THE INTRA-ACTION BETWEEN EDUCATIONAL SPACE AND STUDENT´S BELONGING WITHIN UNIVERSITY CITY SCHOOL OF ARCHITECTURE IN MEXICO

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Abstract. This paper aims to investigate how the physical and material characteristics of architecture interact with intangible aspects such as learning experiences and belonging, within the context of higher education institutions. While there is a concern in the literature regarding the spatial factor, higher education institutions as material entities is not a topic that has been studied intensely. Therefore, after the COVID-19 pandemic, the relevance of interrogating and examining space is crucial, not only as a container for human activities has gained relevance within the field of architecture and other disciplines.

We use the Baradian concept of intra-action to develop an understanding of non-human entities and how they are as important as human ones. The hypothesis is that physical characteristics of space, such as materials, light, colour, layout, form, and material historic components, are essential for the learning experience of undergraduate students through their five years of architecture studies. We examine the National Autonomous University of Mexico, which is an example of how materiality could influence student's experience. The university's architectural significance has led it to be listed as World Heritage due to certain material assets which are associated with intangible factors such as meaning and memory which may affect students' sense of belonging. The methods to facilitate this research include 10 semi-structured interviews with architectural students which were conducted during October and November 2022 at the case study selected. The analysis reveals the importance of materiality among undergraduate students, and how the spatial and physical aspects relate and overlap with the learning experience. The outcomes of this study will add value to the physical and material aspects of a Higher Education Institution by understanding space from a non-anthropocentric perspective. The findings show how the design studios are the most essential learning space for architectural students since it becomes a second home for them. However, the distinctive contrasting designs of the studios, produce discrimination and social segregation between students with different economic, and cultural backgrounds as they perceive the pedagogical approaches within each studio are selected due to their personal context.

Keywords: Intra-action, educational spaces, Higher Education Institutions.

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1.   Introduction

According to the literature, there is a concern regarding sense of belonging because it is related to positive achievements at university. The significance and contribution of the following study comes from understanding the materiality of architecture, hence, the physical aspects of the built environment and how these physical and material characteristics are important for the psychological and pedagogical aspects of Higher

Education. A comparison of the existing themes in the literature with the themes developed during the study will add knowledge about how human and non-human factors should be addressed in HEIs to improvestudent's sense of belonging.

Sense of belonging is defined as feeling welcome, heard, and accepted (e.g., Pedler *et al*., 2022) within an educational institution. It is critical for student success (Gravett, 2021, Ghosh, 2021). Studies of the the sense of belonging generally take a humanistic and social approach (Kahu & Nelson, 2018; Tinto, 2017; Stone & O'Shea, 2019; Groves & O'Shea, 2019). Moreover, belonging (and relatedly, exclusion) is also entangled with concepts such as culture and ethnic background such as African American or Hispanic (Hurtado & Carter, 1997). These many aspects of belonging can therefore, affect student performance at university. Much of the literature focuses on belonging in higher education institutions may be developed within a typical student (Thomas, 2015). However, there is a possibility, that in order to keep their personality and individuality, students may decide not to belong (Lahdenpera & Nieminen, 2020). Within the current literature there is some discussion about the relationship between belonging and material space, the main approach that has been taken is an anthropocentric one, where a hierarchy exists between subjects over objects.

The main research question of this study is*: are the physical characteristics of architectural space (e.g., materials, light, colour, composition, natural elements, architectural layouts, among others) an essential aspect for undergraduate students to belong in architectural schools?* In order to conduct the research, the approach towards the study has been developed through Karen Barad's concept of intra-action and Agential Realism perspective, which suggests that the subjects and the objects are not in hierarchies but coexist with each other with the same level of importance. The specific case study was chosen (National Autonomous University of Mexico, UNAM) because its spatial characteristics and their meaning are important, as evidenced by its inclusion in UNESCO´S World Heritage list. The campus and the school of architecture are important not only because of their heritage status, but because it is the number one institution in the country according to the world rankings. UNAM has social significance as its physical location is privileged with a campus of great impact because of its artistic content, size, population, and its relation to the most iconic architects of the 20th century. This demonstrates a bond between the physical aspects of the university environment, such as form, and the non-physical aspects such as learning experiences, belonging, meaning, and memory. This is where the concept of intra-action comes into place because both physical and non-physical aspects of the environment are entangled with each other. The main objective of the research is to understand how materiality is intra-acting with the different factors that engage with students in Higher Education Institutions. We use the term *intra-action* instead of interaction because the concept of intra-action understands how everything is entangled and connected with each other instead of being independent of one another but existing within the same time and space.

In order to find the importance of materiality, empirical studies were developed during October and November 2022.The study included 10 semi-structured interviews with students who were mainly, but not exclusively in their third year. The interviews were conducted face to face at the case study location, where the students felt more comfortable within the school´s facilities. The interviews were analyzed using thematic analysis within the NVIVO software to obtain the main themes and categories. The analysis was developed with a deductive approach, using the four domains of Belonging

(Ahn & Davis, 2020), however, due to the data that was obtained, the last domain "personal space" changed into the security domain.

      The first section of the paper will explain the existing literature about sense of belonging, and the theoretical framework, describing the concept of intra-action and the importance of materiality according to Karen Barad. Then, we give context for the case study, before proceeding with the methods of data collection and analysis. Finally, we explain the results we obtained through the thematic analysis of the interviews, the conclusion and discussion section, and a brief explanation of the possibilities for future research.
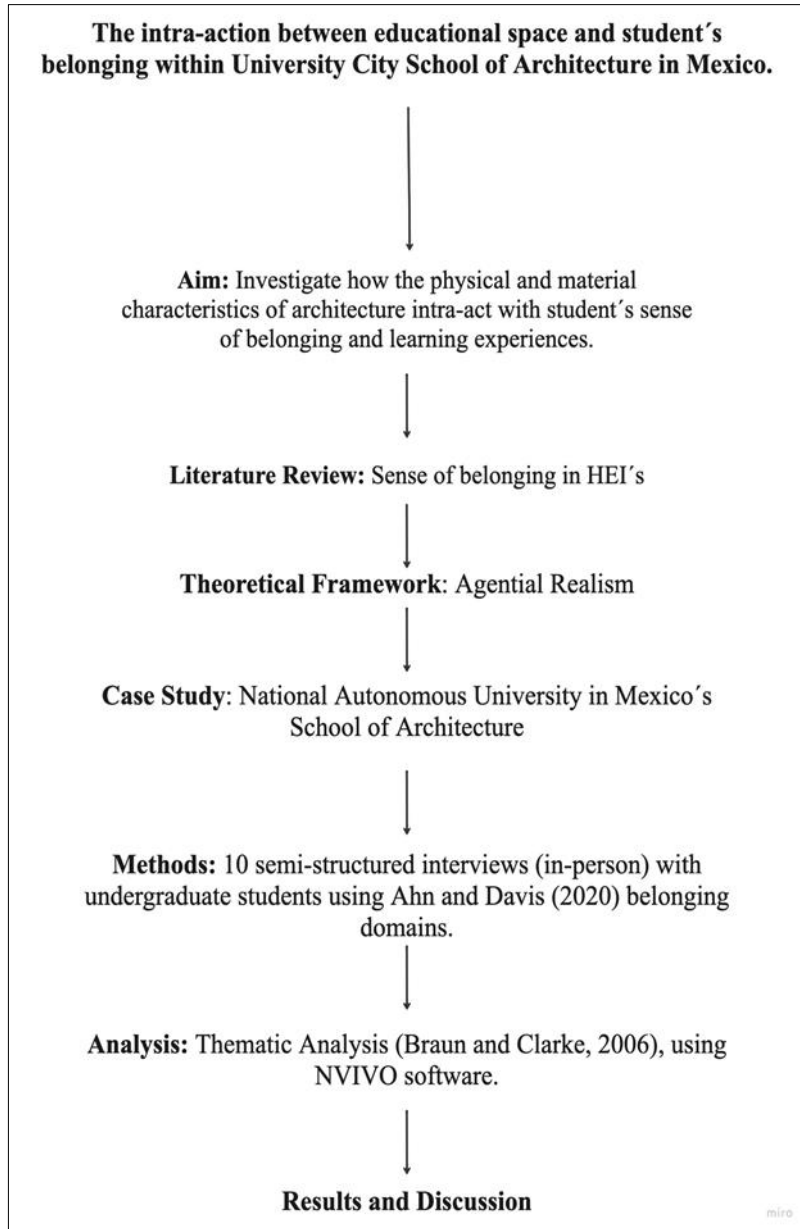

The intra-action between educational space and student´s belonging within University City School of Architecture in Mexico.

