

TSAKO THABO HIGH SCHOOL
ARISE AND SHINE

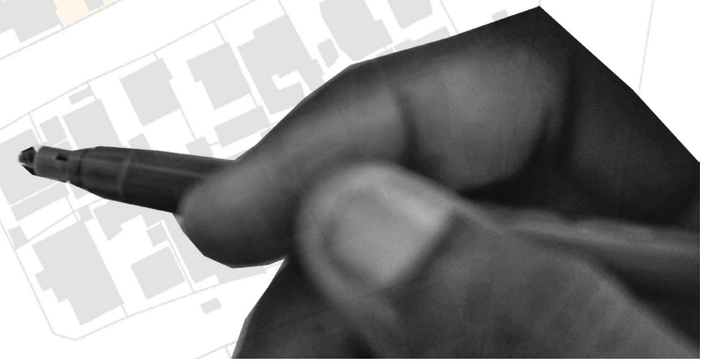
SCHOOL AS A Creative Incubator

Facilitating storytelling through creating a expanded and safer school typology

2022 M_INT (PROF)

KIRSTIN NIEBUHR





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Expression of Thanks

I would firstly like to thank my creator and Father God. I can not express how thankful and grateful I am for your love throughout this journey. You showed me your love throughout this time more than ever. Thank you for carrying me through the highs and lows. Thank you for giving me the necessary strength, motivation, peace and joy, and clarity. Thank you for being my light and for shining your light for me to guide me through this journey. Thank you for using this journey to grow my passion and to get to know myself. Thank you for sending me all the people I needed throughout this journey.

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Abstract

Social and physical segregation currently exists between social and ethnic groups within secondary schools causing bullying and a need for a safer school typology. Furthermore, it is found that this causes role confusion and a need for an environment to enhance the development of the adolescent. The aim of the project is to create a reinterpreted new typology to create a safer learning environment for adolescents at Tsako Thabo Secondary School and further schools in Mamelodi.

This proposal aims to enhance the development of an adolescent through the creation of a expanded typology, linking to cognitive and emotional development. In this stage of their lives, an adolescent's main development is to establish their belonging and their individual identity (Bronfenbrenner 1997; Erikson 1968; Louw& Louw 2013; Wilcock 2006). Furthermore, currently, the typology of the school creates physical and social segregation causing social and cognitive boundaries causing bullying, and a lack of safety within schools.

KEYWORDS | Well-Being, Meaning Making, Storytelling, Safety and Security, Spatial Agency, Interiority

CONTEXT

The site is situated within the suburb, Khalambazo situated to the west of Mamelodi.

GENERAL ISSUE

Social and physical segregation currently exists between social and ethnic groups within secondary schools causing bullying and a need for a safer school typology.

URBAN ISSUE

Lack of safety formed by existing typology causing segregation which causes bullying.

INTERIOR ARCHITECTURAL ISSUE

The current typology contains neglected spaces and a lack of ownership formed through the segregated spaces, creating unsafe spaces surrounding Tsako Thabo Secondary School. Unsafe spaces are also created within the school which causes bullying hotspots within the school. Bullying occurs in the school creating need of expression and a need for identity and a sense of belonging for the adolescents.

THEORETICAL FRAMEWORK

The project explores the theories of Christopher Alexander(1977), aswell as the theories of Bronfenbrenner(1977) and Wilcock (2006).

A story told through the perspective of an adolescent

AT TSAKO THABO SECONDARY SCHOOL.

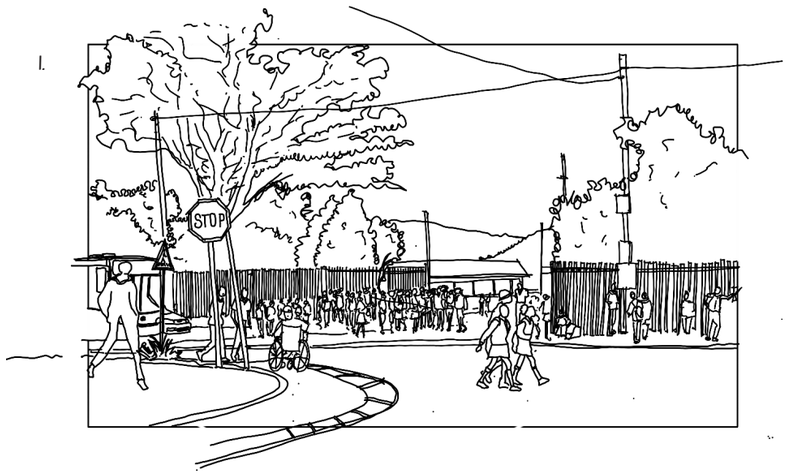
When I was in primary school, my mom used to walk me to school and would tell me that one day I would be all grown up and go to a big school where I could catch my dreams of becoming a singer.

A few years later I came to Tsako Thabo Secondary school, I was put into a class in which I felt a lot different from the other learners, but I tried to be someone they would like so that someone would like me.
However, this only made it worse, they started calling me names and telling me to go back where I came from, sometimes they would even trip me or hit me. There are days when I just hide in the bathroom to be safe, but they still find me there.

The only people that do understand me at school are my teachers. One day I was just minding my own business and I thought today would be a good day I had just finished my maths test and I thought I did well. When I moved through the corridors they came and attacked me. I tried to defend myself, but they were too strong. I just remembered hearing cheering and clapping from the other kids surrounding us. Now in every break, I hide in the far end back corridors and hope they don't find me.

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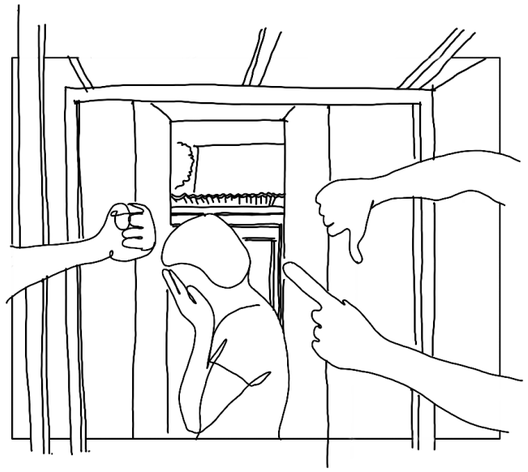
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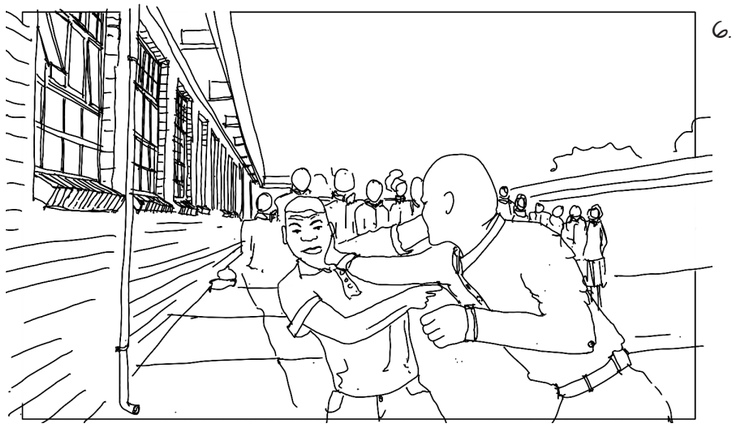
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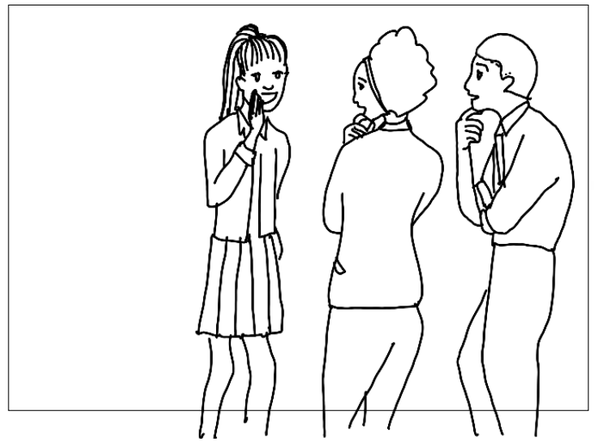
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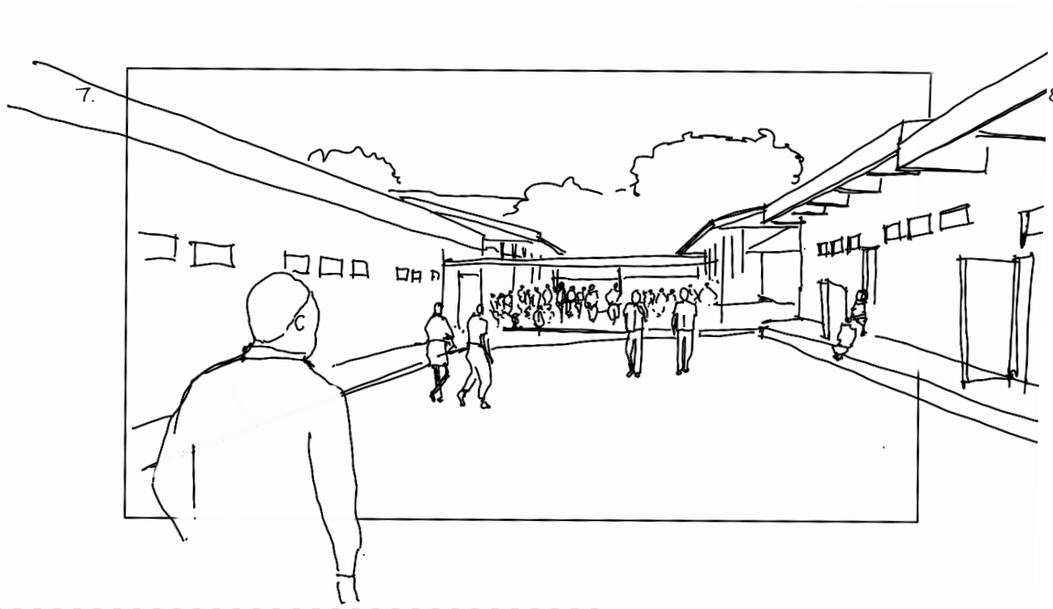
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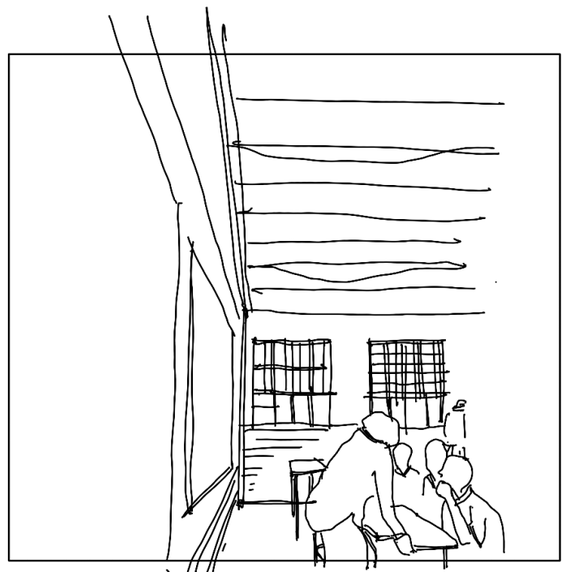
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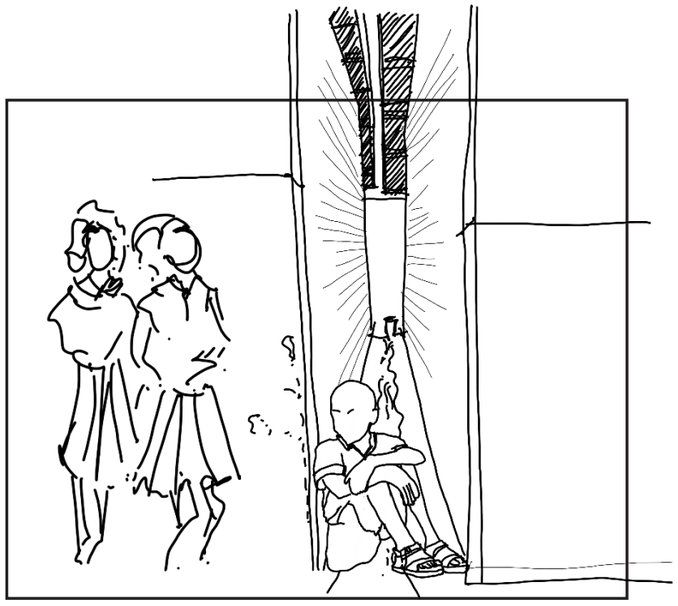
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GLOSSARY

List of Terminology

ABBREVIATIONS

Abbreviations	Meaning
1. *Co-Design*	Collaborative-Design
2. *UUCS*	Unit for Urban Citizenship Studio
3. *PAR*	Participatory Action Research
4. *UP*	The University of Pretoria
5. *OT*	Occupational Therapy
6. *SWB*	Subjective Well-being
7. *OWB*	Objective Well-being
8. *PUA*	Pre-University Academy
9. *PHD*	Doctor of Philosophy
10. *JCP*	Joint Community-based Project

LIST OF TERMINOLOGY

Terms	Definitions
1. *Appropriation*	Taking space for one's own use and changing it for a special purpose to provide a space that can function for multiple purposes by providing ownership to a user.
2. *Adolescent Development*	Development is the cycle of growing and becoming more mature. Adolescence is a stage within the developmental process between childhood and adulthood. Erikson's theory explains that during this time of development the main task for an adolescent is to solve the crises between identity, establishing belonging, and role confusion (Erikson 1968).
3. *Belonging*	Collaborating with others and sharing the same values creates a sense of belonging (Wilcock 1999)
4. *Cohesive space*	A space in which a social and physical connection takes place in which segregated spaces become mediated.

5. *Collaborative-Design*	A design process where the community members become part of the design process.
6. *Community member*	A person that lives in a specific geographical location.
7. *Creative Incubator*	The creative incubator is a space of expression through the means of storytelling to uplift and builds a future (Quinncreative 2009).
8. *Doing, being, becoming belonging*	Relating to Wilcock's theory of identity formation formed through storytelling (Wilcock 1999).
9. *Empathy mapping*	Empathy mapping is a means to map and create persons from the user groups in order to gain a deeper insight into the different personas.
10. Expression	An action of sharing one's thoughts and feelings through a means of storytelling (Oxford Languages 2022).
11. Epistemic diversity	Episteme is the Greek root word explaining that there is not a single way of sharing and receiving knowledge (George 2003:50). This notion further explores that epistemic diversity is essential for learning and for making a difference in the global community. It is essential to recognize the different knowledge systems within epistemic diversity (BHons 2020).
12. Identity	Identity is formed through our occupation of doing, being, becoming, and belonging. Our doing and our being are embedded within our present moments, where the doing focuses on what (Wilcock 1999).

