wellbeing with their studies.

Temperature

Temperature control was attributed to having a negative or positive influence on engagement with their studies with both Luke and Yasmin stating that this would have an impact on whether they attend class or not. Monday mornings were deemed as being the most difficult as they believed the heating had been off all weekend and they were entering classrooms that were too cold. Luke also had experience of his studies during COVID restrictions when windows would regularly be left open for ventilation throughout the winter periods, subsequently influencing his choice to attend certain classes or not. It is acceptable that this was during an emergency, however it offers some rational on his attendance to class during this period. The temperature of the classroom also affected where Ina would choose to sit within a room, with the location nearest the heater being a determining factor. Noel was the only one to mention a room being too hot, but advised he turns the heating off and opens the doors in this room when he arrives to cool it down.

Even though studies have been conducted that focused on rooms that were too warm with Wargocki et al. (2007), and NASUWT (2012), it could be worthwhile for future researchers to consider rooms that are too cold can also have an impact on student wellbeing.

Light and Views

Ina, Alan, and Noel expressed that natural light and views were poor in the classroom that they spent most time within in their current studies. Noel had a preference to spend time within the computer lab whenever he was not in class and attributed it to the natural light, views, and being able to receive good ventilation within this space. Yasmin and Luke both had robust feelings on their current studies as they could refer to previous positive experiences on a different campus that offered good views and good natural light.

There have been extensive studies (Tanner et al., 2006; Lee et al., 2015; Li et al., 2016) undertaken to investigate the positive impact of good views on student behaviour both academically, socially, and mentally that support the opinions of the participants. Lack of, or poor natural light has been attributed to Seasonal Affective Disorder (Beauchemin and Hays, 1996) as well as poor academic performance and tiredness (Tanner, 2009). Furthermore, Barret et al., (2015) took over eight years to establish the link between classroom design and learning, with lighting being found to have the strongest individual impact on students.

Basic Needs Physical Indoor	Natural Light Bad in room most time spent within	Natural Light Good	Temperature too Hot in current studies	Temperature too Cold in current studies	Acoustics Noise an issue – too much noise a distraction	Materials Floors	Materials Ceiling	Materials Walls
	Ina	Noel_ reference to computer room – not class room		Ina	Ina	Ina_ Noisy	Ina_ Ceiling is not cohesive	Ina_ Not soundproof
	Luke			Luke	Luke	Luke preferred natural materials	Luke preferred natural materials	Luke preferred natural materials
	Alan			Alan	Alan	Alan – v. plain	Alan – v. plain	Alan – v. plain
	Yasmin			Yasmin	Yasmin	No comment	Yasmin_ Lower ceilings preferred	Yasmin_ preference for colour
			IV5_reference to computer room – not classroom		Noel	Noel_ Noisy	No comment	Noel_ Visual Interest of Student work on walls a positive
	Furniture Tables	Notes	Furniture Seating	Notes	Views None @ Class Room most time spent within	Notes		Poor Ventilation
	Ina	Standard Tables – nothing special	Ina	Standard Chairs – nothing special	Ina	No views – look onto canteen		Luke
	Luke	Too small for paired or group work	Luke	Not comfortable	Luke	Can refer to good views from previous studies in another campus		Noel
	Alan	Ok – very plain	Alan	Ok – very plain	Alan	No Views – in basement level		
	Yasmin	height adjustable tables + chairs from previous studies	Yasmin	Refers to ergonomic chairs from previous studies	Yasmin	Can refer to good views from previous studies in another campus		
	Noel	Too small for paired or group work	Noel	Standard chairs plastic become sore after extended time Computer room offers better chairs for comfort	Noel	Prefers computer lab which offers good views		
Describe a situation where you felt comfortable and at ease – main factors emerging			Views out window	Furniture Seating	Natural Light		Temperature	Social
			Luke , Yasmin	Yasmin	Luke, Yasmin		Yasmin	Ina
Would classroom ever have any influence on whether you attend a lecture or not – main factors emerging			Ventilation	Temperature – Too Cold	Not having work complete – due to physical layout and how lecture navigates space		Comfort	
YES			Noel	Luke, Yasmin	Ina		Alan	

Table 5: Participant opinions on Furniture, Materials, and Atmosphere

4.8 Furniture, Materials, and Atmosphere Findings

The physical space is not seen as the main component but should be viewed as a facilitator for the learning process. In order to facilitate a learning environment many educators would agree that the physical design of a traditional classroom is not exactly ideal (Perks, Orr and Alomari, 2016).

Furthermore Wolffs' (2003) report suggests that there is a clear relationship between people and space and recommends that further investigation is required in order to identify the core elements of classroom physical design to support and promote collaborative learning.

Furthermore, as illustrated in Table 5, some of the emerging factors that made the participants feel comfortable were related to the physical design of the space including views, furniture, light and temperature. However, for Ina the social aspect of being with her peers was also a factor. When queried if a classroom setting would ever influence their attendance or not – ventilation, temperature and comfort were highlighted. Ina's reasoning was if she had her work complete or not, as she watched how the tutor would navigate the room and subsequently would know if she would be first or last to have her work reviewed.

These findings suggest that factors including classroom layout, acoustics, temperature, light and views, play a role in the participants comfort levels and attitudes towards their indoor learning environment. Reinforced by Yasmin, who felt there was room for improvement within her current campus.

".... definitely made me realize how some spaces here on the campus are not that welcoming for students and could be improved massively to maybe improve the learning experience for students"

Samura (2018) advocates for educators to foster ways to be able to gather feedback from the students that use the space, and integrate this as an ongoing process of the campus over time. Ultimately, students have the best understanding and experience with these spaces. These findings offer a small insight to the potentially valuable feedback that may be available through the students.

Taking inspiration from Fisher's recommendations (2005) that suggests linking educational research with concepts from the construction industry could prove an interesting framework to adopt to include students in the design of their learning environments. It could be argued that as they are the ones that spend the most time within these environments they could be in the best position to offer solutions ensuring the spaces they spend so much time within support their needs (Tekin and Kotaman, 2013).

To elaborate this idea further this researcher has set out some considerations drawing from their own industry experience. This is centered on how a building contract has traditionally been applied

and proposes new methods for collaboration that includes all users to be a part of the design process.