Aim: Investigate how the physical and material characteristics of architecture intra-act with student´s sense of belonging and learning experiences.

Literature Review: Sense of belonging in HEI´s

Theoretical Framework: Agential Realism

Case Study: National Autonomous University in Mexico´s School of Architecture

Methods: 10 semi-structured interviews (in-person) with undergraduate students using Ahn and Davis (2020) belonging domains.

Analysis: Thematic Analysis (Braun and Clarke, 2006), using NVIVO software.

Results and Discussion

Figure 1. Map of the Study

2.   Sense of Belonging

Within the context of HEIs as Hodgins (2018) mentions, the categories to describe belonging are self, social, and space, but different categories may apply within the academic sphere. Gravett (2021) and Ghosh (2021) describe sense of belonging as associated with positive outcomes at university and it is known to be related with university students' success. It has been documented that belonging is fundamental within Higher Education theoretically and practically (Gravett, 2021) and several pedagogical models have included belonging as key for student success (Kahu & Nelson 2018; Tinto 2017; Stone & O'Shea 2019; Groves & O'Shea 2019). Ahn and Davis (2020), explain the need of students to belong to an educational community, and identify four dimensions important to belonging within higher education: *academic* (e.g., curriculum,); *social* (e.g., friendships); *surroundings* (living space); and *personal space* (identity, and personal interests). (Ahn & Davis, 2020, in Gravett *et al*., 2021)

There are two different approaches toward belonging. The first one is explained by Hodgins (2018) where the author describes that for us to improve our sense of belonging, we need to work within the aspect of the self, the social, and space. Meanwhile, Ahn and Davis (2020), state that according to their research with undergraduate students, there are four different domains of belonging and these categories are alike and overlap with each other. Both consider the social aspect, the self or personal space, and space on its own. Whereas Ahn and Davis (2020) add a fourth domain, the academic, which is important for this study since we are looking for belonging within HEIs.

Gravett (2021) explains that we should ask who can belong, how, and to where they should belong. This is related to what Thomas (2015) clarifies as how the concept of belonging could be seen as privileged through "typical" student perspectives. It is important to understand, as Mann (2005) suggests, belonging could mean losing individuality to be a part of something, and as Lahdenpera & Nieminen (2020) state, not all students want to belong or become members of a community. Belonging has been associated with people, but also with physical environments. Likewise, Hurtado & Carter (1997) explain how connections with others are related not only to relationships with other individuals but to spaces as well. Moreover, the definition of social integration of Spadys associated with the psychological aspect that can influence students' interactions within the campus environment. Additionally, this is based on Tinto´s model of students' persistence which is related to engagement within an educational community. Hurtado & Carter's research aimed to understand how history and ethnicity are related to exclusion and how this affects student success.

The concept of belonging has to do with people but also with physical spaces, and these places (buildings), refer us toward new experiences, as Markus (1987) explains. The author has studied how there are three different architectural categories that are related to a human first experience with a building. These categories are divided into function, form, and space, where the first one regards the human activities that are being held within the building, the second one regards the physical aspect of the building, and the last one relates to the geographical location. Markus' model is especially relevant for the integration of environment and behaviour research because he has argued that each of these architectural discourses, which are primary for the experience of a building, enshrine ways of classifying human action and experience (Markus, 1987 in Canter 1996.).

2.1. Theoretical Framework: Agential Realism

As researchers, it is important to have a position to develop our studies. A paradigm is defined as a set of beliefs that leads us into action (Guba & Lincoln, 1994). This is important because it sets a framework for conclusions and findings about a certain phenomenon we are studying (Rashid *et al*., 2019). For example, the positivist paradigm is understood and associated with realism and common sense (Hudson & Ozanne, 1988; Scotland, 2012), where knowledge can only be created through the experience of the primary senses (Greener, 2008). This statement relates to the conceptual framework of Karen Barad, where they avoid the anthropocentric approach and state that things and objects can be considered at the same hierarchical level as humans. This is associated with the attention this study is highlighting in the physicality of educational spaces and therefore, this is the path that leads the research into its focus and contribution to knowledge.

Agential Realism where Karen Barad´s ethic-onto-epistemology stops considering a human-centred approach but rather includes humans and makes them part of the materiality of the world (Brooks, 2019). Barad (2007) reflects on the studies of Niels Bohr by showing that humans are part of the material reality instead of just observers of the material world. This is when Barad comes to the concept of intra-action, challenging the subject-object dichotomy that often occurs within science (Brooks, 2019). To have a better understanding of the physicality of objects and places, it is necessary to avoid an anthropocentric view of the world. For this research in particular the concept of intra-action comes to light to explain the entanglement of belonging understood as a human characteristic or quality and the physical characteristics of educational spaces associated with a human term.

> "…the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action". (Barad, 2007, p. 33).

As Barad (2003) explains, the perception we have constructed about space will transform itself if we recognize the material conditions of matter. Therefore, it is important to understand space from the physics perspective, considering its three dimensions such as northward, eastward, and upward. However, space cannot be considered as one entity only because it is closely associated with time, and those concepts together form the single entity of spacetime, in which the fourth dimension is onward (Taylor *et al*., 1992). Additionally, architecture as "matter", hence, the physical characteristics of space, has always been used as a tool for educational practices (Bertelsen & Rassmusen, 2018 and Grosvenor & Rassmusen, 2018). It is essential to understand the entanglement of buildings, humans, objects, and educational practices within their process of intra-action where they are in a constant form of becoming (Rassmusen, 2021).

To understand the physicality of objects and places, it might be helpful to avoid anthropocentric views of the world. As Barad (2003) mentions, language, culture and discourse are important, they "matter", but what has lost importance or doesn´t "matter" anymore is matter indeed. This is associated with what Democritus once explained about the atom as the smallest unit, which by its composition is defined as "inseparable". By this, Barad (2003) explains the meaning of *thingification* which is related to our perception and relationship of and with the world. When we understand and recognize that the material conditions matter because they are part of the intra-activity that is

occurring constantly in our world as Barad (2003) explains, our perception of space will transform itself as well.

When we think about educational spaces, we must consider that as Locke (2015) points out, bodies, spaces, matter, and immateriality are all connected and generating new meanings. This idea is associated as well with what Blanche Verlie CCR 15 (2020) state on how knowing, being, and doing are not separated but instead always related, linked as well with the Baradian (2007) understanding of knowing, which they describe as a "matter of intra-acting". The concept of intra-action might be like the common term of interaction, the difference is that interaction separates subjects, objects, and knowledge, as if they exist in the world independent of each other, but intra-action recognizes that they are all connected and that they emerge through relationships (Barad, 2007).