13. Interior architecture	Interior architecture is the design of a space for human inhabitation, about art and science. It focuses on the needs of the user and the relation between a detailed design of space for the user.
14. Interiority	Interiority is the point at which the understanding of an inside of a building becomes 'elastic' and the interior starts extending into the exterior (Mc Carthy 2005:112).
15. Intangible	The quality of spaces created which cannot be seen but affects the psychology of the individual (Oxford Languages 2022).
16. Meaning making	Meaning is an intent of a word, text, concept, or space means to a specific individual.
17. Multi-scalar	An intervention that considers small, medium, and larger interventions start to form a relationship between an object to a person, a space to a person, and a system to a person.
18. Reinterpreted spatial typology	A way of designing considering the existing ways of building and rethinking it in a way that is more human-centered.
19. Objective well-being	The extent to which external constraints positively contribute to ensuring users lead a high-quality life (Himics 2020).
20. Occupational therapy	A human-centered health profession promotes well-being and health through occupation (Wits 2010).
21. Participatory action research:	A qualitative research methodology that includes collaborative activities and workshops with the participants to gather research and unpack the issues of the study (Lean 2021).

22. Spatial agency	Spatial agency views the discourse of architecture through a different lens by allowing the user to take initiative and control over their surrounding space through designing for appropriation (Awan *et al* 2011).
23. Spatial intervention	Spatial Intervention refers to the design and implementation of an object, space, or system.
24. Social and physical cohesion	Social cohesion involves developing shared values and a connection beyond different understandings based on identity formation. Physical cohesion describes how a space could have similar or the same values to different individuals (Oxford Languages 2022).
25. Social and physical segregation	Social segregation links to different understandings of values creating separations between different individuals (Oxford Languages 2022).
26. Safety	A state of feeling and being protected from matters that could be an injury, a risk, or danger (Oxford Languages 2022).
27. Storytelling	The action of telling or writing a story for the sake of sharing knowledge to uplift others.
28. Subjective Well-being	An individual assessment of their lives in terms of psychological and physiological well-being (Himics 2020).
29. Tangible	Relating to a physical space you can touch and interact with (Oxford Languages 2022).
30. Typology	Relating to how a space is configured and in which architectural style it is designed and built.
31. Typology of expression in relation to a school	A spatial configuration of how the secondary school is configured allows for a user or the adolescents to share their thoughts and experiences.
32. Urban Interior	Spaces in the public domain that are designed for human habitation, that are outside, or street edges or spaces between buildings, which are not defined in the same way as traditional interiors as the 'insides' of buildings (Attwill *et al* 2015).
33. Well-being	Personalized assessment of one's mental, physical, and social status (Himics 2020).

PART 1

Position and Situation

INTRODUCTION & Background

1.1_INTRODUCTION

Motho ke motho ka batho translates to a person being a person because of others and is a quote commonly known amongst the Sepedi and the Xitsonga cultures (Cronin 1999). The phrase refers to the sharing of knowledge and through doing, so building cohesion and a holistic identity amongst individuals. Through the sharing of stories and knowledge, a sense of community and identity can be established. People from different backgrounds are connected through stories of their interests, talents, and dreams.

A knowledge hub or a creative incubator can be a space where knowledge is shared, and stories are told (Quinncreative 2009). Through the sharing of stories amongst creative fields such as art, writing and music, the knowledge transfer can become therapeutic. It could also be a space in which a shared language is developed through which belonging and a holistic identity is created for individuals. Through this, a space of cohesion is created, which leaves less room for miscommunication.

An identity can be defined as a social and political network system of a source of meaning and experience (Zarzar 2008). Through the meaning of space, a sense of belonging and pride is created (McCarthy 2005:117). Interiority, on the other hand, can be defined as the concept of an architectural space that is dependent on social, cultural, and political networks (McCarthy 2005). When considering the definition of collaborative design, it relates closely to the idea of sharing knowledge amongst these networks (Awan *et al* 2011: 65). Therefore, when designing a space, it is important to include the user in the design process and consider the needs of the user closely and design accordingly (Giaccardi& Fischer 2008).

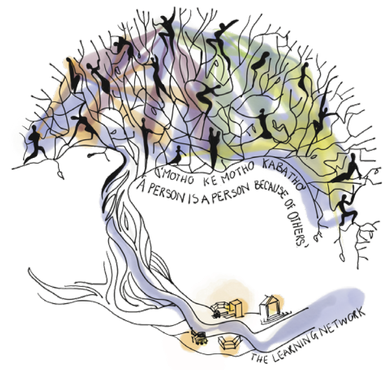


Figure 1.1_ Motho ke Motho ka Batho (Author 2021)

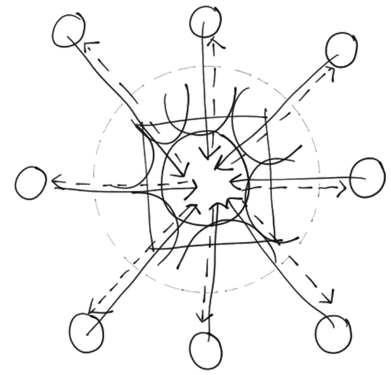


Figure 1.2_Sharing Knowledge through one Platform (Author 2021)

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A._ POSITION

This study is an inductive study that considers an amalgamation of Participatory Action Research (PAR), collaborative design (co-design), and a meta-design methodology (Figure 1.3) (Giaccardi & Fischer 2008). The main design informants derive from data captured from PAR and co-design sessions from 2020-2021 within the UUC of the department of architecture, along with secondary data gathered through a meta-analysis and a theoretical framework. PAR and empathy mapping is used to gain a deep insight into the needs of the adolescents as the users to ensure a human-centered design that could create a holistic identity and belonging within the design process and product to enhance the development of an adolescent (Louw &Louw 2013).

1.2._BACKGROUND

Site: Tsako Thabo Secondary School

Address: 13415, Mamelodi 608-Jr, Pretoria, 0122

A. _SIGNIFICANCE OF STUDY

This design investigation aims to enhance the mental development of an adolescent, linking to cognitive and emotional development. In this stage of their lives, an adolescent's main development is to establish their belonging and their individual identity amongst the identity of others. Furthermore, Louw and Louw (2013) discuss that adolescents' sense of safety is grounded and dependent on the sense of belonging within their environment. This can also be considered through Bronfenbrenner's and Erikson's theories of development. We can state that the environment in which the individual is placed or situated has a direct impact on the way an adolescent develops emotionally as well as cognitively (Bronfenbrenner 1997; Erikson 1968; Louw& Louw 2013).

B. _RESEARCH DEVELOPMENT

This study is conducted over a period of two years. Within 2021 primary data was gathered through PAR, co-design, and meta-design methods with the Pre- University Academy and with learners from *Tsako Thabo Secondary School*. Workshops were conducted under the UUC within the department of architecture of the University of Pretoria by the honours and masters group in 2020 and 2021 with the adolescents of Tsako Thabo Secondary School through the PUA. Within 2022 the captured data along with secondary data is used to establish a design proposal.

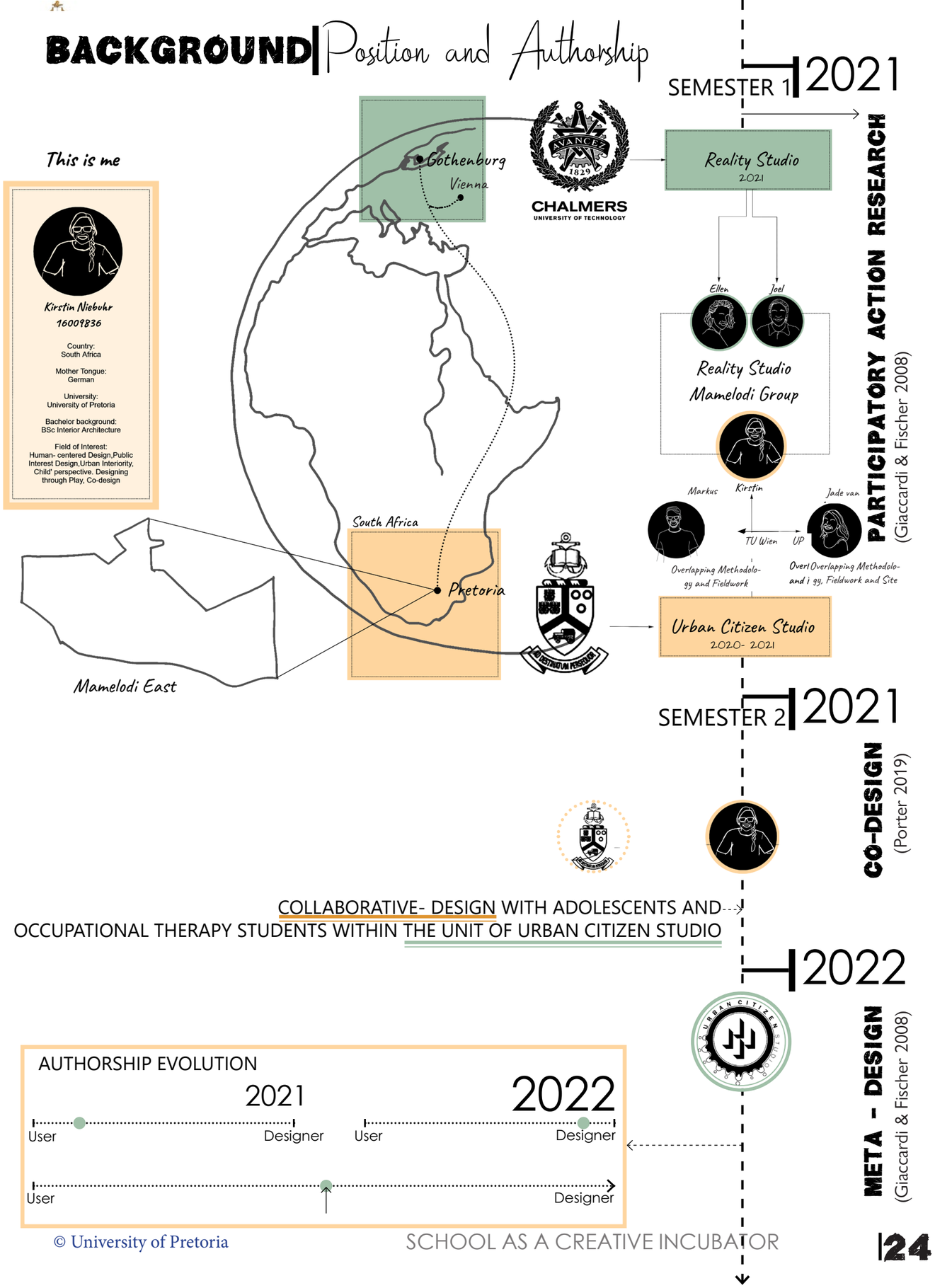


Figure 1.3_ Position and Authorship Timeline(Author 2022)

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C. _SITE SELECTION

In 2020 and 2021 mapping took place in and around *Tsako Thabo Secondary School* as well as within the area surrounding the UP Mamelodi Campus. *Tsako Thabo Secondary School* is situated within Mamelodi east within Khalambazo. This was conducted under the UUC from the University of Pretoria (UP), Department of Architecture. Tsako Thabo Secondary School is set adjacent to the Pienaar river and the Magaliesburg Mountains. Furthermore, the secondary school is located within a residential setting consisting of multi-ethnic societies (Figure 1.4).

D. _USERS AND STAKEHOLDERS

The main stakeholders are the adolescents within Khalambazo and specifically the adolescents within Tsako Thabo Secondary School. Through the mapping, it was found that adolescents feel unsafe due to bullying caused by tribe wars or cultural inequalities between the Tsonga and Pedi tribes that are predominant within the school (B Hons 2020).

Therefore, the main stakeholders of the project are adolescents, staff members, and parents from Tsako Thabo Secondary School as can be seen in table 1. The school currently houses 803 learners as well as 14 teachers. In 2020 under the research of the UUC, the honours group made a connection with several stakeholders including a teacher from Tsako Thabo Secondary School, also forming a key representative of the project. Stakeholders and users that were identified during the course of UUC in 2020 and 2021 were used to expand the network of stakeholders. Connections to further teachers and adolescents were made. Furthermore, more stakeholders were included through a collaboration established with the OT Department of UP through the conduction of a Ph.D. Conducted by Helga Lister regarding Storytelling (Figure 1.5).



Figure 1.4_Participatory Action Research (Author 2021)

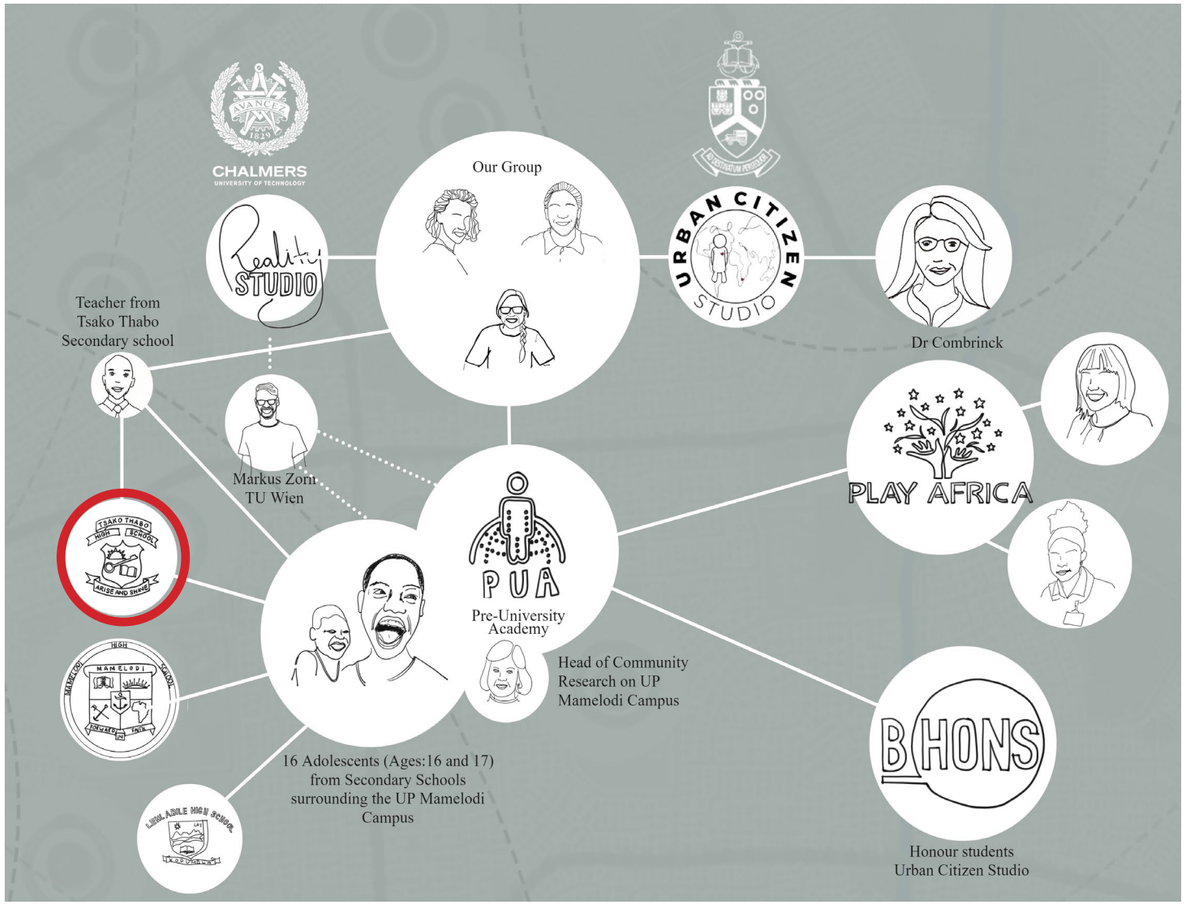


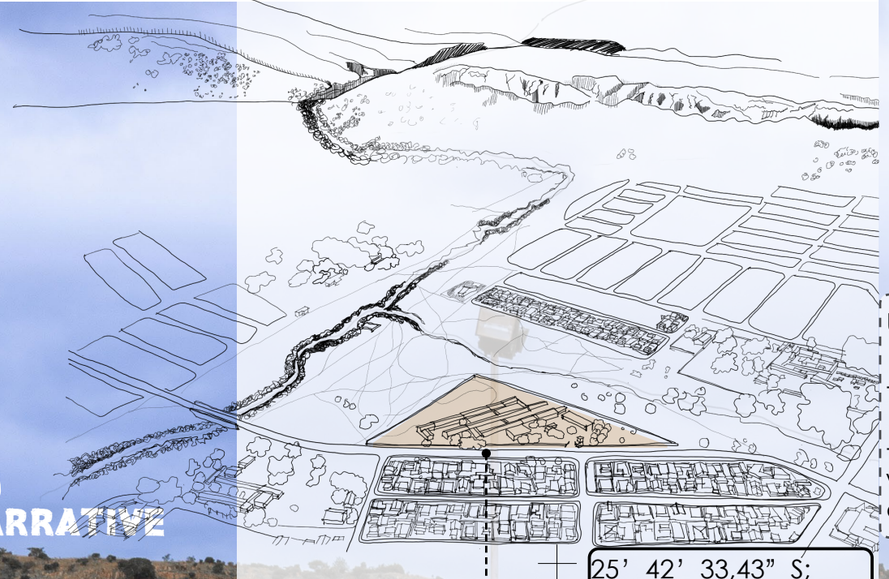
Figure 1.5_ Stakeholder Diagram(Author 2021)