Traditional Building has included standard building contracts – usually confined to the construction works only. It can sometimes be deemed a declaration of war between client and contractor that concentrates on the contractual process instead of the actual product (Gunnigan, 2019).

Unfortunately, this can result in projects not meeting their intended deadlines, costing more than the initial budget, being unfit for client or end user requirements, and resulting in disputes (Cooke and Williams, 2009). Design and build contracts put the onus on the contractor to be responsible for both the construction and design. They can work well where the client's requirements are clearly set out. However, they are deemed unsuitable for more sensitive projects where the requirements cannot be identified in advance of contractor appointment (Cunningham, 2013).

However, an alliance contract challenges traditional approaches, deemed as incentive-based relationships. All individuals agree to work together as one team. This aims to ensure a no blame policy, with all parties working cooperatively to overcome problems and/or risks (Stiegler, Vinson, and Elkins, 2019). This approach requires a multi-disciplinary team to act with integrity, work collaboratively, and agree uniformly on project decisions. Alliance contracts have proven their success as good contracting model for managing investment and services in both public and private sectors (Portes, 2017). One such educational example was the construction of the new Technical University (TU) Dublin campus (2014). The team was made up of designers and architects, local design lead representatives, landscape architects, contractor, and the end users. The project achieved its target date opening to 1000 students, achieved planned quality within budget, and everyone emerged with "enhanced professional reputations' (Gunnigan, 2019, p19). Key characteristics of an Alliance Contract therefore includes integration, one voice, one outcome (Shaw, 2021).

4.9 The impact of Basic Needs outside a classroom for student wellbeing and sense of belonging

Under the category of basic needs outside the classroom the participants were asked to express their opinion on their preferred spaces on campus that they were drawn towards for concentration, group work / collaboration, and some time out for themselves as illustrated in Table 6 p.48.

They have been grouped into sub-categories to include:

- Access
- Sense of belonging

4.10 Access

Wayfinding and being able to easily navigate throughout the campus emerged as an issue the participants felt was poor on campus. Noel had strong views on this especially “... *I hate the wayfinding – I’m always a bit lost*”. Poor wayfinding can result in people feeling disorientated and frustrated, and even pose a danger when life threatening situations such as a fire or similar states of emergency would hamper people’s ability to navigate the physical space easily (Hidayetoglu, Yildirim, and Cagatay, 2010). Alan found it difficult to find classrooms when he was new to campus “...*when I was new here sometimes I wasn’t able to find the classroom easily..*”. This can be particularly evident for visitors to campus or first year students especially (Wiener, Büchner, and Hölscher, 2009).

Ina felt that even after four years on campus she could still find it difficult to find new classrooms “...*I still found myself lost even last year...*” This was re-iterated by Yasmin who also found that after two years she could be dis-orientated “... *even after two years I still get lost around here...*”.

Hidayetoglu et al. (2010) reported that poor wayfinding can inhibit a student’s ability to access campus facilities and in turn could influence their perception and overall reputation of the institution. However, offering clear wayfinding allows for users to easily access the building’s facilities (Iftikhar, Asgar, and Luximon, 2020). Ultimately, it can lend itself to build trust and dependance on the facility management (Hashmi et al. 2020). Luke had no comment to offer.

4.11 Sense of belonging

Student mental health and wellbeing can be nurtured through creating the correct culture and sense of community on campus (Universities UK, 2023). This can be supported by considering social spaces adjacent to classrooms that easily offer areas for collaboration and interaction (Miller et al., 2019). On occasion these areas are referred to third spaces where people are naturally drawn towards for human interaction (Tate, 2023).

All participants universally noted that they regularly use the outdoor green space to meet with classmates, collaborate on projects or when they are looking for some time out by themselves. Luke observed the design of the space is centred around a courtyard and felt this naturally encouraged people to gather. The reference to green space and being outdoors also links with Biophilic design which aims that through an improved connection with nature can improve people's capacity to perform tasks and their overall experience of space (Heath, 2023). It should be reflected that making use of this green space would be weather dependent and considering the positive impact it appears to have on students it could be worthwhile for future researchers to contemplate alternative zones on campus that could be used similarly but are indoors and/or sheltered.

All participants were comfortable returning to classrooms when lectures were not being held and would regularly rearrange the furniture to suit their needs. Availing of classrooms when not in use was mainly done for collaboration on group projects. Even though all participants expressed they would rarely move furniture during class time they felt comfortable doing so when a class was not in place. This supports Miller et al.'s (2019) report, which suggests a sense of ownership and belonging with campus spaces can be identified among students who feel comfortable in returning to their learning spaces, after class time to collaborate.

Yasmin was the only one to mention using the library while on campus. She felt she needed quiet space to concentrate on her studies and found it challenging to get work done in the classroom or around other people.

Ina and Noel both mentioned regular use of the computer labs for concentrated work. This was Noel's favourite room on campus and where he felt most comfortable with his surroundings especially.

Yasmin was the only participant who referred to the canteen for social interactions. However, she also felt the canteen layout was not very welcoming and would prefer to return to one of the smaller classrooms for group work.

4.12 Access and Sense of Belonging Findings

The opinions expressed on seeking out different zones while on campus for the participants' studies supports the work of both Bosch (2021), and Wolff (2003), who have both set out design principles that advocate for choice, movement, project based areas, collaborative based zones, and areas for private retreat so that students can select how they wish to work based on the activities required.

As wayfinding was noted as an issue it could prove beneficial for future researchers to identify clear wayfinding that will benefit the students and their ability to access the institutions facilities (Hassan, Asgar, and Luximon, 2020).

When proper facilities for students are supplied to interact and collaborative they will feel comfortable with their space and not rely on learning to only happen within a formal setting (Ferrell, 2017).