On the other hand, Haraway (2016), has described pedagogy as what promotes the ability to respond to certain actions, while Edwards and Fenwick (2013) explain that learning is a group of possibilities for action. Understanding pedagogy and learning are important, it is relevant as well to understand the role of architecture associated with both concepts, as Bertelsen & Rassmusen (2018) and Grosvenor & Rasmussen (2018a) describe, architecture has always been used as a tool for educational practices. It would be crucial to ask ourselves as Rassmusen (2021) mentions, in what ways does the building modifies, transforms, or replaces pedagogical practices? It is key to see the building, the subjects, the objects, and the educational practices in their process of intra-action where they are constantly reconfigured (Rassmusen, 2021).

So why consider non-human centred theories if sense of belonging has been defined as a human quality or need? According to the consulted literature, the studies on belonging have been focused mainly on how it may be developed through certain aspects such as academic, social, surroundings, and personal space (Ahn & Davis, 2020), as human experiences related to social and psychological functioning (Hagerty *et al*., 1992), and social recognition and acceptance (Freeman *et al*., 2007), however, all of this factors to achieve belonging occur and are embraced within the physical characteristics of educational space, and there is not enough literature on the subject yet. While an important aspect of belonging relates to other human beings, the places where we belong are a matter of importance as well, therefore, giving the same level of hierarchy to the physical aspects of educational space is key to the findings of this study, because physicality is essential for Higher Education Institutions.

There is an architectural term that relates to the physical description of architecture: *architectural character*, it is defined as how a building should seem what it is, e.g.: a house should look like a house, and a hospital should look like a hospital. This is related to what Goldberg (2012) describes when our relationship with a building starts with the first look we have toward it. This architectural character has been described as the physical characteristics of architecture that make architecture what it is, however, it is related to the psychological aspects of what humans have created as concepts of existing things. Therefore, the statement "a house looks like a house", might be better if said: "a house, that looks like the preconceived human concept of what a house should look like".

Besides the architectural elements that should be analyzed, there are the psychological factors that take place within HEIs and their inhabitants. If we must consider the subjects and the physical places as a holistic entity (Gifford *et al*., 2011), it is important as well that we consider the other components that inhabit and shape architecture. What is needed is a robust account of the materialization of all bodies

"human" and "nonhuman" and the material-discursive practices by which their differential constitutions are marked (Barad, 2003, p. 810).

Nowadays, buildings that we observe or that we inhabit have lost their architectural character. Hospitals seem to be hotels and vice versa, houses become museums such as Villa Tugendhat by the German architect Mies Van der Rohe in Brno, Czech Republic; or Villa Savoye in Poissy, France from the Swiss architect Le Corbusier. Buildings communicate with their inhabitants, character is not in vain, it helps us understand how cities work. And this is associated as well with environmental psychology, which is defined as the transactions between individuals and their physical spaces (Gifford *et al.,* 2011). The studies of this variant of psychology work within different levels of analysis, one of them is *a) Fundamental psychological processes like perception of the environment, spatial cognition, and personality as they filter and structure human experience and behaviour,* and *b) The management of social space: personal space, territoriality, crowding, privacy, and the physical setting aspects of complex everyday behaviours, such as working, learning, and living in a residence and community.*

The first one (a), relates to the perception of space and how this affects our behaviour, then, the second one (b), mentions social space, as a reminder of physical spaces where common behaviours take place, such as educational spaces. Environmental psychology has studied different possibilities for improving the quality of teaching and learning, for example, integrating into educational spaces, objects that make us feel at home is a turning point for learning (Wollin & Montagne, 1981), meaning that a human process such as learning is deeply associated with an object, therefore is related to a material aspect.

3.   The University City Central Campus of UNAM

The University City Central Campus of UNAM is located south of Mexico City. The campus is traversed by Insurgentes Avenue, the main North-South circulation axis of the town. The campus is in an area where rocky platforms define different spaces, which suggested the general concept of the master plan, designed by architects Mario Pani and Enrique del Moral (ICOMOS, p. 259). The infrastructure that University City has, as Enrique Graue Wiechers, Rector of the University mentions in the *book "Central Campus CU, Lectures of a Living Heritage",* is something that links us to the past, this place was conceived thinking on the needs of today (2019). For the first time in the 20th century, Mexican society faced an issue with an identity that has always been linked to pre-Hispanic architecture. Therefore, the materials we observe and the forms that University City has, such as platforms, open spaces, and stairs, relate to the principles of ancient Mexican architecture (Morales, 2019).

There is no direct access to campus, it is an open space with modern buildings that have a careful dialogue with nature. This University was home to the 1968 Olympic Games, and it is also home to Nobel Prizes. This demonstrates its concern towards sports, politics, and research as the main axis of its ideals as a HEI. There was a group of buildings at the Central Campus, which determined the impact on how modern education in Mexico should reflect a community concerned with sports, social relations, culture, and wellbeing according to Enrique Graue Wiechers in the presentation of the book lectures of a living heritage. Central University City Campus is recognized by UNESCO as an institution that has an outstanding value to humanity. According to the International

Council of Museums and the International Committee for University Museums and Collections, there are two ways in which a university can be listed:

a) *Directly, when the university (or part) is listed; (University City).*
b) *Indirectly, when the city center or site where the university is located, is listed.*

According to the International Council on Monuments and Sites (ICOMOS), the property was nominated based on criteria ii, iv, and vi, which relate to adding architectural criteria from the 20th century, the principles of modernism have been applied while considering an improvement on the quality of life, and its relation to Mexican culture. All these criteria have been justified.

3.1. University City Campus Today

The physical characteristics of architecture should be of great influence to develop a sense of belonging. Therefore, the purpose of this study is to provide a different approach where the physicality of spaces becomes equally important to construct a strong sense of belonging. Furthermore, the problems of the case study will be presented in detail, where the selected HEI has physical characteristics that make it relevant just because of its materiality. National Autonomous University of Mexico (UNAM) is characterized by its modern campus, its buildings have significance in what it means to become a student at University City in social, political, architectural, and historical aspects. While the Central Campus is of great value to Mexican society, it has suffered violence against its students for the past years. This study will explore how students in the Faculty of Architecture are feeling on campus, understanding emotions as psychological events (Feldman *et al.,* 2007). This led us to different questions: in which spaces do students feel like they belong? Why do they belong there? And how can other spaces be improved to foster and boost a sense of belonging?

3.2. The School of Architecture

As Calanchini (2019) explains, the architectural project was developed within the years of 1950 and 1954 by the architects José Villagrán García in collaboration with José Alfonso Liceaga Pérez, and Javier García Lascuráin Calderón. The Faculty of Architecture was first the Arts Museum and the National School of Architecture, which later became the National Museum of Science and Arts (MUCA) and the Faculty of Architecture (FA) of UNAM (Calanchini, 2019).

According to Calanchini (2019), the most important architectural modification in the history of the school was the building "K" of classrooms, designed by the architects José Villagrán García and Raúl F. Gutiérrez García. In the images below, the one on the left shows the original state of the Faculty (1954), and the state in the year 2018 on the right with the addition of the "K" building.