- OCCUPANCY -

				Number of Adolescents				
Grade		8	9	10	11	12		
Internal stakeholders								
Number of Adolescents		250	118	220	148	67		
Total		803						
Number of Teachers		14						
External Stakeholders								
South African Schools Act : Regulations								
							Total Square meters	
Minimum area per person Gr 1-12	Learner	1					needed for school	
	Educator	7	Learners				803	
							47	
			Teachers				98	
			Total				948	

Table 1.1_ Occupancy (Author 2021)

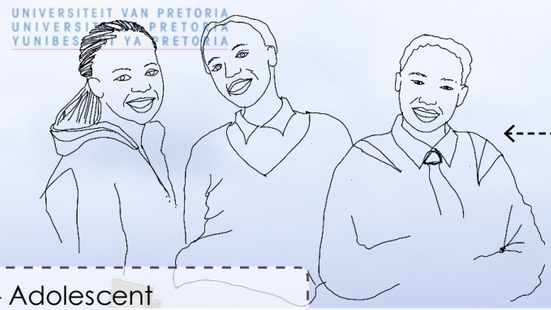
Existing NARRATIVE



25’ 42’ 33,43” S;
28’ 22’ 16,19” E

Tsako Thabo
Secondary School,
Tsomo street,
Mamelodi,Pretoria





25’ 42’ 33,43” S;
28’ 22’ 16,19” E

Tsako Thabo
Secondary School, Tsomo
street,
Mamelodi,Pretoria

User - Adolescent

- Ages: 12- 18 years

-Number of Adolescents within Tsako Thabo Secondary School: 803

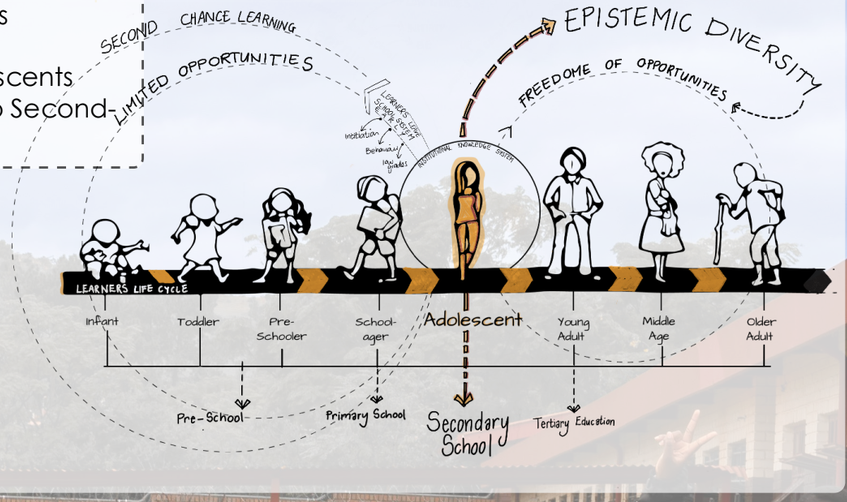




Figure 1.6_Tsako Thabo Secondary School is located within Mamelodi east to the East of Pretoria (Author 2021)

Figure 1.7_Adolescents Life Cycle in Mamelodi (Author 2022, Erikson 1968, Louw & Louw 2013)

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Site Analysis

CONTEXTUAL HISTORY AND THEORY

1.3_SITE ANALYSIS

Mapping, the characteristics of the personas on an empathy and ritual map (Character Design 2019) revealed different spatial informants, related to the perspectives of the adolescent towards the streets and the urban interior surrounding the Mamelodi Campus. The empathy and ritual mapping took place through workshops conducted with the adolescents living in the area.

The empathy map is set up, to document all key aspects relating to what the adolescent is feeling, thinking, hearing, seeing, doing, and saying within a workshop (Character Design 2019). This form of mapping allows the designer to view the world from an adolescent's perspective and through doing so helps for a more accurate design investigation. Through the questions that were asked and tasks that were done within the workshop, personas were derived. Through the analysis of the workshops as discussed in the methodology, important spatial informants relating to an empathetic approach could be derived.

Prominent spatial features were identified through the personas: thresholds, fences, closed public spaces, narrow corridors, corners, and dead ends. Furthermore, through Workshop 1 in 2021, we were also able to identify different cultural groups within the urban fabric of Mamelodi. Tsako Thabo Secondary School consists predominantly of Sepedi and Tsonga Cultures which was found to cause conflict and thus bullying and segregation in the school, hence leading to a lack of safety within the school (UUC 2021). Therefore, it can be said that there is a need for mediating between the different cultural groups. It was however also found that through common interests and passions, a means of mediation starts occurring. Furthermore, the common interests of adolescents currently lie in co-curricular activities such as music, art, and writing. These activities can be related to a means of expression linked to storytelling. Therefore, an opportunity lies within creating mediation to create safety through the means of storytelling by creating spaces that encourage for stories to be shared through programs related to storytelling. *Please refer to Addendum A and to the maps for further information.*

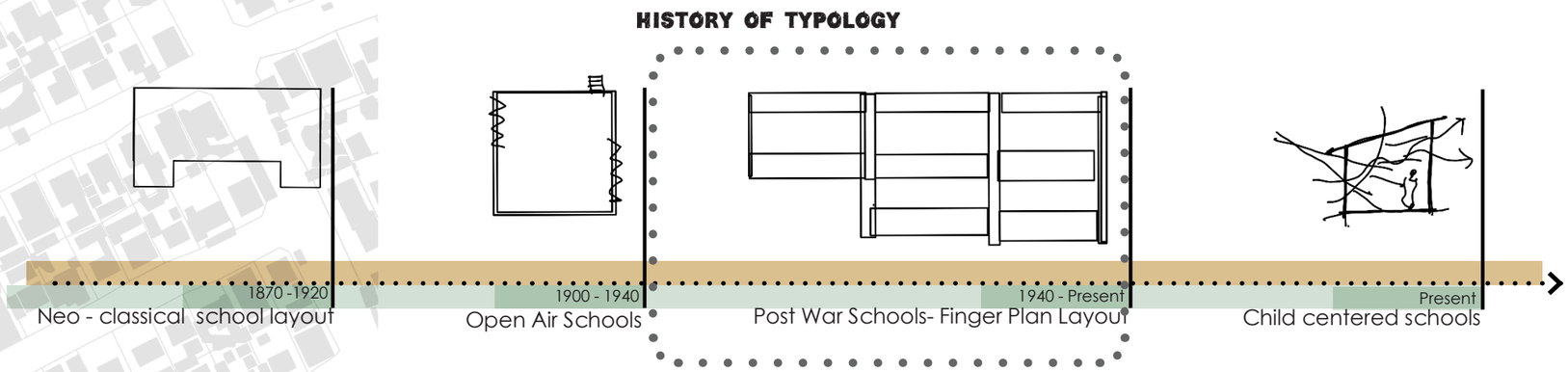


Figure 1.8_ Timeline of educational architectural typology (Author 2021)

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1.3.1_CONTEXTUAL HISTORY OF MAMELODI

The educational ecosystem can be defined as the space through which the individual is educated (Legotlo 2014). When considering the educational ecosystem of Mamelodi East and specifically Kahlambazo, we can see that the apartheid history has led regions to suffer from the consequences thereof (Legotlo 2014). Therefore, it may be evident that there is a lack of interior and urban interior spaces which enhance the development of an adolescent relating to a sense of safety.

During Apartheid, racial and ethnic identities were imposed on the South African society (SACAP 2013), causing a need for a holistic identity within communities such as Mamelodi (Lehohla 2017). It is evident that, in townships such as Mamelodi, there could be a lack of spaces within the context of Khalambazo to enhance the developmental skills and growth of the child due to history and the resulting tension caused thereof due to space being unsafe (Porter 2019).

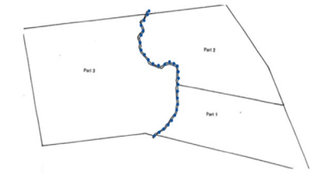
1.3.2 EPISTEMIC DIVERSITY WITHIN KHALAMBAZO

The design proposition is framed within the theory of epistemic diversity. Episteme is the Greek root word explaining that there is not a single way of sharing and receiving knowledge (George 2003:50). This notion further explores that epistemic diversity is essential for learning and for making a difference in the global community. It is essential to recognize the different knowledge systems within epistemic diversity.

When considering the context of Mamelodi East it is found that different knowledge systems create platforms for sharing knowledge. These systems consist of informal and formal learning and can be classified as epistemic diversity in the educational ecosystem (Unit of Urban Citizen Studio 2020). The educational ecosystem can be defined as the concept with a focus on the educational sector of the larger community consisting of multiple stakeholders from different knowledge systems forming part of epistemic diversity (Eskilsson et al 2020, Unit of Urban Citizen Studio 2020).

In 2020, the UUC mapped epistemic diversity within Mamelodi, and the following knowledge systems discovered are: the relational knowledge system, the faith-based knowledge system, the indigenous knowledge system, the entrepreneurial knowledge system, and the co-curricular knowledge system, and the institutional knowledge system (Urban Citizen Studio 2020). It was also found that the relational knowledge system, the faith-based knowledge system, and the indigenous knowledge system can be classified into the value-based knowledge system (Figure 1.10).

This study will be working within the relational knowledge system as well as the co-curricular knowledge system, which provides a platform to investigate how individual identities and belonging are influenced by others.



Subdivision of the farm Vlakfontein in relation to the Pienaarsriver.



Pienaarsriver functions as western boundary in 1947.



Expansion of Mamelodi to the west in 1961.

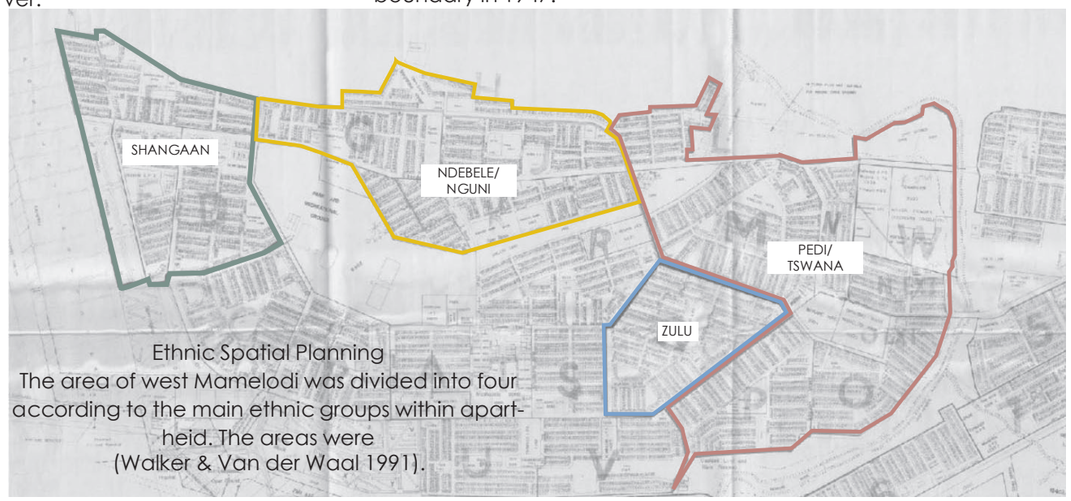


Figure 1.9_Contectual History (Walker & Van der Waal 1991)

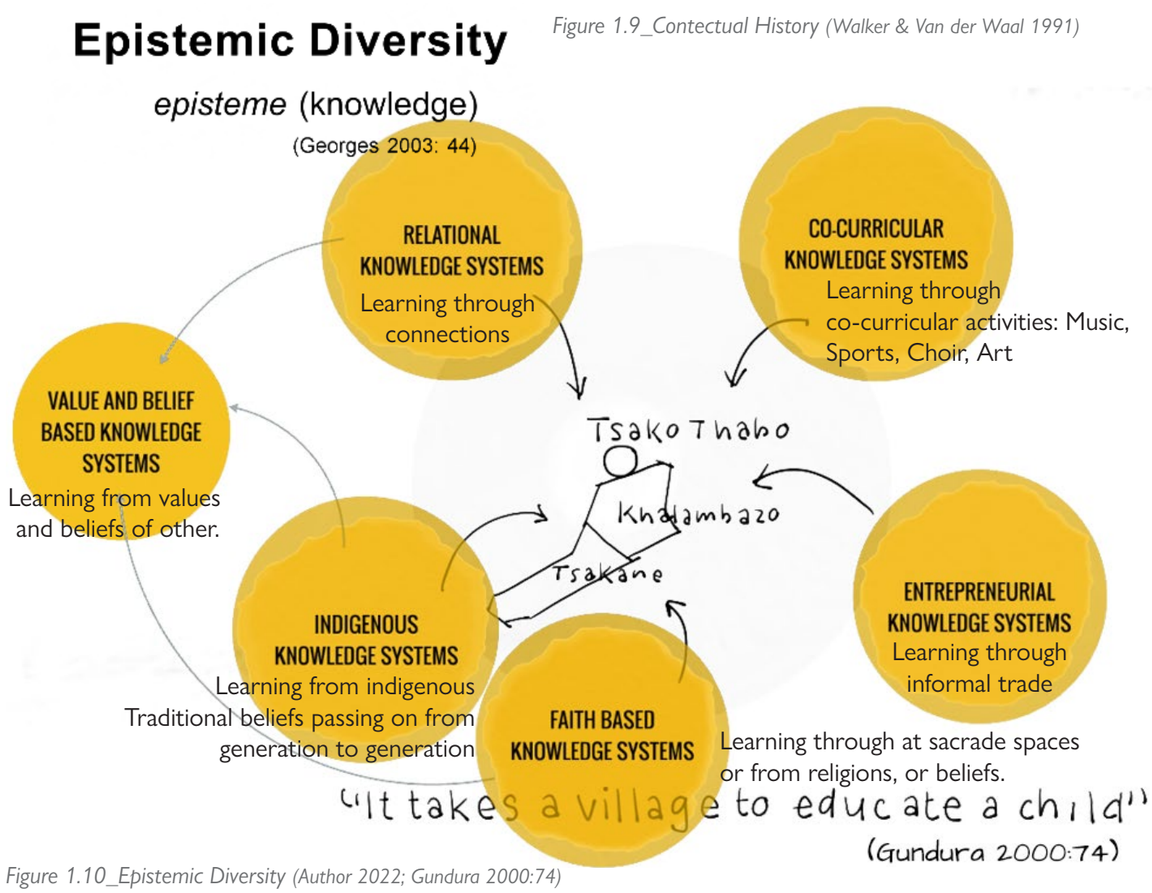


Figure 1.10_Epistemic Diversity (Author 2022; Gundura 2000:74)