Basic Needs outside a classroom for student wellbeing and sense of belonging	Returning to classroom after class	Areas that are inviting on campus Outdoor space	Areas that are inviting on campus Computer Room	Areas that are inviting on campus Classroom	Wayfinding on campus poor	Time for yourself while on campus outdoor space	Areas to meet with others on campus Outdoor Space	Use of Library on campus	Use of canteen on campus
	Ina	Ina	Ina	Ina	Ina	Ina	Ina	Yasmin	Yasmin
	Luke	Luke	Noel		Alan		Luke		
	Alan	Alan			Yasmin		Alan		
	Yasmin	Yasmin			Noel		Ina		
	Noel	Noel							

Table 6: Participant opinions on Basic Needs outside a classroom for student wellbeing and sense of belonging

5. Conclusion

This study has investigated higher education design students preferred built environment for their wellbeing and studies while on campus. The study was initially motivated by the researcher's observation that students may wish to move furniture around to suit their needs while in class. Paired with the literature review, which indicates, a growing interest in matching pedagogy with physical space for student wellbeing, this research aimed to shed some light on this phenomenon.

As the project progressed and interview data was analysed, several themes emerged. These were the prominence of internal scripts (Kollar et al., 2014) with influenced participants' preferences, the alignment of participants' preferences with biophilic design (Heath, 2023) and the importance of including students' preferences within the design of their own learning spaces (Samura, 2018; Bosch, 2021). It could prove beneficial for future researchers and those involved in the design of learning spaces to consider that without clear direction, new environments could be prone to failure and affect students' wellbeing and engagement which supports the recommendations of Fisher (2005; Fisher et al., 2009).

Questions that referred to physical space off campus which are included in the questionnaire Appendix 6, 8 and 9 produced no data of value to support or illuminate the objectives of the study and the decision was therefore taken to exclude this as a focus within this study.

The findings of this project reveal that the participants expressed certain needs and desires within the built environment which would support their studies and paired with consideration of psychological needs could potentially enhance their experiences on campus. These needs can be considered in relation to fulfilment of Maslow's hierarchy of needs, which can lead to strong adult relationships (O'Donnell et al., 2014), and when matched with a strong sense of safety in our educational environment can lead to positive learning experiences (Mau et al., 2014).

The findings suggest that students would appreciate having physical environmental flexibility and choice of movement to either work comfortably in groups/ teams as well as having retreat spaces to limit distractions supporting the studies of Wolff (2003), Steelcase Learning (2022) and Bosch (2021).

The traditional layout was deemed by the participants to be appropriate for lecture methods of teaching i.e.; on screen presentations, and practical demonstrations. However, for more active learning in group or team-based activities it was not deemed appropriate. This could suggest that two different types of activities are required in the same room, and it might be worth considering that the more active based learning would be better suited for a workshop/ studio themed space.

Light and views have been proven to have positive affects through the studies of Tanner et al. (2006), Lee et al. (2015), Barrett et al. (2015), Li et al. (2016). The participants who were able to compare previous experiences in similar environments were able to validate these studies.

Even though there is some evidence in literature to support the importance of acoustics (NPCH, 2018; Crandell et al., 2000), it should be noted that this was a principal distraction expressed by all participants. Furthermore, the Department of Education Ireland (2003) have clear guidelines and associated legislation for educational facilities to abide by for noise control and comfort.

Temperature was also noted as a concern affirming the studies of Wargocki et al. (2007), Mendall et al. (2005), NASUWT (2012), Barrett et al. (2015). These studies concentrated on temperature being too hot, however, the participants in this study also expressed rooms being too cold. This could offer reason for future researchers to include classrooms which are too cold as a study.

The participants' comments indicate that physical factors including layouts, flexibility, the amount of natural light/ views, acoustics, and temperature play a role in the participants' comfort levels and attitudes towards classrooms. Subsequently, this could potentially influence their satisfaction with the learning experience (Espey, 2008).

The research participants noted that outside class time they did avail of outdoor green spaces, classrooms when not in use, the computer lab, and to some small extent the library, thus confirming the studies of Ferrell (2017), Heath (2023) and Tate (2023).

Poor wayfinding on campus was expressed as an issue to access college facilities adequately, establishing the reports of Wiener, Büchner, and Hölscher (2009), Hidayetoglu, Yildirim, and Cagatay, (2010), Iftikhar, Asgar, and Luximon (2020).

It is clear that Student engagement and wellbeing is placed as a priority by the Irish Higher Education Authority (2023), National Forum (O'Farrell, 2019), Irish Universities Association (2023), Union of Students Ireland (2023) and many institutions within Ireland (Collins et al., 2016). The focus appears to be primarily on how institutions can develop a sense of community, support students academically and mentally, while providing a seamless integration to employment which is undoubtedly a critical factor. This study addresses the concept of the physical environment where students spend their time on campus, which has proven to have a direct influence on student wellbeing and subsequent engagement with their studies. Furthermore, the studies of Barrett et al. (2015) based in the UK, found that the physical environment accounted for a 16 per cent variation in student learning abilities. This proves conclusively that the learning environment does matter,

offering possibilities for future research on the built environment at Irish higher education institutions to be developed.

Educational institutions need to adapt and change to provide students with the requirements they need to succeed in an unknown and changing future, however many institutions appear the same as they did a generation ago (OECD, 2016). Although working towards a consensus of opinion could prove to be a substantial task, it could be achieved through further sustained research among educators, policy makers, and researchers around the world (Hudson and White, 2019). It can be concluded that when a “whole institution approach” (Universities UK, 2023, p.12) is adopted, this can allow students to connect themselves both emotionally and physically to their new environment fostering feelings of safety, security and sense of belonging.

The project was restricted by the time available to propose meetings with students and therefore it only focused on a limited number of participants, within a design faculty. The interview-based approach enabled the researcher to gain significant insight into the preferences of individual participants, which made the importance of internal scripts in determining preferences visible. In future studies, it may prove valuable to conduct focus groups to enable a larger cohort of participants to give their personal input. Conducting an action research study could prove beneficial, however it should be carefully managed to ensure from the outset that this type of research would be acceptable by the gate keepers (faculty, management, administration, lecturers etc). Caution should be abided by, so that any proposed changes in an action research proposal would not be disruptive to the environment or prove intrusive on the student experience. Despite its limitations this study aimed to highlight the value that could be gained collecting data from students who spend time in classrooms and use the campus facilities to gain further understanding of the built environment and impact on student wellbeing.

The use of an interpretive lens in analysis enables an understanding of specific perspectives. Interpretive analysis focuses on how people interrelate, how they form ideas, and think about the world while incorporating the researcher’s own views and understanding to help interpret the expressed opinions and behaviours of others (Thomas, 2017). Therefore, caution should be given to generalising these findings to the broader context of the campus including other faculties that may not be design related.