While the design of the "K" building was important for the architectural modifications of the faculty, this building separated the spatial dialogue and the connectedness that existed between the administrative buildings and the design studios. This phenomenon was the first spatial disruption that the faculty had. However, the second disruption was in the original design of the faculty, which was the division of the design studios into different buildings. There are 16 design studios at the Faculty of Architecture, and each of them has a different approach and philosophy to its teaching and learning process. This event rather than helping toward sense of belonging, generated an atmosphere of competition, having the feeling of being in different schools of

architecture and feeling isolated since there are labels regarding social class, ethnicity, and political ideas between one studio to another. While there are 16 design studios, there are only 8 buildings, this happens because of the morning and evening shifts University City has.
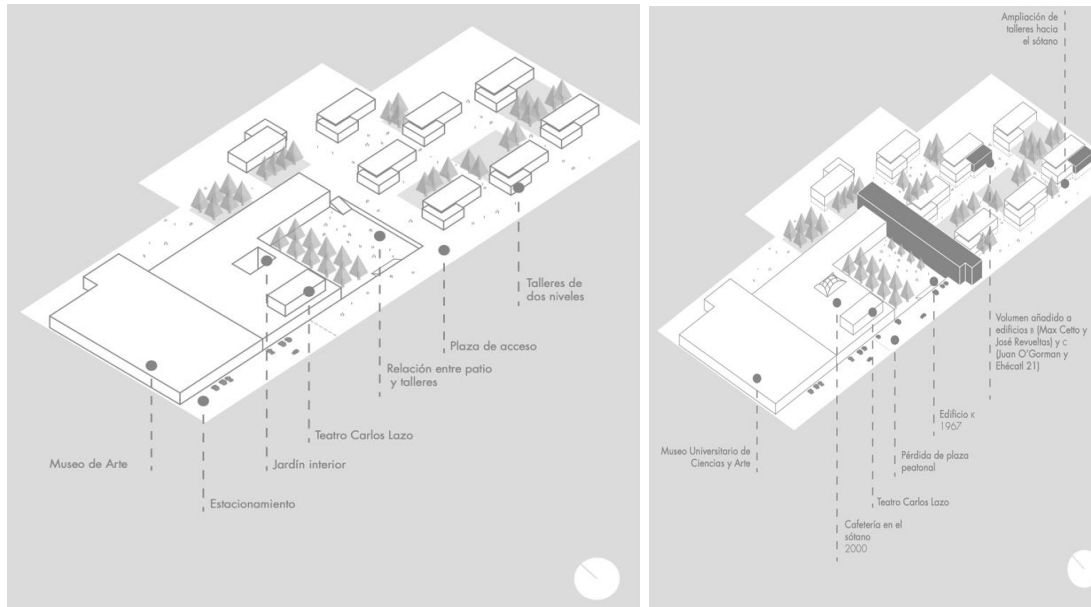

Figure 2 and 3. Scheme of the School of Architecture, the addition of the "K" building and the Design Studios. (Images from the book "Central Campus Lectures of a Living Heritage)

Figure 4. Scheme of the 16 Design Studios at the Faculty of Architecture. (Images from the book "Central Campus Lectures of a Living Heritage)

3.3. Methods, Data Collection and Analysis

The study included qualitative methods such as semi structured interviews. The Design Studios that were studied were *Jorge González Reyna*, *Max Cetto*, *Hannes Meyer*, *Juan O´Gorman*, *Luis Barragán*, *Gayou*, *José Villagrán*, *Carlos Leduc*, *Jose Revueltas*, *and Domingo García Ramos*. This means that 10 out of 16 Design Studios were approached, plus, *Design Studio Experimental* which was a new addition to the school´s structure.

Participant Design Studios	Shift
Domingo García Ramos	Afternoon
Experimental	Morning
Gayou	Morning
Hannes Meyer	Morning
José Revueltas	Afternoon
Juan O´Gorman	Morning
Carlos Leduc	Morning
Luis Barragan	Morning
Max Cetto	Morning
Jorge G. Reyna	Morning
José Villagrán	Morning
Non-Participant Design Studios	**Shift**
Carlos Lazo	Morning
Uno	Morning
Federico Mariscal	Afternoon
Ramon Marcos Noriega	Afternoon
Taller 3	Afternoon
Ehécatl 21	Afternoon

3.5. Semi-structured interviews

Ten students participated in the interviews. There were students from each of the semesters that form the 5 years of study.

Each of the students selected a particular place to conduct the interview. These places were chosen differently according to where the student felt more comfortable as requested before conducting the interview. The interview questions were divided into four domains, based on Ahn and Davis's (2020) definition of belonging. There were 8 questions in total and each interview lasted about 45 minutes. Within the **Academic** domain we asked questions such as: *Do you feel the School of Architecture gives you a purpose as a student?, Do you feel your academic goals are being encouraged?,* in the **Social** domain we asked: *In which ways, does the School of Architecture fulfil your social needs?, and Do you feel supported at the School of Architecture?,* while in the **surroundings** domain we asked: *In which spaces of the School you feel like you belong the most?, and Do you think that the insecurity issues at the School of Architecture and Central Campus in general are counterproductive for the development of your sense of belonging?* And last, in the **personal space** domain we appointed the following questions: *Do you feel like you belong at the School of Architecture? And, what do you think should be done to improve sense of belonging at the School of Architecture?*

Regarding the analysis of the interviews, the approach that was followed was Thematic Analysis based on Braun and Clark. Thematic analysis has been a very used analytic method (Boyatzis, 1998; Roulston, 2001). It is used mostly for analysing qualitative data, as mentioned by Braun and Clark (2006), researchers should be familiar

with this analytic method from the beginning because it helps to develop other types of qualitative analysis. As mentioned before, the analysis took as a theoretical framework the four categories of belonging from Ahn and Davis: Academic, Social, Surroundings, and Personal Space to build the questionnaire. However, throughout the interviews, the most relevant domains were academic, social and surroundings, all in the same level of importance. The three domains were divided into positive and negative responses, therefore, this will help to understand the student´s position within belonging and space. Every interview was conducted in Spanish and translated into English language, they were transcribed immediately by the interviewer and lead author. The analysis was done with the NVIVO software.

4. Results and discussion

The themes that were obtained through the analysis were divided into three domains. While the academic, social, and surrounding domains remained the same, the data did not provide evidence of the personal space domain. Instead, security was found as a concern in the data and it related to the surrounding domain. Through the following sections, each domain will be described and explained along with the final themes.

Academic Domain

Regarding the academic domain, the interviews showed that the positive aspects include new generations of young teachers who are beginning to give lectures in the school and bring fresh and new ideas into pedagogical practices. There is a need for more academic activities that create a sense of community, and there is a relationship between a sense of belonging and being involved as an essential part of the school, for example, working as a student in an institutional project. Moreover, the negative aspects show that the school is still experiencing very old-fashioned pedagogical approaches, which is related to how teachers demonstrate a high level of hierarchy among the students, seeming not approachable at all. There is a poor understanding of the personal aspects of students and how this affects their academic performance, in addition, there is a lack of openness regarding the traditional approaches to architectural pedagogy. The design studios are competing instead of building community, and last, the academic performance of students is being affected by the insecurity of the spaces.

The themes that were developed were as follows:

1. *"Teacher knows best":* *The student and teacher relationships as a constant for exposing hierarchy, power, intimidation, and indoctrination, leading to understanding power as a pedagogical approach*. Through the interviews, students disagreed with the way they are being taught architecture. Firstly, faculty members don't seem to take account of student´s voices, even though students state they are starting to have different spaces to speak up. However, opportunities to criticise the school are extremely limited. Students feel that the curriculum has not been updated, and they explain that there is no connection between their lecturers and them.