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SITE ANALYSIS

Three Issues
PROBLEM STATEMENT
SITUATION

1.4_THREE ISSUES AND PROBLEM STATEMENT SITE ANALYSIS

1.4.1_THREE ISSUES

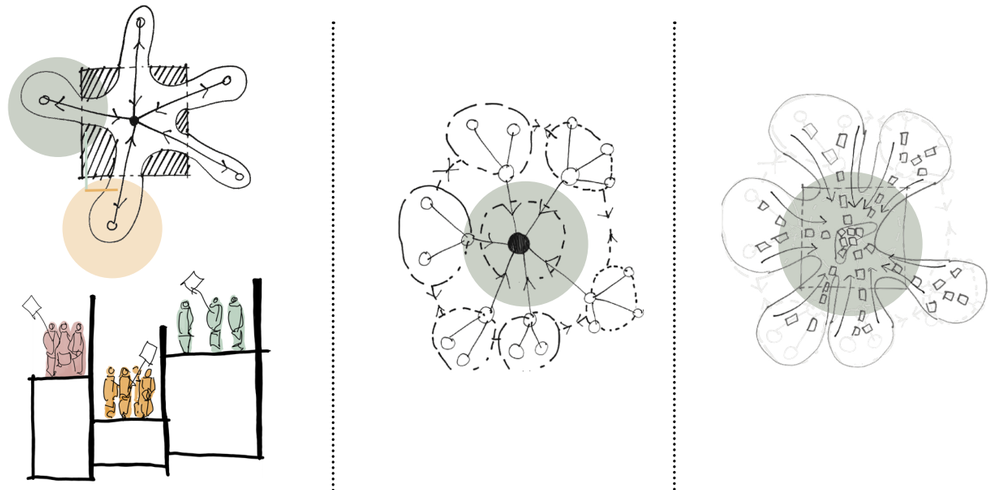
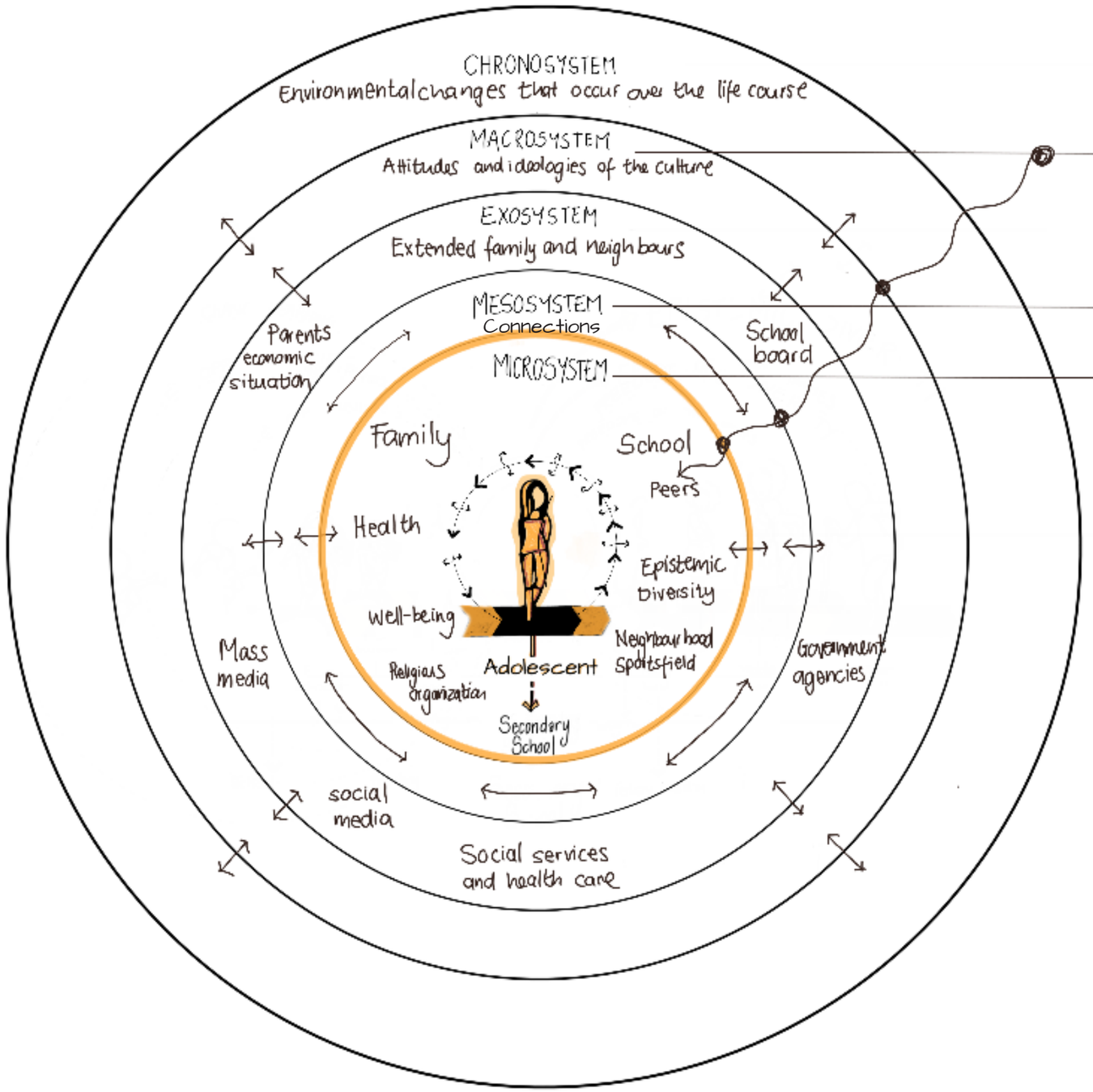


Figure 1.11_ Parti Diagrams of Three Issues(Author 2021)

A._GENERAL ISSUE - SOCIAL AND PHYSICAL SEGREGATION.

Louw & Louw (2013) state that children as adolescents (ages: 12-18 years), develop and find their purpose, belonging, and identity at this age, which is highly influenced by their surrounding environment (Louw & Louw 2013). When considering the area of Khalambazo in Mamelodi, it is evident that social and physical segregation still exists. Social segregation is caused by cultural differences in the beliefs of cultural groups. These differences sometimes cause conflict. Furthermore, physical segregation is also evident within the urban planning whereas seen in Figures 1.4 and 1.17 the community lives in segregation. Tsako Thabo Secondary School lies in between different fragmented residential areas that are split by culture. As the school sits in the buffer zone between the cultural groups, an unsafe space is created as can also be seen on the map.

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GENERAL ISSUE

Social and Physical Segregation

URBAN ISSUE

Thus lack of safety formed by the segregation caused from bullying

INTERIOR ARCHITECTURAL ISSUE

- Neglected spaces/ Lack of ownership formed through the segregated spaces

=creating unsafe spaces surrounding Tsako Thabo Secondary School

= Linear finger typology creating hotspot for bullying

=Unsafe spaces are created within the school

=bullying occurs in the school leaving a need for Identity and a sense of belonging and a need for expression for the adolescents.

The Site analysis will be unpacked through the lens of the following diagram.

Figure 1.12_ Adolescent Development diagram (Adapted from Bronfenbrenner 1997)

B._URBAN ISSUE - NEED FOR SAFETY

When considering the mesoscale of Bronfenbrenner in Figure 1.11, it was found that due to the apartheid history segregated spaces exist between cultural and ethnic groups which exist on a macroscale. This segregation is carried through within the school embedding the issue of segregation. *Tsako Thabo Secondary School* exist of predominantly the Tsonga and the Pedi cultural groups. The name for the school *Tsako Thabo* was created through both the Tsonga and the Pedi language meaning 'happiness'. Through PAR methods and workshops, it was found that the two cultural and ethnic groups have different beliefs which cause conflict between the adolescents within the school. Additionally, it was found that these differences cause bullying and the cause of unsafe and neglected places within the school. Therefore, it can be said that different understandings between individuals and cultural groups create a need for a holistic identity, sense of belonging, and safety.

Due to adolescents feeling unsafe within the school due to bullying because of the segregation this leads to a need for spaces to enhance their development and therefore enhance a sense of belonging and identity (Bronfenbrenner 1997; Erikson 1968; Louw& Louw 2013).

C._INTERIOR ARCHITECTURAL ISSUE

Neglected spaces and lack of ownership formed through the segregated spaces creating unsafe spaces surrounding Tsako Thabo. Moreover, unsafe spaces are created within the school as bullying occurs resulting in a lack of interiority and a need for cohesion through conflict arising caused by cultural differences leaving a need for identity and a sense of belonging for the adolescents. Louw & Louw (2013) discuss that it is of ad most important that an adolescent grows up in a stable space for an individual to develop cognitively and emotionally. Therefore, a sense of safety influences the adolescent's development and thus has an effect on the identity and the sense of belonging between their surrounding peers and their surrounding community. It can thus be said that the interior architectural issue considers the neglected spaces within Tsako Thabo Secondary School in such a way must consider the need to enhance the development. It is also evident that there is thus a need for a sense of ownership and a need to activate the neglected spaces.

It can thus also be said that there is a need for cohesion to create a safer school for the adolescents and tangibly it is important for all adolescents to take ownership of the school to create a safe interior and urban interior space.

1.4.2_PROBLEM STATEMENT

Through workshops dealing with the methods of PAR with adolescents from Tsako Thabo Secondary School, it was found that there is a need for a holistic identity, sense of belonging, and a sense of safety on the school grounds of Tsako Thabo Secondary School and its surrounding environment and urban interior (Attiwill *et al* 2015). Furthermore, it was found that the need for safety and security is caused by the bullying and conflict caused through segregation caused by different beliefs within the two predominant cultures: Sepedi and Tsonga. Furthermore, through considering the tangible aspect of the school of the existing interior architecture it was found that the existing current typology and spatial design do not promote or enable safety. As the current typology does not promote safety this also causes adolescents to be unable to find identity and belonging within the community (Figure 1.13).

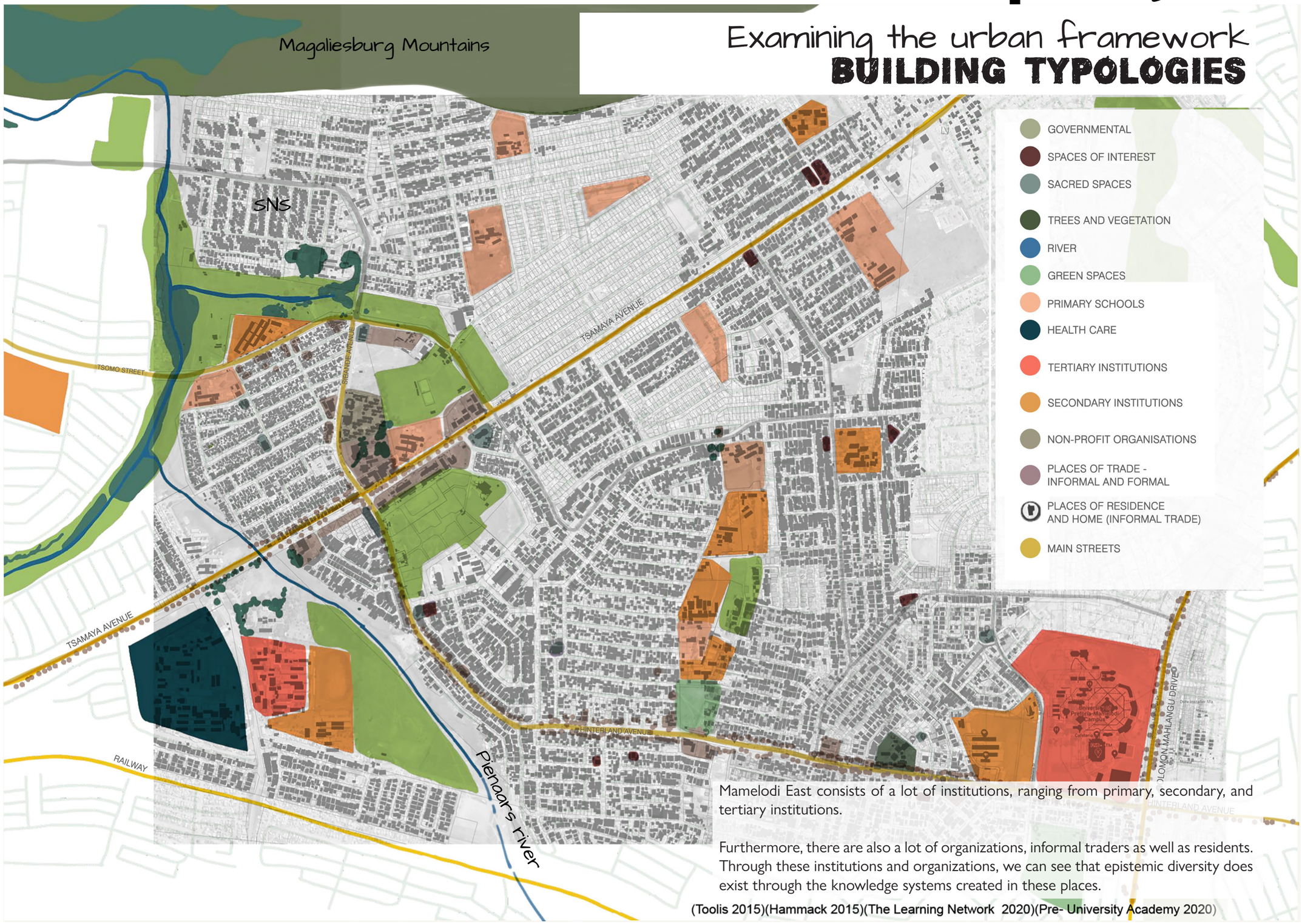


Figure 1.13_Existing Floor Plan showing safe and unsafe zones within Tsako Thabo Secondary School (Author 2021).