Further studies could investigate students’ opinions on their wellbeing and motivation in the built environment based within Irish institutions of Higher Education, inclusive over a full college year, or perhaps over a few years. Targeting a larger cohort of participants could address the stability of these findings. It could prove useful to compare experiences across the broader context of campus to

include all faculty users. Different opinions may influence what is perceived as an improved environment – what one student may see beneficial for their learning may be contradicted and even detrimental to another (Perks, Orr and Alomari, 2016).

It is this researcher's intention to highlight the fact that physical space (also noted as built environment) can act as a contributing factor to student well-being and engagement. The suggestion of applying an Alliance contract within an educational institution looks to ensure that all users of the campus facilities would be involved in the design of their built environment. An Alliance contract would be best suited within the context of renovation or new building works with a budget in place. However, it should not be overlooked that even small changes with a limited budget could be proposed with classroom layouts, allowing for flexibility within a room, temperature control by tutors/ students, and a review of campus wayfinding, could aim to improve wellbeing based on the participants opinions from this study.

As a final point it should be noted that this study did not assess the achievement of actual learning outcomes within a physical environment. Arguably this could be addressed in a more extensive study, concentrating on the same course, within the same room, with access to student grades conducted over a series of terms, possibly even years. The findings of this study do not claim to be a definitive example of the importance of classroom design and learning, but instead concentrate on well-being and engagement and aim to complement the existing and growing research literature which examines classroom and campus design at Higher Education.

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Appendix 1:

Griffith College Ethical Approval Form

This form should be completed by the researcher (with the advice of the research supervisor), for all research which involves human participants.

Research Title	An inquiry into the learning environment preferences of undergraduate design students: What spaces encourage their motivation and engagement?
Researcher(s)/Learner	Oisin MacManus
Supervisor (where relevant)	Dr. Cathy Peck
Programme of Study (where relevant)	MAELD Master of Education and Learning at Griffith College Dublin

Checklist:

<i>Please attach to all forms:</i>	
Summary of Project Proposal (no more than 500 words) <i>Please note full copy of revised proposal included as per email correspondence P.Gillis + C.Peck</i> (*Note Summary removed in this appendix as full dissertation in place)	✓
Participant Information Sheet	✓
<i>If applicable, application should also include the following:</i>	
Draft Consent Form	✓
Draft Research Instrument e.g. survey, interview schedule, focus group questions etc	✓

Part (a)

		Yes	No	N/A
1	Will you describe the main research procedures to participants?	✓		
2	Will you tell participants that their participation is voluntary?	✓		
3	Will you obtain written consent for participation?	✓		
4	If the research is observational, will you ask participants for their consent to being observed?	✓		
5	Is the right to freely withdraw from the research at any time made explicit to participants?	✓		
6	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	✓		
7	Will you debrief participants at the end of their participation?	✓		
8	Will your research involve discussion of topics which the participants might find sensitive?		✓	
9	Will financial inducements (other than reasonable expenses or compensation for time) be offered to participants?		✓	
10	Will your project involve deliberately misleading participants in any way?		✓	
11	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?		✓	
12	Does your research involve participants who are particularly vulnerable or who may feel unable to give informed consent e.g. prisoners; children; people for whom English is not their first language; learners in a programme you teach on?	✓		
13	Will any non-anonymised and/personalised data be generated and/stored?		✓	

If you answered YES to any of questions 8 to 13 please complete Part (b) of this form. If there are any other ethical issues that you think the Committee should consider, please explain them in Part (b) of this form. It is the researcher's obligation to bring to the attention of the Committee any ethical issues not covered on this form.

Part (b)

For each question 8 to 13 that you answered YES, please give a summary of the issue and action to be taken to address it (no more than 300 words in total):

Qu.12

It may prove possible that there are people involved with interviews whom English is not their first language however the cohort proposed are 4th Year undergraduate design students of Griffith College that maintains a Level 6. IELTS or Equivalent for these studies. A level 5.5 IELTS may take English language support in Semester 1.

Potential other ethical issues:

Signed (by Researcher):



Date: 28th Feb.2023

To be completed by the supervisor (in the case of a learner application)

PLEASE TICK ONE

As the supervisor of this research project, I confirm that I believe that all ethical issues relating to research have been dealt with in accordance with the College's policy on research ethics.



The application requires the attention and approval of the Research Ethics Committee. (In general, forms which answer 'yes' to questions 8-13, should be forwarded to the Research Ethics Committee).



Comments:

I am confident that the language requirements (5.5 – 6 IELTS) for the profile of learner that are proposed as participants in this research will act to substantially mitigate their vulnerability. Moreover, I am confident that participants who meet this language requirements are able to give informed consent.

Signed (Supervisor):



Date: 6th February, 2023

Participant Information Sheet – For Interview Participants

INTRODUCTION

My name is Oisín MacManus and I am a student in the MA in Education, Learning and Development at Griffith College, Dublin Ireland.

You are being invited to take part in a research study about the preferred learning environments that encourage motivation and engagement for undergraduate design students.

Participation is voluntary.

Before you decide if you want to take part, it is important for you to understand why the research is being done and what taking part involves.

Please take time to read the following information carefully and discuss it with others if you wish. Do ask me directly if there is anything that is not clear or if you would like more information.

WHAT IS THE PURPOSE OF THE STUDY?

I am interested to find out if the physical layout of a classroom has any influence on learners' engagement with the subject being taught, and whether the layout allows for them to work comfortably on their own studies while in the same room. I also wish to enquire if the layout of the classroom inspires students' enthusiasm and wellbeing for both themselves and collaboration with their classmates.

Outside the classroom, I would like to discover where students preferred space on campus is to work on their studies while alone or with classmates.

I would also like to discover students preferred physical environment for their studies when they are off campus and the reasons why they prefer certain spaces.

WHY HAVE I BEEN CHOSEN TO PARTICIPATE?

I am interested in understanding the experiences of undergraduate design students.

You are being invited to participate in this study because you have experience in being a design student on and off campus.

I am hoping to have ten participants in the study.

DO I HAVE TO TAKE PART?