"Many times these roles of student-teacher continue to be repeated, where the teacher is the only one who is right. So you come to your class, take your class, whatever it is, whether good or bad. You can't even say if your teacher has the ability to teach you the content of the class or not".

"There are few teachers who I feel have forged me and have supported me not only on an academic level but also on a personal one. I would not say that it has been a great support".

2. ***"Being part of this story is a privilege"****: Having the encouragement and support of being part of a community that has national significance while understanding and re-signifying spaces from generation to generation.* Even when students describe they are not fully satisfied with the education they are receiving, they also state different aspects that are positive regarding their architectural education at UNAM. Being accepted to this institution is not easy, for most of the student population means a huge sacrifice from them and their families. For some students being accepted to UNAM was their only possibility to continue with their studies, therefore the sense of community and belonging increased. In addition, the social connections they start at school, and knowing many important people have experienced the same spaces they are experiencing today, allow them to keep going during the five years of studies.

"I feel that it is encouraging from the beginning to have this expectation and how being a part of it has to do with how proud it makes you feel to be part of this community and I think that that is living up to the expectation and continuing to represent something that is great".

"The generations that have passed through here endow or resignify these spaces with their own experience".

3. ***"Feeling well = learning well"****. Pedagogical dynamics that may be more aware of psychological needs, a curriculum that integrates emotional support.* Throughout the interviews, students have described how hard it is to study architecture. Some of them explain they can´t develop a sense of belonging when they don´t even have the time to meet with their peers due to the amount of work they have. However, according to students, lecturers claim that if they had that amount of work, and they could manage, the new generations should manage as well. For architectural students, patterns such as lack of sleep are common; however, this has an impact on their well-being.

"I firmly believe in the idea that these teachers have of bringing this new socialization between student and teacher that is not only academic but also related to the field of mental health.

"It will sound like the oldest excuse of any architecture student but there is no time to talk, nor time to realize it".

"Changing that mentality and renewing it so that the teachers are also interested in your way of thinking about what is happening to you, about the personal things that influence your work, that is the change that we need".

4. ***"Preserve? Or move ahead?"****. Being listed as heritage as a counterproductive asset for a better school performance due to infrastructure and spatial restrictions, while at the same time heritage represents a strong characteristic for students' belongingness.* The fact that UNAM´s central campus is listed as heritage is a controversial issue. During the interviews, students stated that being part of a community that takes place within historical buildings has great significance for them as members of this community, however, the consideration

of the building as heritage means that certain areas can´t be modified even if the student´s spatial and educational needs require it.

"What the faculty and the campus share is that they are sacralized, so obviously, yes because they are heritage. And that gives you a context of non-intervention (spatial and infrastructure)…"

"We cannot build any other building even if it is needed".

"Belonging has to do with UNAM, that UNAM is heritage and I am part of that, of that great campus, of that great university, and that the best philosophers, architects, chemists, Nobel Prize winners have come from here".
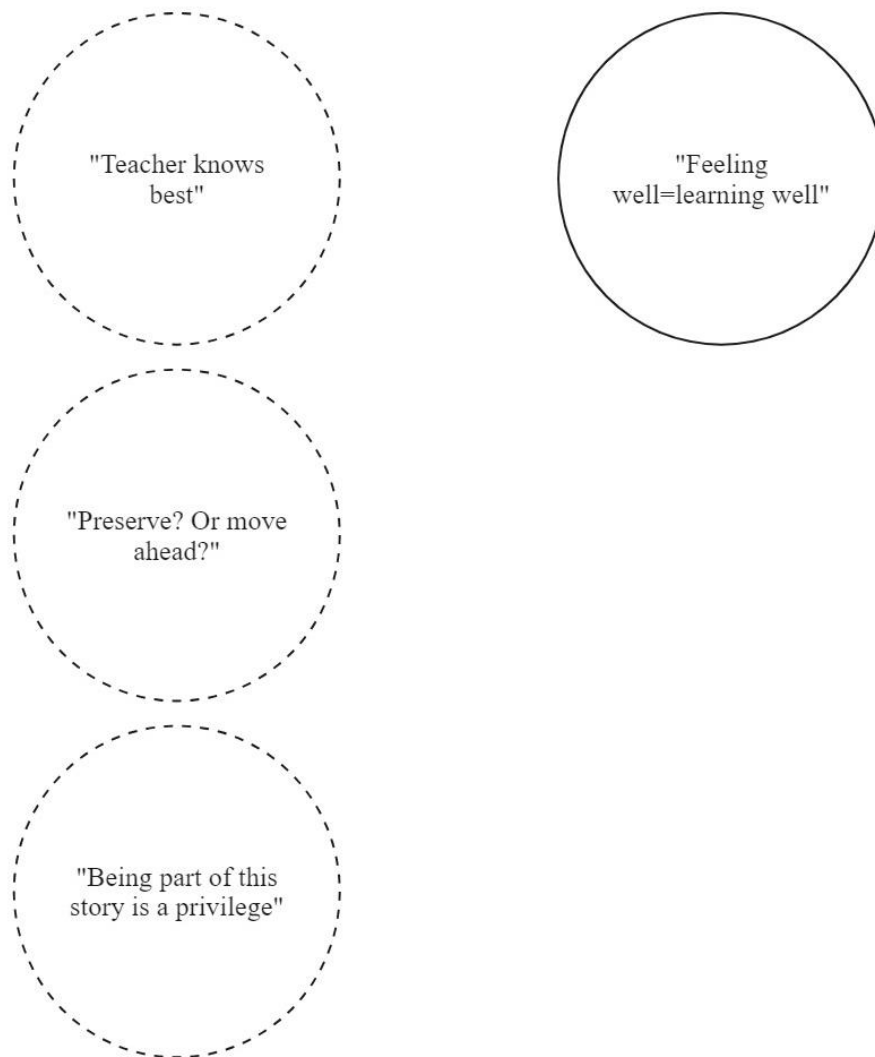
Academic Domain

Figure 5. Visual summary of the Academic Domain. Themes on the left marked with the dotted circles are space-related

Social Domain

The social domain showed in a positive aspect that the welcome activities (induction) that are held at the beginning of the term are highly relevant for student´s sense of belonging, people, and social connections are encouraged. Moreover, feeling empathy about others creates a sense of fellowship among students and building friendships is the most important aspect for feeling and strengthening belongingness. On the other hand, the negative aspects show the disruption of the COVID-19 pandemic, there are not enough activities to engage with others, and the community is described as competitive and self-centered, where there is poor collaboration, communication, and horizontality. Also, there are not enough spaces for freedom of speech, and architecture students don´t have time to engage in social activities.

Regarding the social domain, the themes are the following:

1. ***"You can't sit with us"****. Segregation as a part of "architectural culture", divided architectural layouts, competitive environments, and an egocentric and individualistic community as a form of not belonging.* As mentioned before, the design studios are independent buildings. Therefore, each studio functions as an independent school of architecture. According to the interviews, students explain they are well aware of how professional performance will mean sleepless nights, and isolation because finishing a project takes a lot of hours and the creative process is not easy to find. Besides this, students explain their need to communicate and connect with other students, from different years of study and different studios. Sometimes for them to achieve a creative thought they need to speak with their peers, and see something outside of their own studios. However, students have explained how they might feel as home within their studios, but when they arrive at a different one, they feel observed and unwelcome.

"This is how an architectural studio works. Through isolation".

"..integrate a little more into the community from different semesters because I feel that sometimes the same studio does make you feel part of a community or feel belonging, but sometimes the studio is a bubble and does not allow you to meet other perspectives"

"I feel that perhaps this area of the design studios feels segregated and there are different ideologies for a reason".