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SITE ANALYSIS | Macro Scale

Examining the urban framework
BUILDING TYPOLOGIES



Mamelodi East consists of a lot of institutions, ranging from primary, secondary, and tertiary institutions.

Furthermore, there are also a lot of organizations, informal traders as well as residents. Through these institutions and organizations, we can see that epistemic diversity does exist through the knowledge systems created in these places.

(Toolis 2015)(Hammack 2015)(The Learning Network 2020)(Pre- University Academy 2020)

Figure 1.14_Macroscale map showing Building Typologies within the context of Mamelodi East (Author 2021)

synthesizing within the urban framework

DAILY ACTIVITIES - AT NIGHT AND DAY

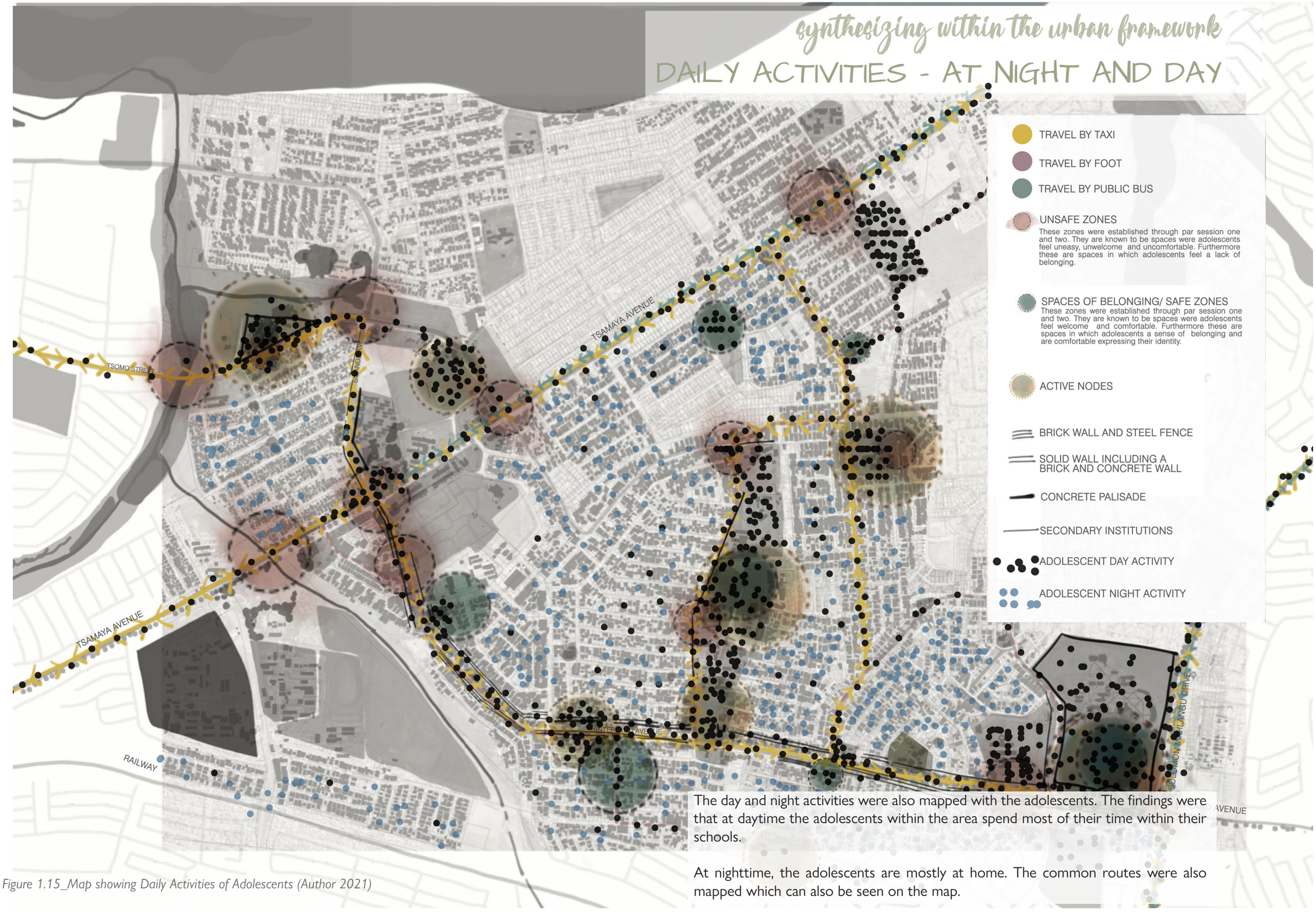


Figure 1.15_Map showing Daily Activities of Adolescents (Author 2021)

The day and night activities were also mapped with the adolescents. The findings were that at daytime the adolescents within the area spend most of their time within their schools.

At nighttime, the adolescents are mostly at home. The common routes were also mapped which can also be seen on the map.

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interpreting the urban framework

WORD ASSOCIATION

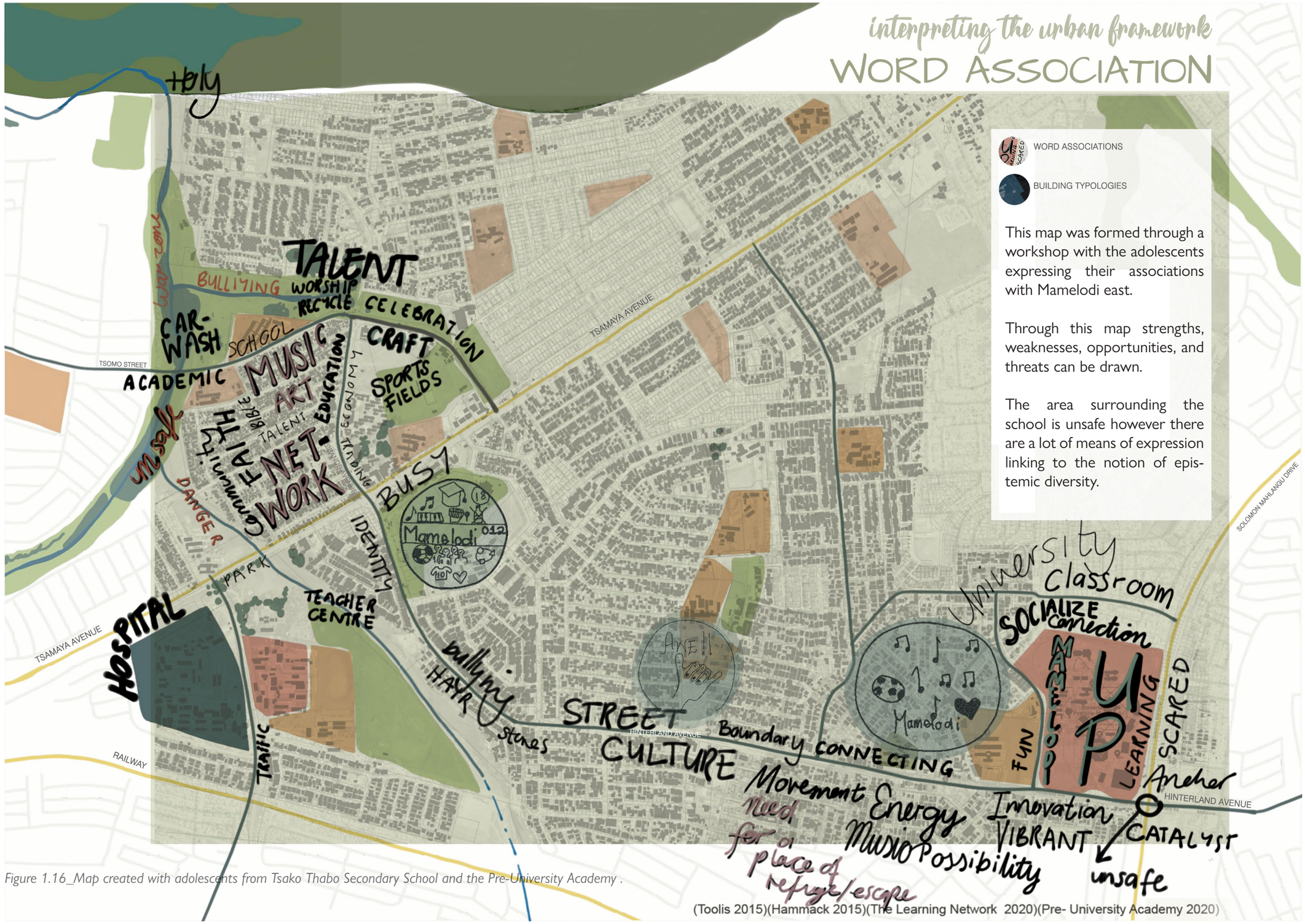
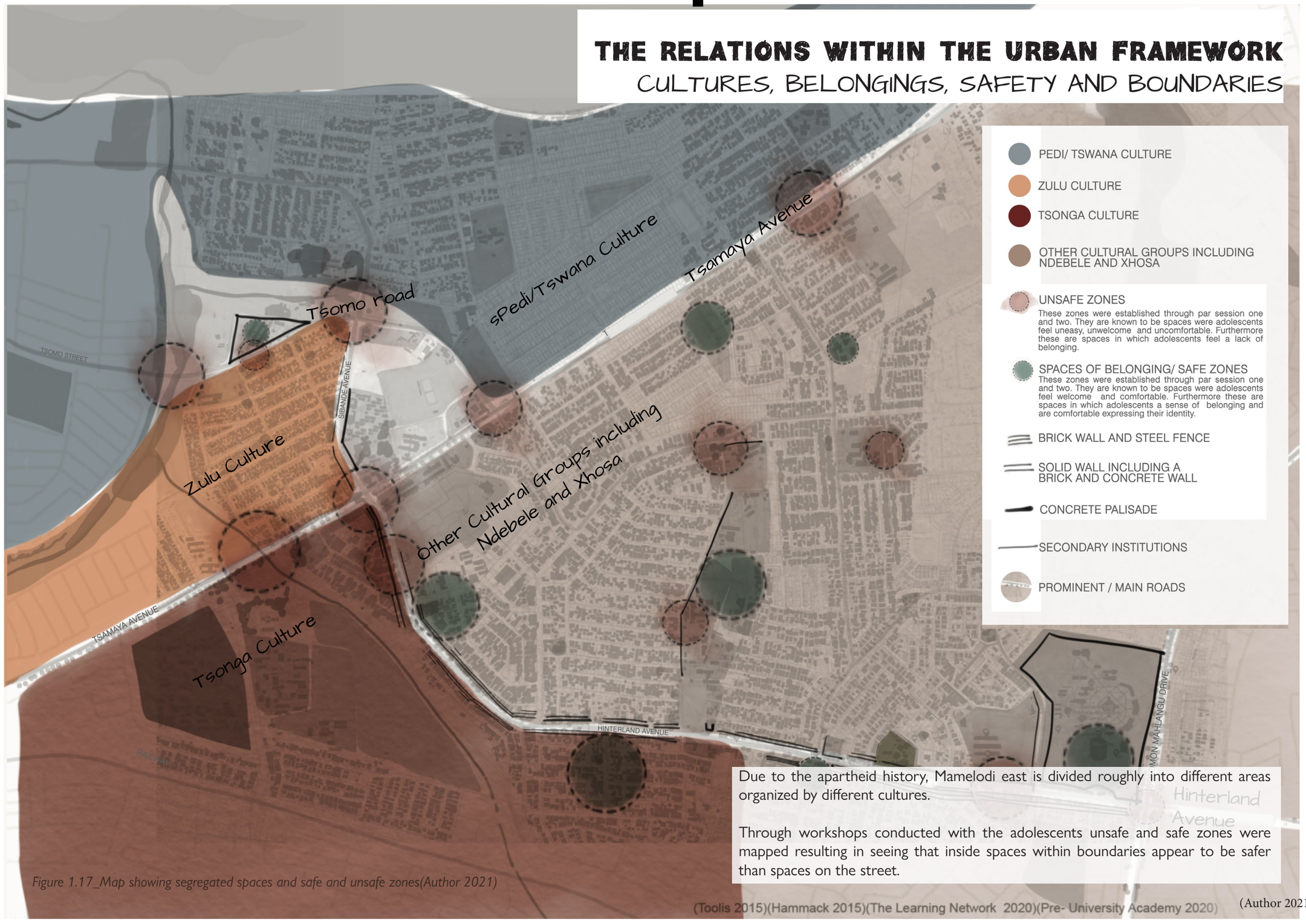


Figure 1.16_Map created with adolescents from Tsako Thabo Secondary School and the Pre-University Academy .

SITE ANALYSIS | General Issue Macro Scale- Mapping

THE RELATIONS WITHIN THE URBAN FRAMEWORK

CULTURES, BELONGINGS, SAFETY AND BOUNDARIES



Due to the apartheid history, Mamelodi east is divided roughly into different areas organized by different cultures.

Through workshops conducted with the adolescents unsafe and safe zones were mapped resulting in seeing that inside spaces within boundaries appear to be safer than spaces on the street.

Figure 1.17_Map showing segregated spaces and safe and unsafe zones(Author 2021)

(Toolis 2015)(Hammack 2015)(The Learning Network 2020)(Pre- University Academy 2020) (Author 2021)

These fictional personas were created through empathy mapping and through personas that were created through the workshops with the adolescents that were conducted in 2021.



KHOSI

Learner at school - Victim of bullying -

Cultural background : sPedi Culture
Age : 15
Living area: SNS
Grade: 9
Gender: Male

Description:
-Male Adolescent feeling unsafe because he is bullied.
- Physically has always felt a little bit weaker then the other learners
-Very clever and good at maths and science
-Gets the feeling a lot of learners gossip behind his back
-He is of the sPedi culture and he always feels that
-There is a crowd or a group of people that gossip out him when he turn his back.



SIMPHIWE

Artisan and Singer - Victim of bullying -

Cultural background : Tsonga
Age : 15
Living area: Tsakane
Grade: 9
Gender: Female

Description:
-Female Adolescent feeling unsafe because she is being bullied
-Very diligent and hard worker
-Always looking out for her close friends
-Shy in the beginning but opens up once she sees
-There is a trusted group of people
-Hide so that the other learner don't see them
-walk with a purpose other wise school boys start bullying her on her way to school while she walks
-She is Tsonga in her culture and she needs to walk very fast within Tsomo street as it is on the border of the sPedi
-Territory where she might get bullied or approached and accused of not belonging or being allowed in the area.

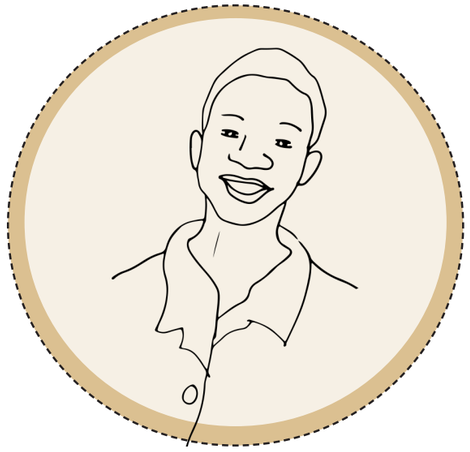


PRECIOUS

Learner at school - Victim outside of the school-

Cultural background : xi-Tsonga
Age : 16
Living area:
Grade: 11
Gender: Female

Description:
-Comes from a home were work is not appreciated. She always feels as if she needs to raise her voice to be heard when she is at home.
-Father died at a young age and now she has a step father who sometimes feels like a lion.
-He abuses my mom and he takes drugs from time to time.
-Has a group of friends that stay close to her that are also starting to take the same drugs
-She never understands why they take these drugs and she doesn't want to be tempted into doing the same.