Your participation in this study is voluntary. If you do decide to take part, you will be given this information leaflet to keep and asked to sign a consent form.

If you decide to take part, you are still free to change your mind and withdraw from the research at any time without giving a reason.

You are free to withdraw from the study at any time up to the analysis of findings, at which stage the data will be anonymous. Up to this point you are free to withdraw your data, without giving a reason for withdrawing, and without your withdrawal having any adverse effect for you.

WHAT WILL HAPPEN IF I TAKE PART?

If you decide to take part in the study the following will happen:

1. I will arrange with you a suitable time and location to meet and interview you.
2. Interviews will be face to face. They will not be filmed. An audio recording will be taken and I will take notes during the session.
3. The interview will last a minimum of 30 minutes and maximum of 60mins.
4. I will ask questions about personal preferences in relation to classroom layout and design.
5. I will also enquire about spaces you may use while not in the classroom for your studies.

Then I will listen to the recording and type up what was said. The recordings will be kept safe in a password protected file on my laptop and they will be destroyed 1 year after the project is completed. A transcript of interviews in which all identifying information has been removed will be retained for a further two years after this.

Data will be stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick.

I give my assurance that all information gathered as part of this research will be destroyed after graduation or in 24 months, whichever is sooner.

Personal data including your name, information gathered during interviews, and location of college will remain anonymous.

WHAT ARE THE BENEFITS, DISADVANTAGES OR RISKS IN TAKING PART?

There will be no direct benefits to participants, however I hope the results of the study will help me to understand students preferred physical environment for their studies and the reasons why.

I will take all measures to minimise any risk to you. All information will be treated confidentially.

In the event of the interview triggering an emotional event, the interviewer will stop the session.

WHAT WILL HAPPEN TO THE RESULTS OF THIS RESEARCH?

The information from this study may be published in scientific or educational papers and on public registries. If this is the case, your identity will remain confidential and no one will know that you took part in the study.

WHAT DO I DO IF I HAVE ANY FURTHER QUESTIONS?

If you have any questions or concerns regarding your participation in the study please ask me directly.

Also, at a later date if you have any concerns about the study or what you said during our interview, you can contact me at oisin.macmanus@griffith.ie .Thank you for reading this information sheet.

Data Protection Information

WHAT IS THE LAWFUL BASIS TO USE MY DATA?

Information will only be used for this research study which aims to inquire about the the preferred learning environments that encourage motivation and engagement for undergraduate design students' The legal basis for processing your data is Article 6(1)(e) of the EU General Data Protection Regulation (GDPR).

WHAT ARE MY RIGHTS IN RELATION TO USE OF MY DATA?

You are entitled to request any of the rights below unless it would make it impossible or very difficult to carry out the research study:

- The right to access to your personal data;
- The right to receive a copy of your personal data;
- The right to ask us to restrict our use of your personal data;
- The right to ask us to correct inaccurate information about your personal data; or
- The right to ask us to delete your personal data.

You are entitled to object to any further processing of the information we hold about you (except where it is de-identified).

INFORMED CONSENT FORM

STUDY: An inquiry into the learning environment preferences of undergraduate design students: What spaces encourage their motivation and engagement?

There are **two sections** in this form.

Section 1 contains statements of understanding and asks you to tick each if you understand. Please ask any questions you may have when reading each of the statements.

Section 2 asks for your informed consent. Please select either 'yes' or 'no' to indicate your choice.

Thank you for participating.

The end of this form is for the researchers to complete.

1. General Understanding	Tick
I confirm that I have read and understood the Information Leaflet for the above study. The information has been fully explained to me and I have been able to ask questions, all of which have been answered to my satisfaction.	<input type="checkbox"/>
I understand that taking part in this study is entirely voluntary. I understand that not taking part will have no negative impact on me.	<input type="checkbox"/>
I understand that I can leave this study at any time without giving a reason. I understand that leaving this study will not affect my education now or in the future.	<input type="checkbox"/>
I understand that I will not be paid for taking part in this study or receive any benefits from any products developed as a result of this research study.	<input type="checkbox"/>
I know how to contact the researcher if I need to.	<input type="checkbox"/>

By ticking each box above and choosing my options below and signing this document I agree to participate in - An inquiry into the learning environment preferences of undergraduate design students: What spaces encourage their motivation and engagement? - as described in the Participant Information Leaflet.

2. Consent	
I agree to take part in this research study, having been fully informed of the risks and benefits in the participant information leaflet provided to me.	Yes No <input type="checkbox"/> <input type="checkbox"/>
I agree to the use of anonymised information about me including information from interviews being used by the researcher for this research study as described in the participant information leaflet.	Yes No <input type="checkbox"/> <input type="checkbox"/>
I understand I am free to withdraw from the study at any time up to the analysis of findings, at which stage the data will be anonymous. Up to this point I am free to withdraw my data, without giving a reason for withdrawing, and without my withdrawal having any adverse effect for me.	Yes No <input type="checkbox"/> <input type="checkbox"/>
I understand that data will be stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick.	Yes No <input type="checkbox"/> <input type="checkbox"/>

Participant Name (Block Capitals)

Participant Signature

Date _____

To be completed by the Principal Investigator or nominee.

I, the undersigned, have taken the time to fully explain to the above participant the nature and purpose of this study in a way that they could understand.

I have explained the risks and possible benefits involved. I have invited them to ask questions on any aspect of the study that concerned them.

I have given a copy of the participant information leaflet and consent form to the participant with my contact details.

Researcher name Oisín MacManus

Title and qualifications Interior Design, BA honours Int.Design, Pg.Cert. Ed, MIDI

Date _____

Two copies to be created and retained: 1 for Participant, 1 for PI.

Faculty Information Sheet – For Head of Faculty and Program Director

INTRODUCTION

My name is Oisín MacManus and I am a student in the MA in Education, Learning and Development at Griffith College, Dublin Ireland.

I am looking to approach XXXXXXXX (*Note; name and location removed to retain anonymity) Students to take part in a research study about the the preferred learning environments that encourage motivation and engagement for undergraduate design students.

Participation is voluntary.

Before you decide upon the ethical review, it is important for you to understand why the research is being done and what taking part involves.

Please take time to read the following information carefully and discuss it with others if you wish. Do ask me directly if there is anything that is not clear or if you would like more information.