"Today they promote discrimination among us".

"I believe that each design studio has its own students and if one joins another studio they see it as: hey, you don't belong here.

"There are times when even the community itself, because it is so competitive and self-centered, makes you feel left out".

2. ***"The whiter you are, the more successful you will be"****. Whiteness, sexual preferences, and privilege as a shield for insecurity.* The Mexican context has been known as insecure, especially for women. While conducting the interviews, female students were the ones stating feelings of insecurity within their school. And how these feelings may decrease if they have a car or if they are accompanied by men. It is important to mention that not every student has suffered from a violent experience on campus, however, there is a clear difference between safety perceptions between the female and male genders.

"Personally I have never felt unsafe on campus and I want to make it clear up front that I am a straight white male".

"In my particular case, it does not affect me, because I am a privileged person, and apart from that I am a man".

3. ***"Who are we?"*** *Belonging as a form of sharing interests, feeling embraced and heard as a way of signifying space due to social interaction but also as an institutional form of identity.* Architectural students relate their social interactions to the different spaces they inhabit within the school of architecture. There are profound connections due to the amount of time they spend with their peers and friends, and these connections are always associated with the different educational spaces, as if the architectural student developed a stronger connection to the material aspects of space, and their social interactions are always involved and understood from a spatial comprehension of the world.

"I feel that what makes me belong are the people I meet. That feeling comes from who you interact with in that space".

"I feel that when I go to the student lounge and do homework, or to the library, there I feel very in touch with the school, with the degree. That's where I feel like I belong. Because of this feeling, all of us who are in that space are from the same school. There is no one from outside. It is a space just for us, to carry out our activities. So, there I feel that I belong".
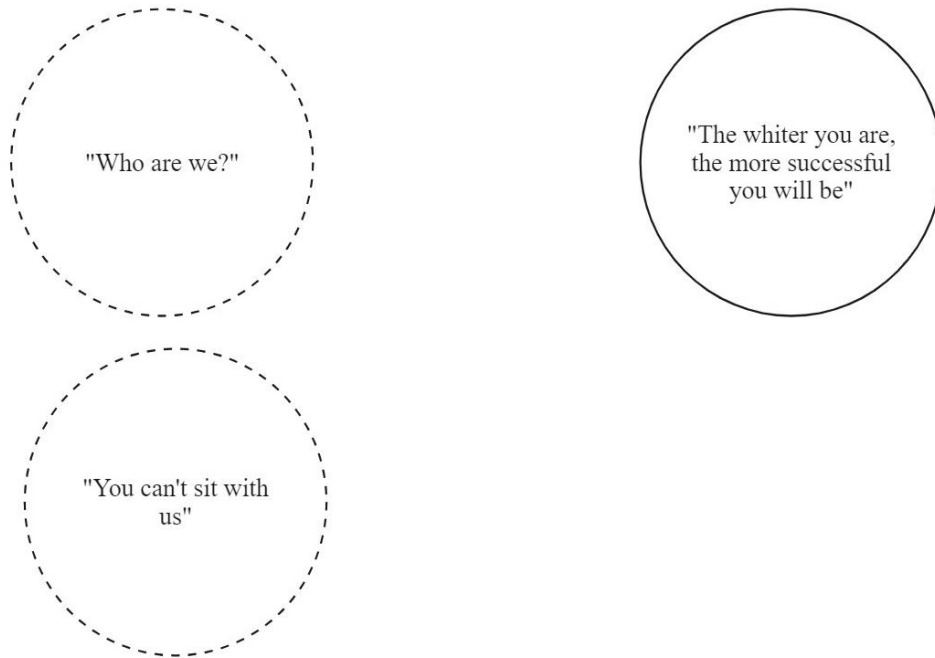
Social Domain

Figure 6. Visual summary of the Social Domain. Themes on the left marked with the dotted circles are space-related

Surroundings Domain

The category about surroundings was the one that students were more engaged with, and the most relevant for this particular study. About the positive outcomes of the interviews, there is the importance of open spaces and the relationship with students and nature. Students point out that their "places of belonging" are mostly "Eden´s Garden, the Pines Patio, the gardens between the design studios, the green space of the islands, and the patio where the Yaspik sculpture is placed. Students describe the importance of these spaces because of the freedom they feel while being outdoors. Moreover, the closed spaces that are important to them are their own design studios, the student´s lounge, the cafeteria, the library, and the student´s yearbook and showcase office.
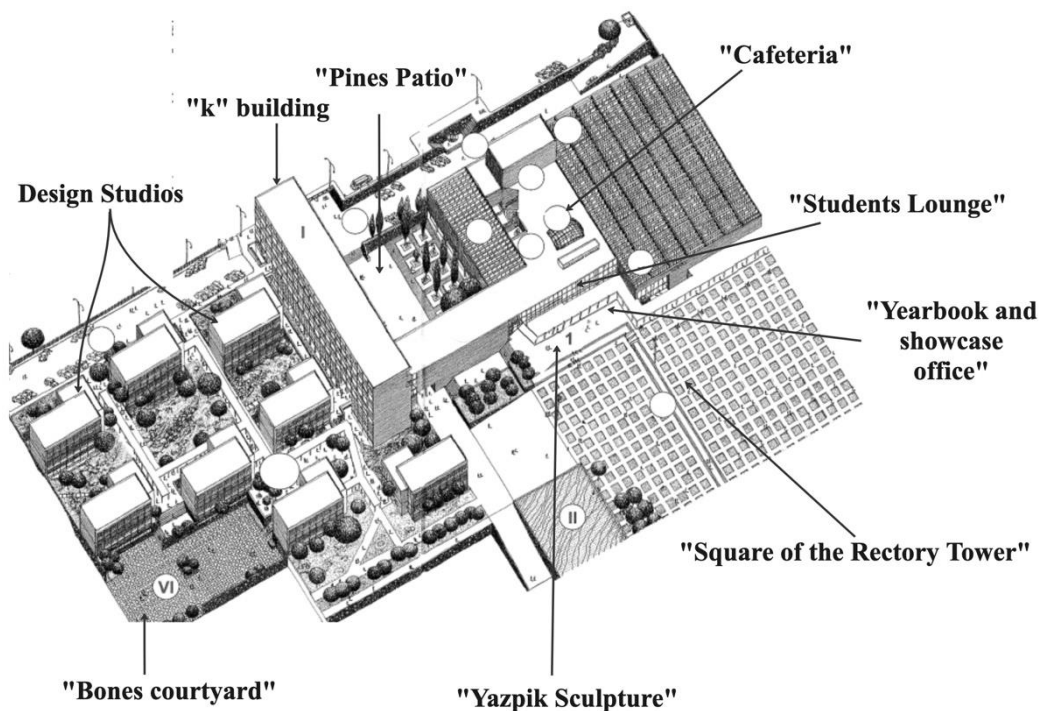
Figure 7. Spatial Diagram of the School of Architecture developed by UNAM as a guide to international students

However, they have mentioned how closed spaces are mostly overwhelming. For students what is important is to have spaces for diversity and inclusion, and they mention how these spaces are not related to be precise with a building,but related to social space. Lastly, the item of heritage came up in the interviews, where students stated that even though they feel important because they belong to an institution that is considered world heritage, this also affects the spatial practices that they would like to develop within space. The negative aspects of the surroundings domain are related to the openness of the University, which is linked to insecurity issues. The space that was mentioned through the interviews as an unsafe space was the "bones courtyard". Moreover, the characteristics that they described as unsafe are crowded spaces, dark spaces, lonely spaces, and big spaces. Also, students mention how the design studio, when it's their own studio they feel quite safe, however, when they are in a different design studio, they feel unwelcome and segregated.