AKANI

Expelled from School - Victim outside of the school-

Cultural background : sPedi
Age : 16
Living area:
Grade: 11
Gender: Male

Description:
-Former student of Tsako Thabo Secondary School.
- His grades where very low so the school kicked him out.
- He feels that it is unfair that he did not get another chance
- Dreams of becoming a farmer one day but he feels that it might be a unrealistic dream as he first needs to get back into school

Figure 1.18_Personas and Section of existing School (Author 2021; B Hons 2020; PUA 2021; Veldsmann 2019)

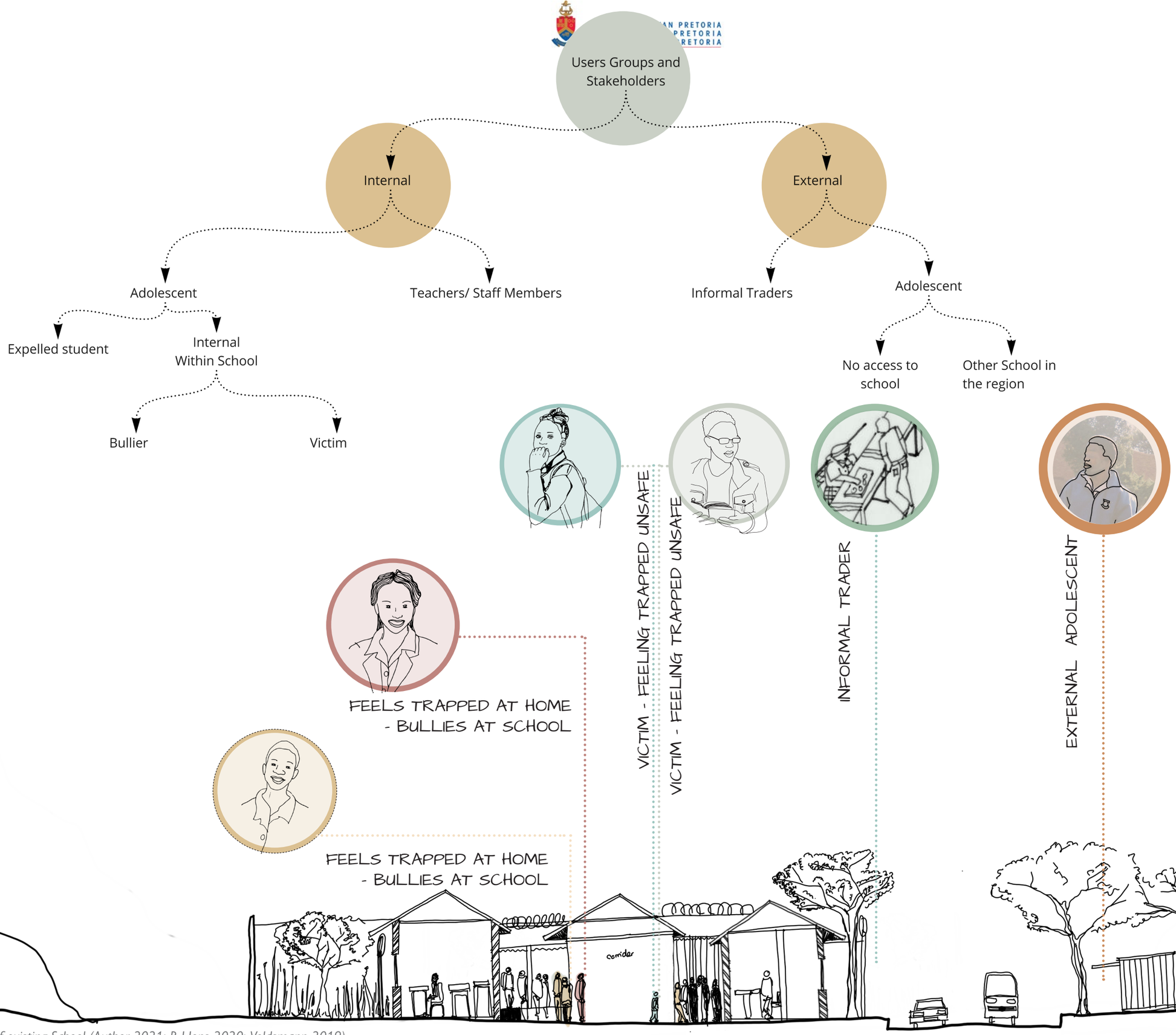


Figure 1.19_Personas and Section of existing School (Author 2021; B Hons 2020; Veldsmann 2019)

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SITE ANALYSIS | Interior Architectural Issue

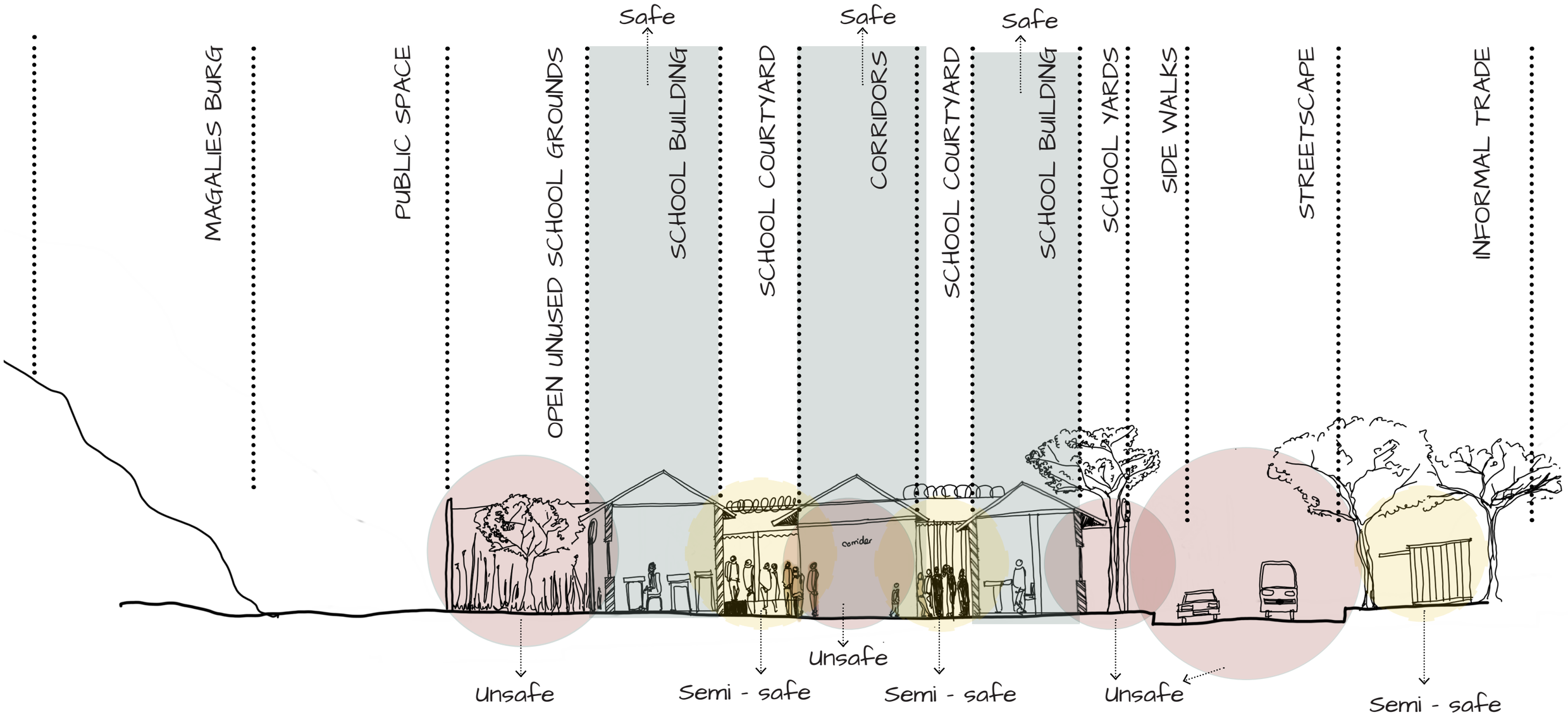
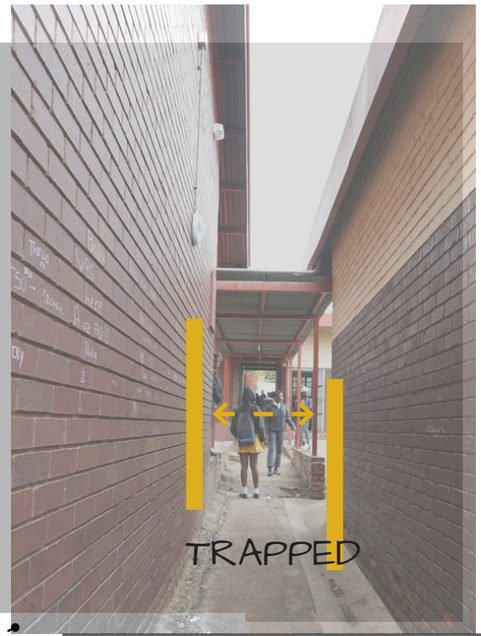


Figure 1. 20_Section of the Existing Tsako Thabo Secondary School (Author 2021; B Hons 2020; Veldsmann 2019)



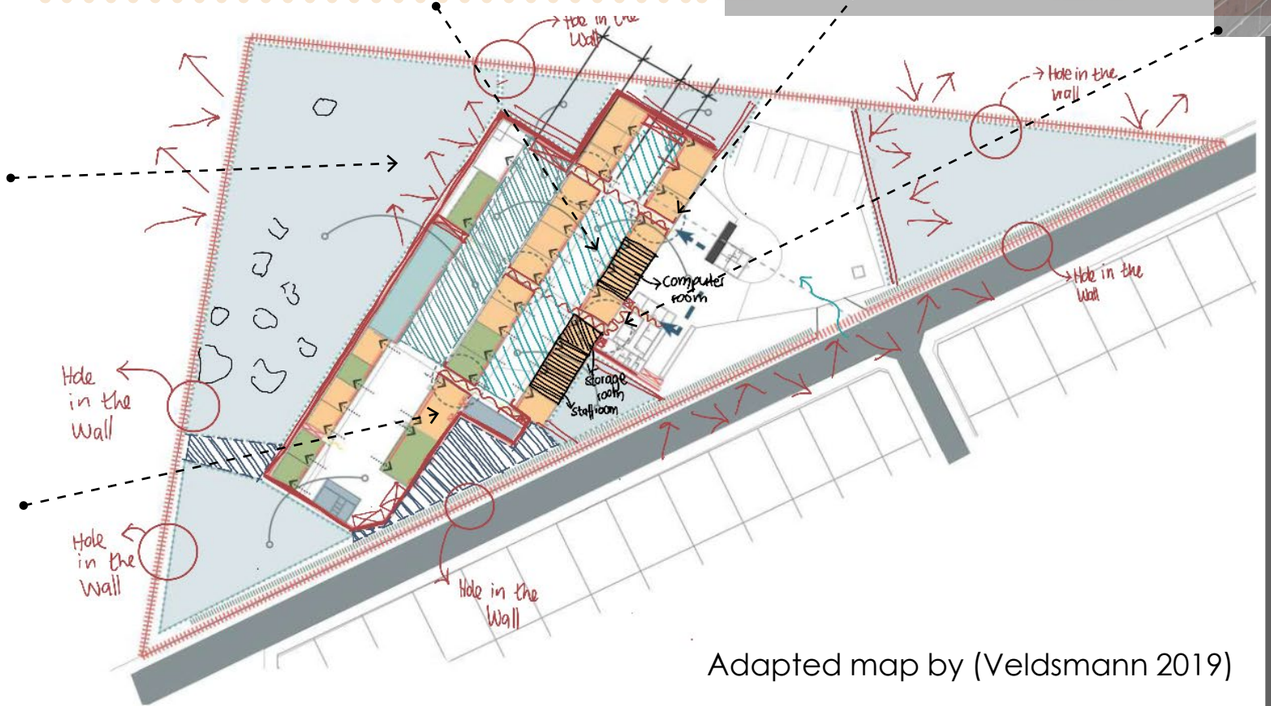












Adapted map by (Veldsmann 2019)



INTERIOR ARCHITECTURAL ISSUES
2019- 2022

Figure 1. 21_Existing Floor Plan Adapted by Veldsmann (2019)

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An initial response of a site analysis from a site investigation.