WHAT IS THE PURPOSE OF THE STUDY?

I am interested to find out if the physical layout of a classroom has any influence on learners' engagement with the subject being taught, and whether the layout allows for them to work comfortably on their own studies while in the same room. I also wish to enquire if the layout of the classroom inspires students' enthusiasm and wellbeing for both themselves and collaboration with their classmates.

Outside the classroom, I would like to discover where students preferred space on campus is to work on their studies while alone or with classmates.

I would also like to discover students preferred physical environment for their studies when they are off campus and the reasons why they prefer certain spaces.

WHY HAVE XXXXXXXXX BEEN CHOSEN TO PARTICIPATE? (*Note; name and location removed to retain anonymity)

I am interested in understanding the experiences of undergraduate design students.

XXXXXXXXXX (*Note; name and location removed to retain anonymity) Students are being invited to participate in this study because they have experience in being a design student on and off campus.

I am hoping to have ten participants in the study.

DO THE STUDENTS HAVE TO TAKE PART?

The students participation in this study is voluntary. If they decide to take part, they will be given the information leaflet as per attached *Participant Information Sheet – For Interview Participants* to keep and asked to sign a consent form.

If the students take part, they are still free to change their mind and withdraw from the research at any time without giving a reason.

Students are free to withdraw from the study at any time up to the analysis of findings, at which stage the data will be anonymous. Up to this point they are free to withdraw their data, without giving a reason for withdrawing, and without their withdrawal having any adverse effect for them.

WHAT WILL HAPPEN IF XXXXXXXX STUDENTS TAKE PART>(*Note; name and location removed to retain anonymity)

If an individual decides to take part in the study the following will happen:

- I will arrange a suitable time and location to meet with them individually.
- Time scale is proposed for Mid-March.
- Interviews will be face to face. They will not be filmed. An audio recording will be taken and I will take notes during the session.
- The interview will last a minimum of 30 minutes and maximum of 60mins.
- I will ask questions about personal preferences in relation to classroom layout and design.
- I will also enquire about spaces they may use while not in the classroom for their studies.

Then I will listen to the recording and type up what was said. The recordings will be kept safe in a password protected file on my laptop and they will be destroyed 1 year after the project is completed. A transcript of interviews in which all identifying information has been removed will be retained for a further two years after this.

Data will be stored securely on the researcher's password protected laptop and a backup on an encrypted USB memory stick.

Personal data including name, information gathered during interviews, and location of college will remain anonymous.

WHAT ARE THE BENEFITS, DISADVANTAGES OR RISKS IN TAKING PART?

There will be no direct benefits to participants, however I hope the results of the study will help me to understand students preferred physical environment for their studies and the reasons why.

I will take all measures to minimise any risk to them. All information will be treated confidentially.

In the event of the interview triggering an emotional event, the interviewer will stop the session.

WHAT WILL HAPPEN TO THE RESULTS OF THIS RESEARCH?

The information from this study may be published in scientific or educational papers and on public registries. If this is the case, the identity will remain confidential and no one will know that who took part in the study.

WHAT DO I DO IF I HAVE ANY FURTHER QUESTIONS?

If you have any questions or concerns regarding the participation of the Level 8 Interior Architecture Students in the study please ask me directly.

Also, at a later date if you have any concerns about the study, you can contact me at oisin.macmanus@griffith.ie

Thank you for reading this information sheet.

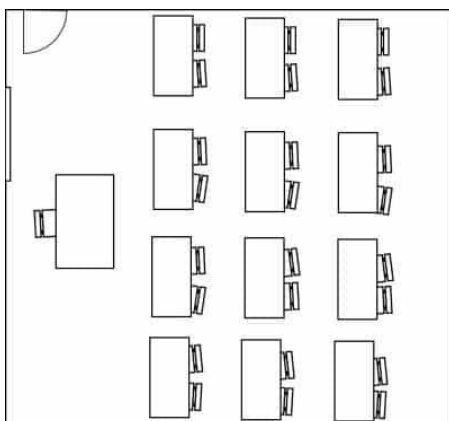
Research Instrument - Draft Interview Questions:

The Intention of these questions is to facilitate a Semi-Structured Interview

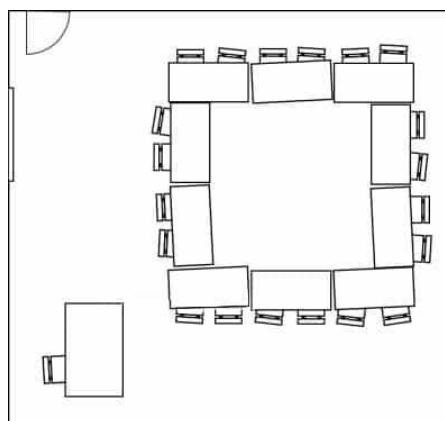
PART 1 – THE CLASSROOM GUIDE

1. Can you tell me how long have you been studying at this institution?
2. Could you describe a situation where you felt comfortable and at ease within a classroom environment?
3. Can you tell me about the atmosphere in this classroom using the below headings as a guideline?
 - g) Light – Natural + Artificial
 - h) Temperature
 - i) Noise
 - j) Materials (walls, floors, ceilings)
 - k) Furniture (seating, tables)
 - l) Views out of the window
4. Given a choice on the layout of the examples shown below can you note them in order of preference, and describe why would you choose one over the other?