Regarding the surroundings domain, the themes are the following:

1. ***"What we see and touch matters".*** *The physical characteristics of space such as colour, form, materials, spatial layout, aesthetics, and historical components as influence on students' social relationships.* For architectural students, spatial perception plays a different role from students of different disciplines. They learn to be more aware of the physical surroundings they are inhabiting. These surroundings might have a positive or a negative impact on the activities and emotions within space.

"the rooms where they teach design or in general the design studios are super large and I love that it is a huge white classroom, that there are many students, many plans, models, and many teachers reviewing many different ideas".

"...mockery, and stereotypes, and well, that was no longer seen in the design. It was not seen what it would cause, but it is designed and today it has terrible repercussions".

2. ***"Should I stay or should I go".*** *Closed spaces as a representation of positive emotions such as security and engagement but at the same time as an association to negative emotions like sadness.* While students explained that they feel more comfortable in open spaces, they are aware that insecurity issues on campus are most of the time being held outside. However, while they feel safer inside, they describe these educational spaces as settings where negative emotions develop.

"I don't like closed spaces, they make me feel like sad and overwhelmed".

"The rooms where they give workshops or in general the workshop rooms are super large and I love that it is a huge white classroom, that there are many students, many plans, models, and many teachers reviewing many different ideas".

"So I would say that the cafeteria is a safe space due to the infrastructure because it is closed, because there are only two entrances through the commerce, because it is in the heart of the school".

3. ***"Out in the wild".*** *Characteristics of open spaces, like silence, stillness, trees, and sunshine, as important assets for student-to-student connections and for having a break from the workload.* It has been stated that students spend most of their time in closed spaces, therefore, it is a positive reaction when they find themselves surrounded by nature. The architectural layout of the school has a combination of closed spaces and patios, where students usually have a break from the design process.

"If I thought about another specific condition of the space that I belonged to, I think I really liked that sometimes I sunbathed outside the studio".

"Definitely in the patio between studios and in the patio of the pines, because it is like a space to live together, to be calmer, and that is, it happens to me but the patio of the pines calms me down, it calms me down a lot to be with nature".

"Definitely in the patio between workshops and in the patio of the pines, because it is like a space to live together, to be calmer, and that is, it happens to me but the patio of the pines calms me down a lot to be with nature".

4. *"Am I welcome here?"* *The perception of design studios as home but also as elements that segregate and discriminate others.* From the beginning, students are assigned or may be able to choose a specific design studio. This means they will be spending most of their time within that space since the main subject they take is "design" which is sub-divided into four to five subjects depending on their semester. Due to the amount of work students describe, they usually don´t have the time to meet people from their own design studio, even less from a different one to the studio they were assigned to. Therefore, the design studio space is described by students as the most familiar setting within the school of architecture, however, the feeling they have from their own design studio is completely different to the one they have in a different building.

"I feel that I belong to the design studio because there is a more welcoming area, because our design studio is like our home".

"Besides that, you enter another design studio and you feel like an outsider, right?"

"I feel that perhaps this area of the design studios feels segregated and there are different ideologies for a reason".

"If the studios did not exist, the scale would be very large so you could feel a little lost or overwhelmed by the size of the school and what studios do is lower that scale. Although they do generate bubbles and that is the counterpart of what I just said because many times the students of one studio do not identify at all with those of another one".

Security Sub-Domain

Through the sub-category of security, students mention how there are certain characteristics such as social class and privileges that decrease the sense of safety on campus such as having a car, being white and privileged, and being heterosexual and male gender. The aspects that have emerged through the interviews state that architecture is the most attacked school on campus, there is a need for physical barriers for protection, and students are aware that if the country is insecure, their school will be insecure as well. In addition, bringing expensive items to campus such as laptops, and iPads, phones leads to robberies and assaults, there is no control over who can access the school. In addition other design studios are scary, vulnerability also creates a sense of community, students experience anxiety and stress because something might happen, and they describe spaces being lonely and dark.
Regarding the security sub-domain, the theme that was developed is the following:

1.- *Is restriction the solution?* *Spatial and material characteristics and their association with safety. Vulnerability as a form of social connection, and the relation of privilege with safety.* The issue of insecurity came up in the interviews because the openness of campus makes it easier for anyone to get inside the school. Throughout the interviews, students mentioned they rather have a closed campus so they can feel safer. There are different aspects such as lighting that decrease the sense of insecurity within the school.
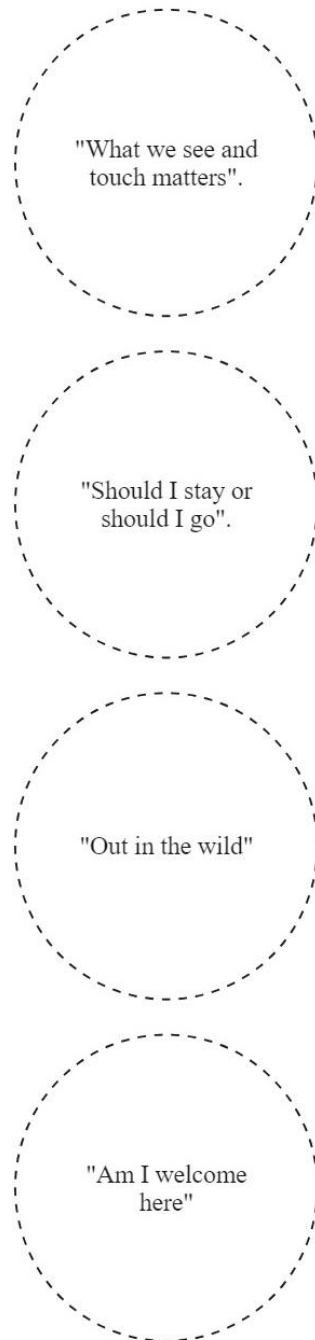
Surroundings Domain

"What we see and touch matters".

"Should I stay or should I go".

"Out in the wild"

"Am I welcome here"

Figure 8. Visual summary of the Surroundings Domain. Themes marked with the dotted circles are space-related

"Personally, I don´t feel it that much, because I come at a time when there is daylight and I come by car, then I think the situation changes a lot".
"The issue of lighting, well-lit spaces are the safest spaces".

"I don't know if it's a bit controversial, but I would prefer that they put a fence to the entire perimeter and have restricted access".

"And perhaps also this union, between the students and the faculty community, we feel a bond where we all protect each other".

Security Domain

Is restriction the
solution?

Figure 9. Visual summary of the Security Domain. Themes marked with the
dotted circles are space-related.

5. Discussion and Conclusions

Scholars such as Hodgins (2018), Ahn and Davis, (2020), and Hurtado and Carter (1997) among others, discuss how space is related to the concept of sense of belonging. Most of the students that participated in the interviews, come mostly from a COVID-19 generation. This means that when they started their studies at the School of Architecture, the pandemic was already going on, so they never felt welcome on campus. They met their classmates through online platforms. Therefore, their approach to educational space has been different than other generations of students (Pownall *et al.,* 2022).