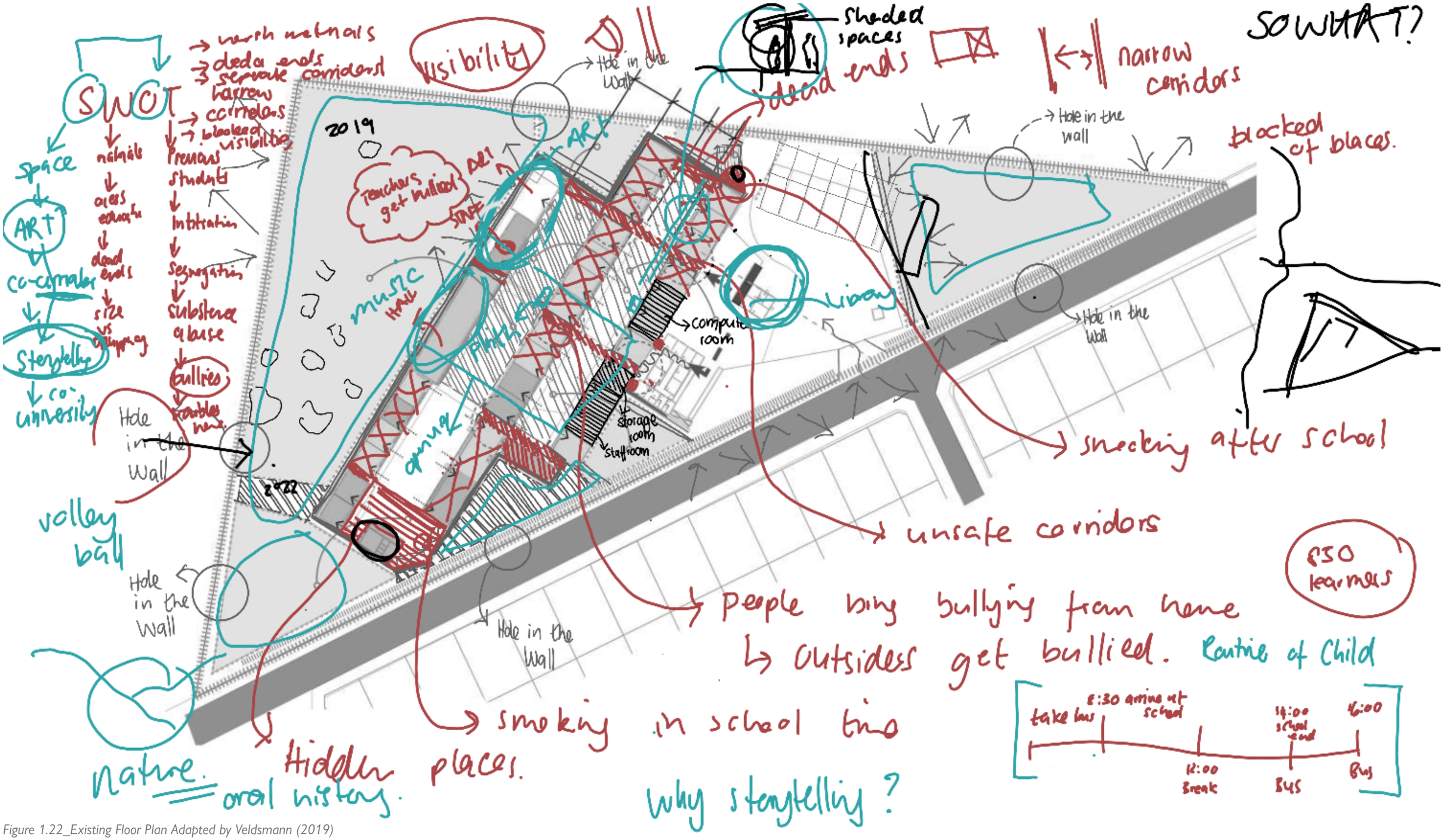
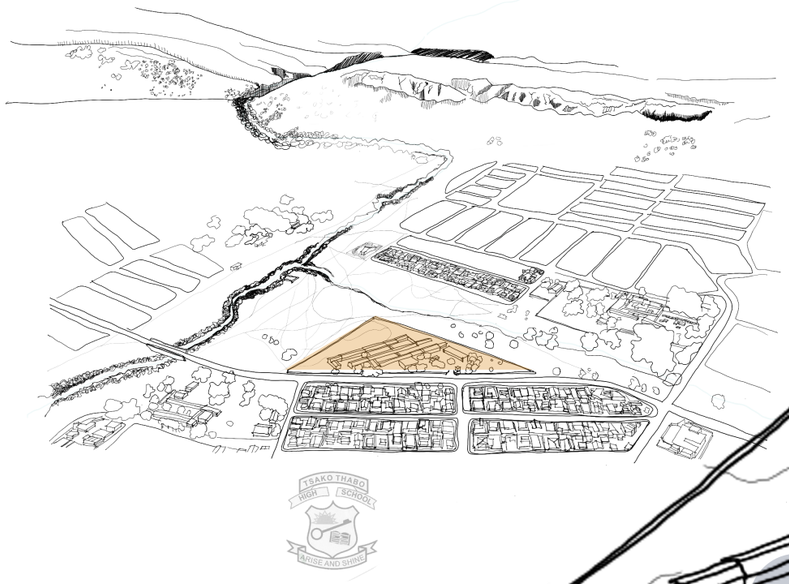
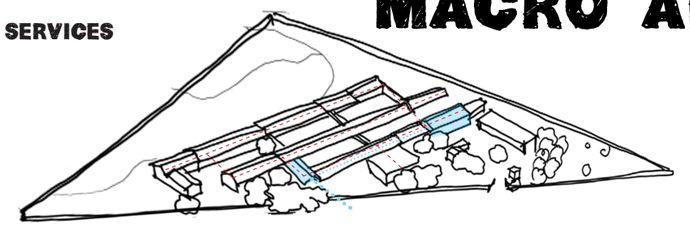


Figure 1.22_Existing Floor Plan Adapted by Veldsmann (2019)

MACRO ANALYSIS | Building Analysis

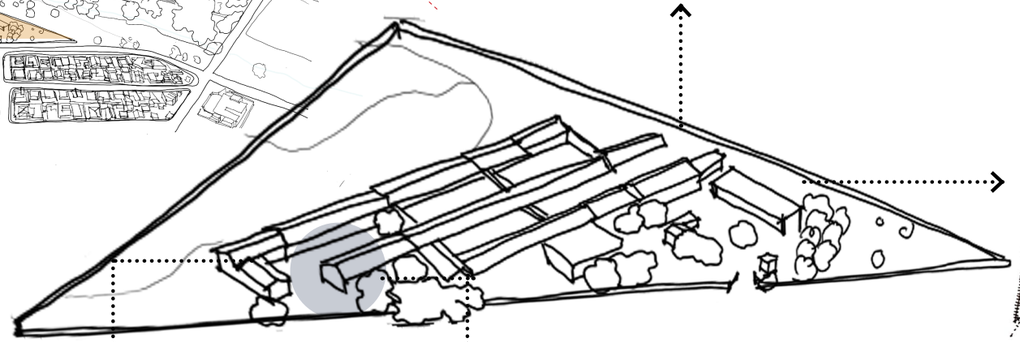


SERVICES

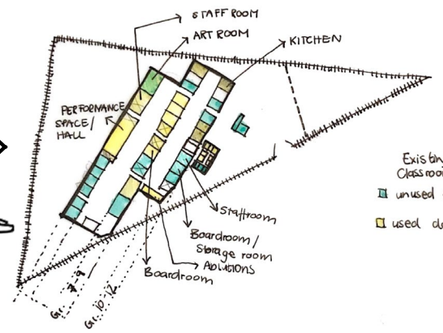


Water reticulation

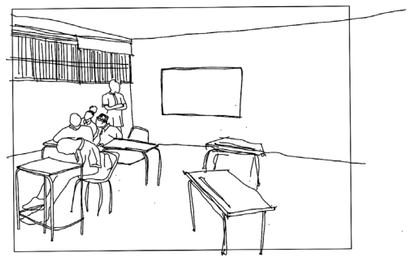
Electrical supply



AVAILABLE AND UNUSED SPACE



Existing Classrooms
- unused classrooms = 17
- used classrooms = 11



BUILDING ANALYSIS

STRUCTURAL

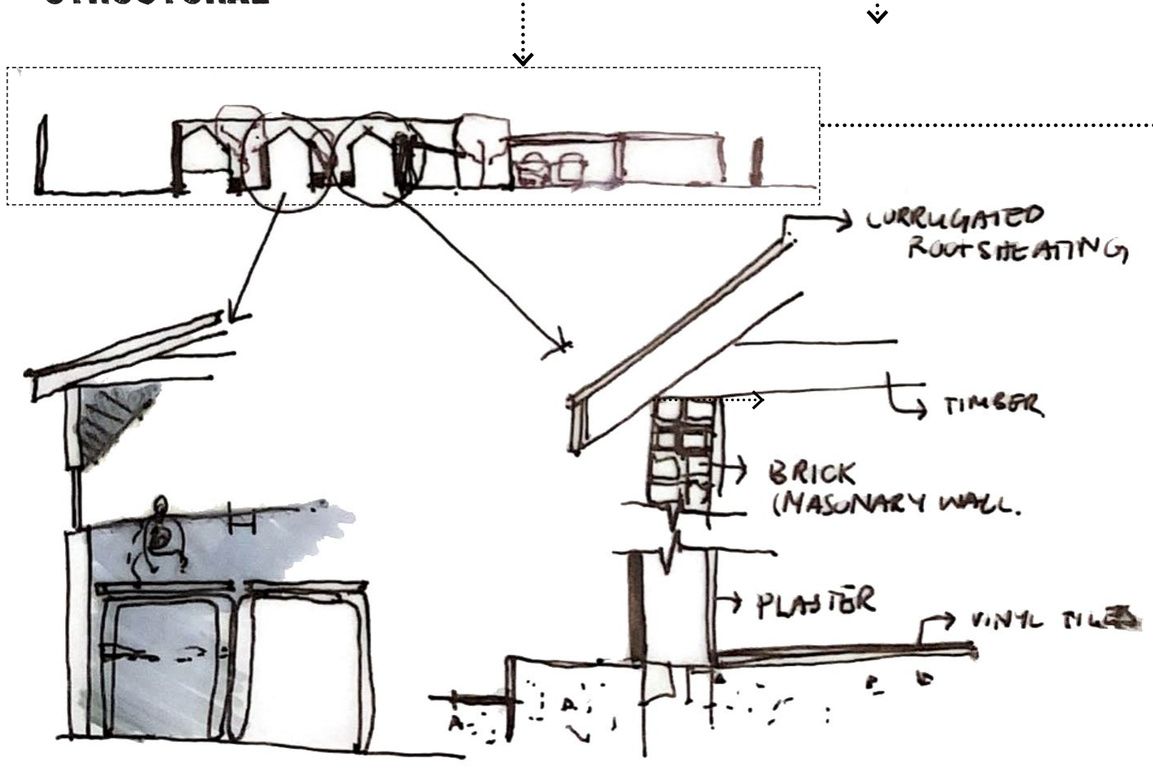


Figure 1.23_Existing Building Analysis (Author 2022)

MATERIALS

Porcelain Tiles

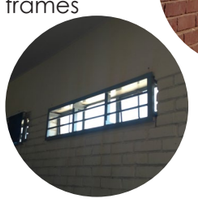


Corrugated Iron



Steel tubes

Steel window frames



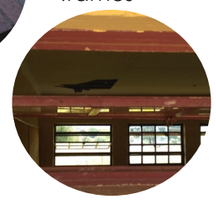
Ceramic Bricks



Brick paving



Steel window frames

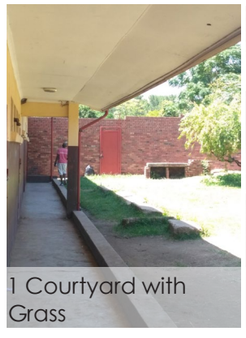


Concrete Paving



Courtyards

MAINTENANCE



1 Courtyard with Grass





Corridors and Courtyards



Unused classrooms



Bathrooms

Due to cost implications and the need for specific spaces school is in the need for ownership and maintenance

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All the findings gathered from the maps and from a building analysis can be summarized in an analysis of strengths, weaknesses opportunities, and threats.

- SWOT ANALYSIS -

STRENGTH

-The property which belongs to the school is very big therefore the is a lot of space for future interventions
-The school already uses art and music as a means of sharing their story.
- The school is located within an area in which epistemic diversity exists

WEAKNESS

- The building is not well maintained therefore not all classrooms can be used
- Only 11 classrooms are used form 22 classrooms
- The school is not maintained very well
- The current buildings do not have fixed programmes which causes for confusion sometimes
- Need for more co-curricular spaces to promote learning

OPPORTUNITIES

- Creating a more open school typology could also enhance the learning of the adolescents as well as create a safer space for the adolescents ensuring them a better future

THREATS

-The current finger building typology creates narrow corridors and dead ends which creates spaces of bullying
- The current typology creates a dangerous learning environment for the adolescents
- The staff room is located far from the adolescents

Figure 1.24_SWOT Analysis (Author 2022)

THEORETICAL Framework

1.5.1_THEORETICAL FRAMEWORK

THE THEORIES OF THE INTANGIBLE - HEALTH SCIENCE

A. _ADOLESCENT DEVELOPMENT

The main theoretical lens through which this study is viewed is through two sets of theories namely Bronfenbrenner's and Erikson's cognitive theory of the development of an adolescent linking to Wilcock's (2006) theory of Doing, Being, Becoming, and Belonging (Erikson 1968).

Erikson's theory (Date) stipulates that within the ages of 12- 18 years the adolescent's main skills development relates to the establishment of self-identity, belonging, and role finding within a society or cultural group. Within this age, their surrounding environment plays a vital role as in this state role confusion could occur causing adolescents not to be able to see where they see themselves in the future. Furthermore, it is said that for these skills to be developed an adolescent needs to find comfort within its surrounding environment relating to a sense of safety (Louw & Louw 2013).

Bronfenbrenner (1997) divides the effect the environment has on an adolescent into five different systems namely the micro–, meso-, exo-, macro-, and chronosystem as can be seen in the Figure 1.28. Bronfenbrenner's theory closely refers to the relationship with others within an adolescent surrounding context. Like how the theory is applied in an intangible way considering the relation to others the theory can also be interpreted in the tangible spatial realm. For this study, Bronfenbrenner's theory was used to unpack the relation between the site and the user. Thus, the issues were unpacked through a site analysis through the lens of the macro-, meso-, and microsystem (Figure 1.27).

B. _DOING - BEING - BECOMING - BELONGING

Leading from Bronfenbrenner's theory we can explain Wilcock's theory (2006) by referring to Figure 21. For the purpose of this study, the theory will be considered from an adolescent's perspective. Wilcock's theory falls into the discourse of occupational therapy of Doing, Being, Becoming and Belonging. The cycle starts from where one belongs and where one is born. Furthermore, doing and going hand in hand relating to our present situation where doing links to the activities we do moment for a moment and were being linked to the feelings we have at the moment. In turn, these tasks and moments have an effect on our growth and evolution which leads back to where we belong and who we become in the future. Becoming and belonging there becomes our story and narrative. These form our identity (Wilcock 2006) (Figure 1. 27).

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THE THEORIES OF THE INTANGIBLE - HEALTH SCIENCE

C. _STORYTELLING

Storytelling and our stories derive from our occupations of doing, being, becoming, and belonging. And it is built up from a microsystem to the largest macro system. Furthermore, storytelling thus becomes a means of expression through talking making of art and through music and creative writing (Figure 1. 27).

STORYTELLING AND WELL-BEING IN ARCHITECTURE AND AS A MEANS OF THERAPY AND SAFETY

Through the research conducted with the adolescent of Tsako Thabo Secondary School, it was found that many adolescents feel unsafe within the school and within their surrounding context. Moreover, it was found that there is a need for expression to establish a sense of security and belonging within the school to raise awareness of the bullying within the school (B Hons 2021).

Liao (2013) refers to the need for stories to be told if they do relate to psychological issues that are brought about by the individual's environment. Furthermore, he explains that if the story is not spoken in a relational realm to others, then the issue just develops further which in turn leads to role confusion for the adolescent (Louw &Louw 2013). Thus, it is important for the adolescent to express their emotions. Secondly, Liao (2013) explains that storytelling is a means of sharing knowledge with others, therefore storytelling can raise awareness, to raise a sense of community, and a sense of pride and ownership. Mc Nish (2013) in her study explains that through raising awareness through storytelling in a spatial realm, a sense of safety and security can also be created. Storytelling thus has the capacity to not only create belonging and security for the adolescent who is a victim, but also for the adolescent who is a bully. Furthermore, it can be said that the sharing of knowledge of experiences creates objective and subjective well-being (Figure 1. 27).

THE THEORIES LEADING TO THE TANGIBLE - ARCHITECTURAL THEORIES

A. _SPATIAL AGENCY

Previous studies, as shown by Awan *et al* (2011:38), in Spatial Agency have found that spaces, including urban interiors, have an impact on the multiple personal aspects of a human being. Child and Adolescent Development (Louw & Louw 2013) furthermore discusses the impact of the surrounding environment on the development of an adolescent in relation to their needs. Therefore, it can be said that the design of spaces should undergo a specific design process that enables certain design principles (Porter 2019). The impact of the environment of an adolescent can be divided into three needs: social, cultural and physical needs. If all three needs are considered in urban- interior space, this can be described as interiority (McCarthy 2005).