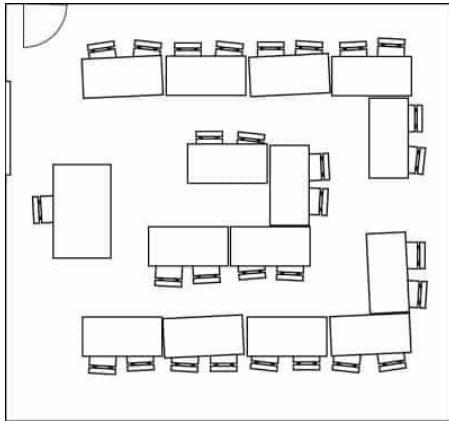
Layout A



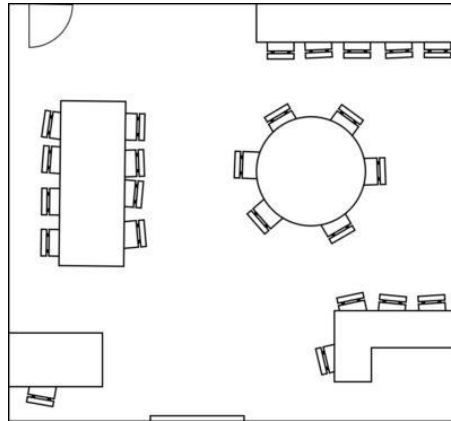
Layout B



Layout C



Layout D



5. In your current studies what is the classroom layout you spend most time within?
6. Would you ever move the furniture around to suit your needs in this classroom and why?
7. Do you find the layout of the classroom works well when project work is being covered by your tutor using below headings as a guide?
 - a. On screen presentations
 - b. Practical Demonstration
 - c. One to one discussion
8. Do you find the layout of the classroom works well when working in pairs or group work? Can you describe why?
9. When you require personal concentration in the classroom what methods do you use to ensure you can focus?
10. In your experience would the classroom ever have any influence on whether you attend a lecture or not? If yes can you explain your feelings and why.

PART 2 – OUTSIDE THE CLASSROOM GUIDE

I would now like to introduce a different topic

2. In relation to your studies can you tell me while on campus what areas are you drawn towards when you are seeking
 - a. Concentration
 - b. Group Work or Collaboration with classmates
 - c. Some time out for yourself
3. In relation to your studies when you are not on campus what areas are you drawn towards when you are seeking
 - a. Concentration
 - b. Group Work or Collaboration with classmates
 - c. Some time out for yourself
4. Respondent Validation: How did you find the interview questions related to the theme of preferred learning environments that encourage motivation and engagement using below headings as a guide?
 - a. Were they hard to answer
 - b. Had you thought about these things before
 - c. Did they make you reflect upon your preferred physical environment in relation to your studies
 - d. Did you think the questions were clear
5. Thank you for your time, are there any more things would you like to say before we end the interview?

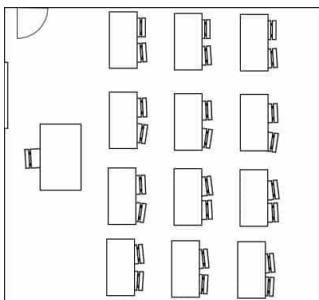
Interview Questions – March 2023:

The Intention of these questions is to facilitate a Semi-Structured Interview

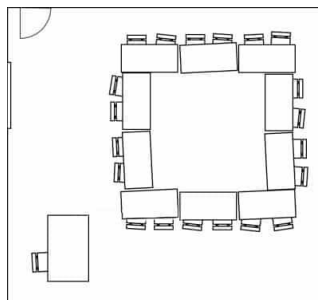
PART 1 – THE CLASSROOM GUIDE

11. Can you tell me how long have you been studying at this institution?
12. Could you describe a situation where you felt comfortable and at ease within a classroom environment?
13. Can you tell me about the atmosphere in this classroom using the below headings as a guideline?
 - m) Light – Natural + Artificial
 - n) Temperature
 - o) Noise
 - p) Materials (walls, floors, ceilings)
 - q) Furniture (seating, tables)
 - r) Views out of the window
14. Given a choice on the layout of the examples shown below can you note them in order of preference, and describe why would you choose one over the other?

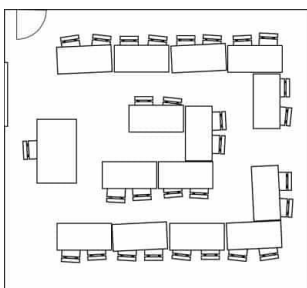
Layout A



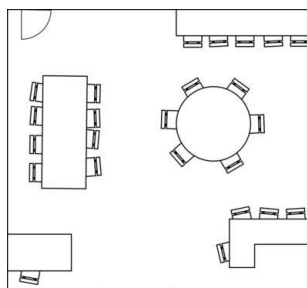
Layout B



Layout C



Layout D



- 15.** In your current studies what is the classroom layout you spend most time within?
- 16.** Would you ever move the furniture around to suit your needs in this classroom and why?
- 17.** Do you find the layout of the classroom works well when project work is being covered by your tutor using below headings as a guide?
 - a. On screen presentations
 - b. Practical Demonstration
 - c. One to one discussion
- 18.** Do you find the layout of the classroom works well when working in pairs or group work? Can you describe why?
- 19.** When you require personal concentration in the classroom what methods do you use to ensure you can focus?
- 20.** In your experience would the classroom ever have any influence on whether you attend a lecture or not? If yes can you explain your feelings and why.

PART 2 – OUTSIDE THE CLASSROOM GUIDE

I would now like to introduce a different topic

6. In relation to your studies can you tell me while on campus what areas are you drawn towards when you are seeking
 - a. Concentration
 - b. Group Work or Collaboration with classmates
 - c. Some time out for yourself
7. In relation to your studies when you are not on campus what areas are you drawn towards when you are seeking
 - a. Concentration
 - b. Group Work or Collaboration with classmates
 - c. Some time out for yourself
8. Respondent Validation: How did you find the interview questions related to the theme of preferred learning environments that encourage motivation and engagement using below headings as a guide?
 - a. Were they hard to answer
 - b. Had you thought about these things before
 - c. Did they make you reflect upon your preferred physical environment in relation to your studies
 - d. Did you think the questions were clear
9. Thank you for your time, are there any more things would you like to say before we end the interview?