Through this study, the four domains of Ahn and Davis have been modified. The first domains of academic, social, and the one of surroundings have remained. But the domain of personal space has not come to light as much as aspects of security that are mostly linked to the spatial domain of surroundings. The domain of surroundings was the one with powerful information, considering the interviews were mainly from a COVID-19 generation, the results highlight the importance of space and the intra-action from the social, psychological, and pedagogical aspects to the physical and material ones. The following image shows the integration of the developed themes and how ten out of twelve were related to spatial and material characteristics. This diagram shows how even when the themes were developed and classified according to an existing categorization, the use of the concept intra-action allows us to understand the different characteristics of belonging as a unity and not as different elements that are independent from each other.

The main learning space for architectural students is the design studio, which is a closed space. These studios have had positive impacts on their students since they consider it home, but as mentioned before the independent layout of the studios falls into the description of "bubbles" according to the students. These closed spaces have all the same architectural layout, form, and function, however, these same spaces are being described as places where poor pedagogical dynamics occur and as places for discrimination. Besides this, the design studio remains as the core physical space for students learning.
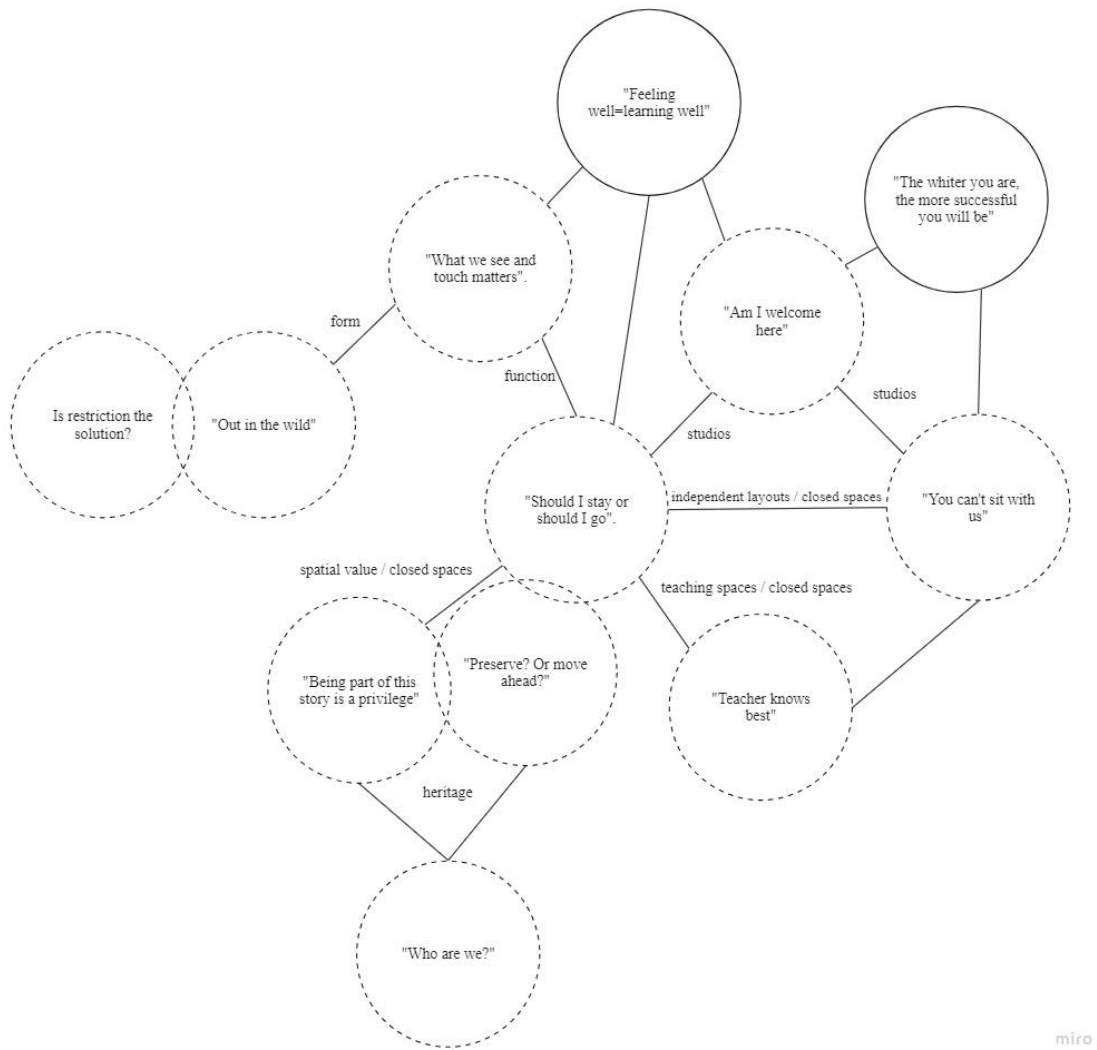
Figure 10. Visual summary of the developed themes and their intra-action

Moreover, these closed spaces are part of the central campus, which means they are considered as heritage. In this case, one of the main reasons to be considered heritage, was the materiality of the architectural design. These material characteristics of the building, such as form, colour, and materials have a great influence on student's sense of belonging. However, it has an impact upon student's performance since the case study is an overpopulated campus and there is a need for more educational spaces. This is why, we developed the themes: Preserve? Or Move ahead? And "Being part of this story is a privilege". The case study being considered as heritage, which has implications for the initial hypothesis. As mentioned before, the case study HEI has an identity that is associated with pre-hispanic architecture, meaning that the material configuration of it is essential since the University is made up of specific materials, forms, platforms, and open spaces. This is all linked to the master plan of the Central Campus and the composition of the School of Architecture, where these modern buildings should show the people an institution that was and still is worried about their students engaging with sports, social relations, culture, and well-being.

Heritage is not only related to closed spaces, but to their dialogue with open space and nature. Which according to the developed themes is associated with well-being but at the same time with insecurity issues specifically for women. Students mention how important is to have spaces that involve nature for them to feel belonging, and how there are negative implications with closed spaces because they associate them with feelings of stress and anxiety. However, even though the Design Studio is a closed space, they feel that this is the most familiar setting for them, and they particularly mention the importance of space (built or not) for social connections, which is related to what Markus (1987) mentions about the physical characteristics of space. In addition, students describe how spatial design might be a generator of discrimination and unsafety, describing how the independent layout of the design studios segregates certain students.

Moreover, there is a concern about how sense of belonging is related to space. Hodgins (2018) mentions three aspects of belonging of which one is space. In addition Ahn and Davis (2020) divided belonging into four domains, including surroundings as a spatial asset. In addition, how space has environmental implications according to Spady (1970) and how the experiences of constructed matter such as function, form, and space are important to achieve belonging (Markus, 1987). However, there is not enough literature that focuses on the material implications of belonging in an HEI. While developing the themes, we discovered that the physical characteristics of spaces, such as colour, form, materials, spatial layout, and aesthetics are an influence on how students relate to their peers. This is shown through the theme "What we see and touch matters" which is related to physical characteristics in open spaces corresponding to the theme: "Out in the wild" and closed spaces: "Should I stay or should I go".

Everything comes together again with the design studios, which are the main educational space for architectural students, and while they conceive them as their second home, the physical characteristics of these spaces segregate and discriminate students due to their independent layout. Therefore, there is an overlap of emotions and perceptions through this material entity of the design studio, where the physical building presents certain characteristics that are negative for students, but in addition, students find it to be positive and suitable to develop their sense of belonging. While the space is the same, the mental perception of it changes completely its main function. This leads us to different questions for future studies such as, are schools supposed to be designed in certain ways following their architectural character and preconceived human forms of how schools should look like? What can we do to improve spatial design for students to develop a healthier relationship with their educational buildings? Should architectural character remain within HEI's? What is the role of heritage within an educational institution?

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