Appendix 8:

Interview Questions REV01 – 130323

PURPLE

Additional of Follow up questions under 5x Headings from Herman Miller St.Georges House

- Basic Needs
- Sence of belonging
- Learning Outcomes
- Workplace Readiness
- Sense of ownership

Interview Questions:

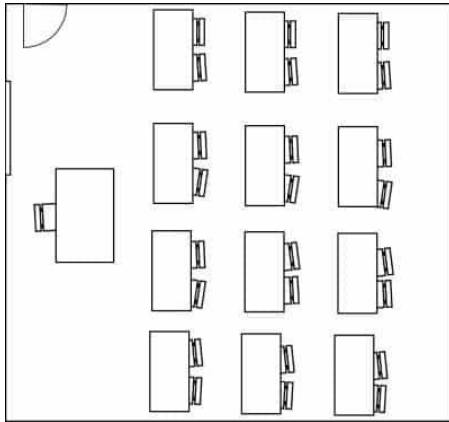
The Intention of these questions is to facilitate a Semi-Structured Interview

PART 1 – THE CLASSROOM GUIDE

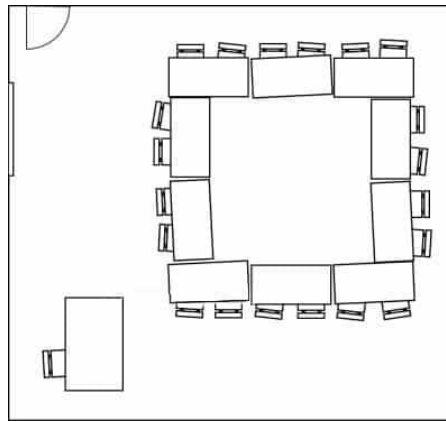
21. Can you tell me how long have you been studying at this institution?
22. Could you describe a situation where you felt comfortable and at ease within a classroom environment?
 - Sense of Belonging
23. Can you tell me about the atmosphere in this classroom using the below headings as a guideline?
 - s) Light – Natural + Artificial
 - t) Temperature
 - u) Noise
 - v) Materials (walls, floors, ceilings)
 - w) Furniture (seating, tables)
 - x) Views out of the window
 - Basic Needs

24. Given a choice on the layout of the examples shown below can you note them in order of preference, and describe why would you choose one over the other?

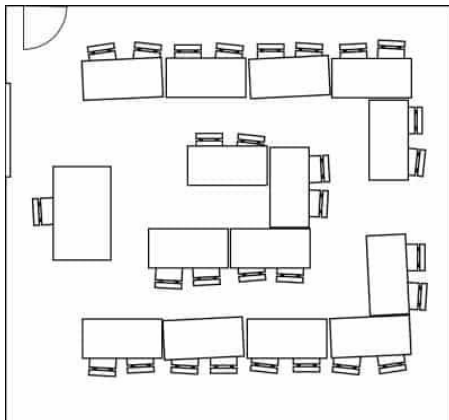
Layout A



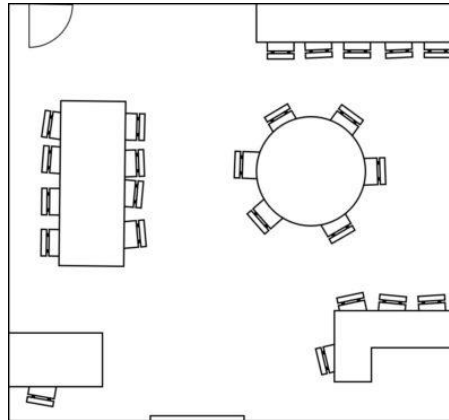
Layout B



Layout C



Layout D



- Learning Outcomes

25. In your current studies what is the classroom layout you spend most time within?

Would you have a preference on where you sit in the room ie front, back, middle

Would you ever return to this after class time to collaborate?

Would return to this class or any others after class time to collaborate or work alone?

- Sense of Ownership

26. Would you ever move the furniture around to suit your needs in this classroom and why?

Do you feel comfortable moving to different areas of the room during class time?

- Workplace Readiness
- Shifting Positions – Sense of Ownership

- Basic Needs - Autonomy
- Learning Outcomes - allow students a choice for how and where they like to work in the classroom

27. Do you find the layout of the classroom works well when project work is being covered by your tutor using below headings as a guide?

- a. On screen presentations
- b. Practical Demonstration
- c. One to one discussion

28. Do you find the layout of the classroom works well when working in pairs or group work? Can you describe why?

Do you ever create a mess when working in groups?

- Sense of Ownership

29. When you require personal concentration in the classroom what methods do you use to ensure you can focus?

30. In your experience would the classroom ever have any influence on whether you attend a lecture or not? If yes can you explain your feelings and why.

PART 2 – OUTSIDE THE CLASSROOM GUIDE

I would now like to introduce a different topic

- 10.** In relation to your studies can you tell me while on campus what areas are you drawn towards when you are seeking
- Concentration
 - Group Work or Collaboration with classmates
 - Some time out for yourself

Are there any spaces you find inviting on campus?

Do you feel there are areas to meet with others to interact, collaborate?

Do you find the campus offers clear wayfinding?

- Sense of belonging

- 11.** In relation to your studies when you are not on campus what areas are you drawn towards when you are seeking
- Concentration
 - Group Work or Collaboration with classmates
 - Some time out for yourself

- 12.** Respondent Validation: How did you find the interview questions related to the theme of preferred learning environments that encourage motivation and engagement using below headings as a guide?
- Were they hard to answer
 - Had you thought about these things before
 - Did they make you reflect upon your preferred physical environment in relation to your studies
 - Did you think the questions were clear

- 13.** Thank you for your time, are there any more things you would like to say before we end the interview?

Appendix 9:

Respondent Validation

Were they hard to answer _ NO	Had you thought about these things before _YES	Had you thought about these things before _YES to some – No to others	Notes	Had you thought about these things before _NO	Notes	Did they make you reflect upon your preferred physical environment in relation to your studies-YES	Did you think the questions were clear YES
Ina				Ina	<p><i>"You never really get to question these things – its just how it is "</i></p> <p>based on previous experience of primary and secondary school</p> <p>taught not to question learning environment or authority</p>	Ina	Ina
Luke		Luke	<p><i>" some of them I guess because of what we study or what I study but some of them I hadn't"</i></p> <p><i>"I would have thought about like layouts - the other ones in relation to where do you go - how I use this space - the room which we use every day - would have never really sat down and thought OK so what place do I go away If I need to get away or what's space doing collaboration - I've never really thought about that - it was cool to kind of sit down and analyze it "</i></p>			Luke	Luke
Alan		Alan	<i>"not all of them but maybe few"</i>			Alan	Alan
Yasmin	Yasmin					Yasmin	Yasmin
Noel		Noel	<i>"I thought of layouts especially and the wayfinding with campus - that's those the two I really have thought about"</i>			Noel	Noel