Spatial agency (2011:29) discusses the use of architecture as a catalyst to connect, empower and create networks. Moreover, it also discusses or relates to the notion of appropriation, ownership, facilitation, and personalization . Through the lens of spatial agency, the urban interior and the streetscape can be seen as a shared language mediating different understanding (Thomas & McDonagh 2013:325).

B. _SAFETY AND STORYTELLING IN ARCHITECTURE

When considering Bronfenbrenner's (1997) matrix along with Liaos(2013) study, storytelling can also be considered architecturally and tangibly. Similarly, how the adolescent's development is considered through the scales of macro, meso, and micro, the stories can be divided into small, big, and alternative scales.
In Himic's study, she explores the means of art therapy and the sharing of stories within a spatial setting. In her study, the means of expressing is within a museum setting. She suggests that the means of using art and meaning through expressing creates mental well-being which in turn creates a stimulating environment that promotes the mental well-being of users (Himics 2020).

Visser(2009), explores the means of storytelling within an interior architectural discourse. Visser argues that storytelling can be expressed through means of individual storytelling in a private setting of meditation as well as also in a collaborative setting within a performance type of space such as an amphitheater setting.

Through the means of creating a platform of expression, mediation is promoted (Liao 2013:76). Furthermore, a sense of safety is also created through the means of creating active spaces of expression that invite people to interact and so activate the space (Alexander 1977:597) (Figure 1. 28).

THE THEORIES LEADING TO THE TANGIBLE - ARCHITECTURAL THEORIES

C. _CHRISTOPHER ALEXANDER – PATTERN LANGUAGE AND INTERIORITY

Alexander(1977) explores the notion of creating spaces for a network in learning. Through Bronfenbrenner's theory, we can also consider Alexanders' theory which talks about small patterns within the microsystem, which relate to smaller interventions or patterns within more intimate settings which can be viewed within a space and a system to be built up into the macro and chrono system consisting of larger patterns. Furthermore, Alexander (1977) bridges the notion of safety and security through the notion of sharing knowledge. He explains that creating nodes of safety can promote security (Alexander 1977). He explains to create public homes and paths as active spaces of expression creates belonging and identity to promote security for individuals (Alexander 1977)(Figures 1. 24 and 1. 28).

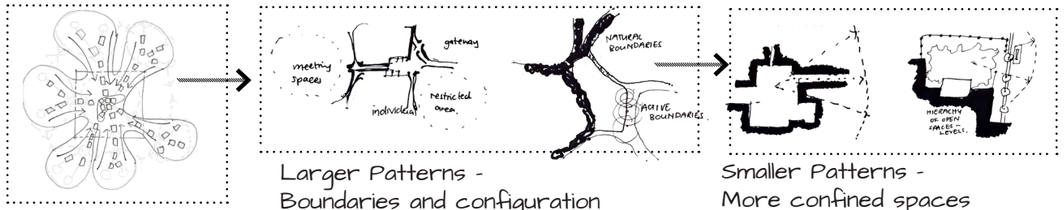


Figure 1.25

D. _INTERIORITY

Interiority is the point at which the understanding of an inside of a building becomes 'elastic' and the interior starts extending into the exterior (Mc Carthy 2005:112). Furthermore, within this elasticity McCarthy (2005) speaks about the in-between spaces between the interior and exterior consisting of boundaries and thresholds as well as urban interior that form an interior even within an exterior or outside setting (Figure 1. 28).

E. _PRINCIPLES

These Principles were derived from the theoretical framework as a synthesis towards design development.

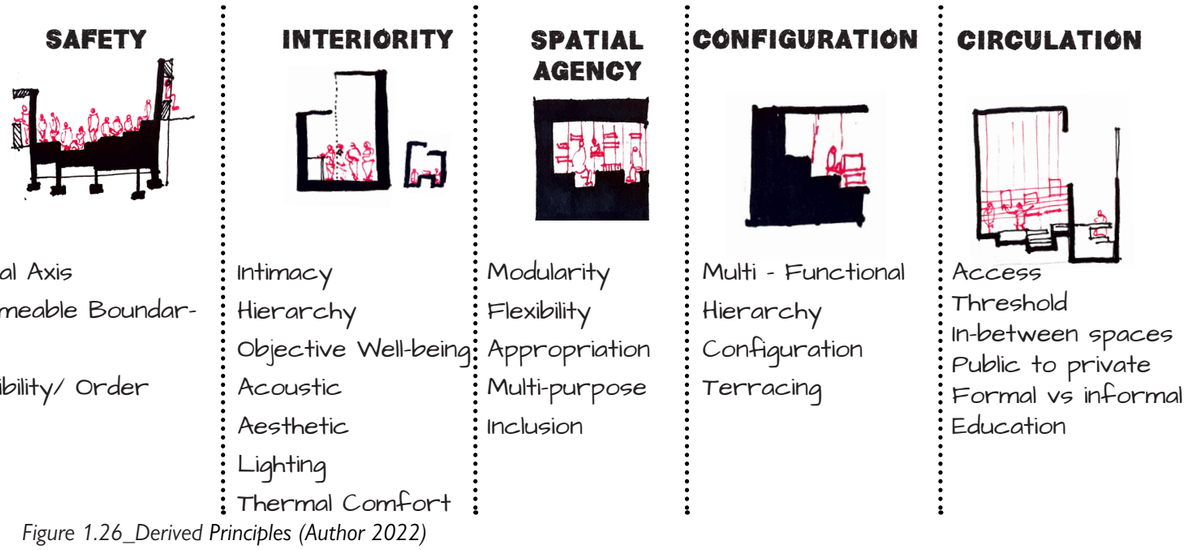


Figure 1.26_Derived Principles (Author 2022)

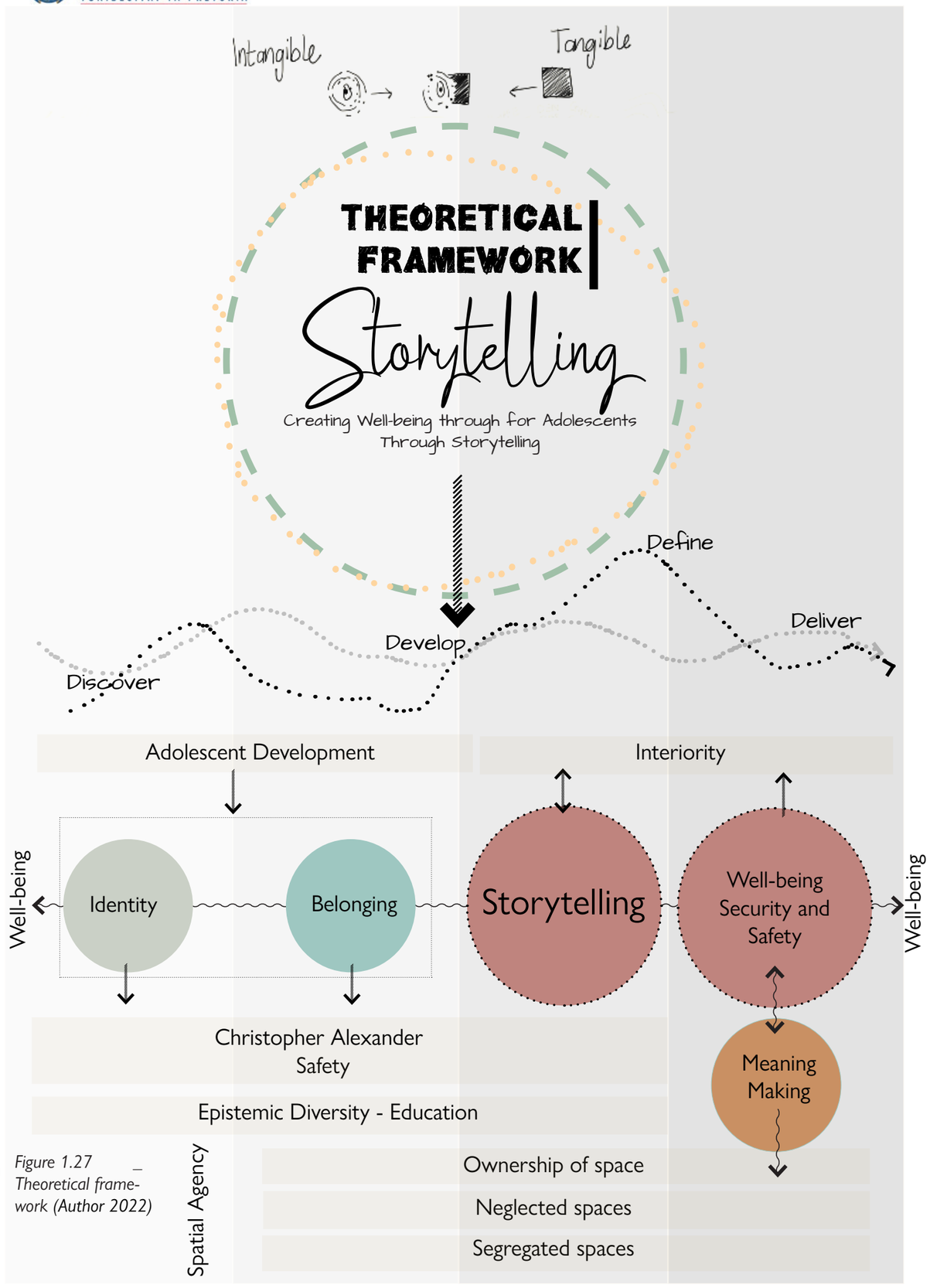


Figure 1.27 _ Theoretical framework (Author 2022)

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INTANGIBLE

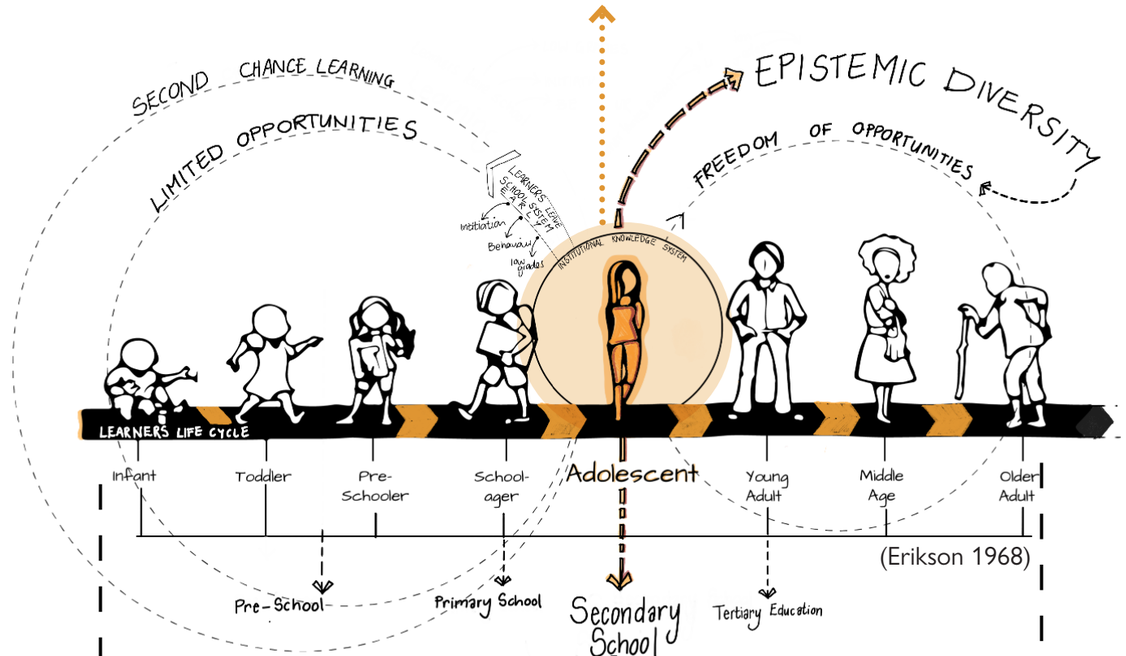
INTANGIBLE ADOLESCENT DEVELOPMENT

AIM AND USER GROUP - THE ADOLESCENT

LIFE CYCLE OF A ADOLESCENT IDENTITY

DOING - BEING- BECOMING- BELONGING

Development of Identity and a Sense of Belonging within their community



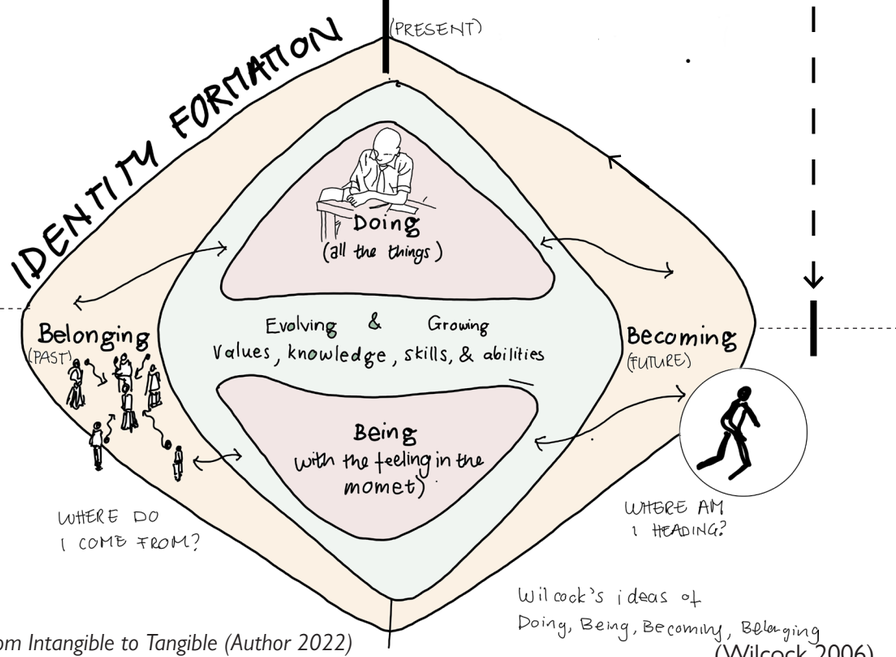
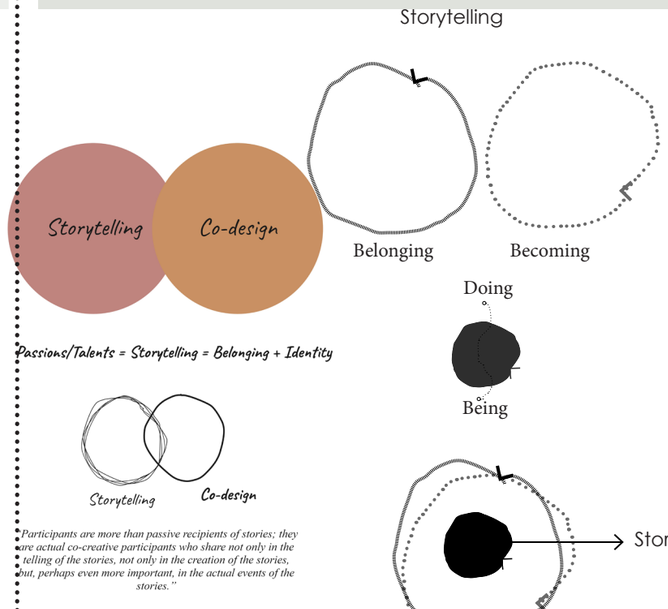
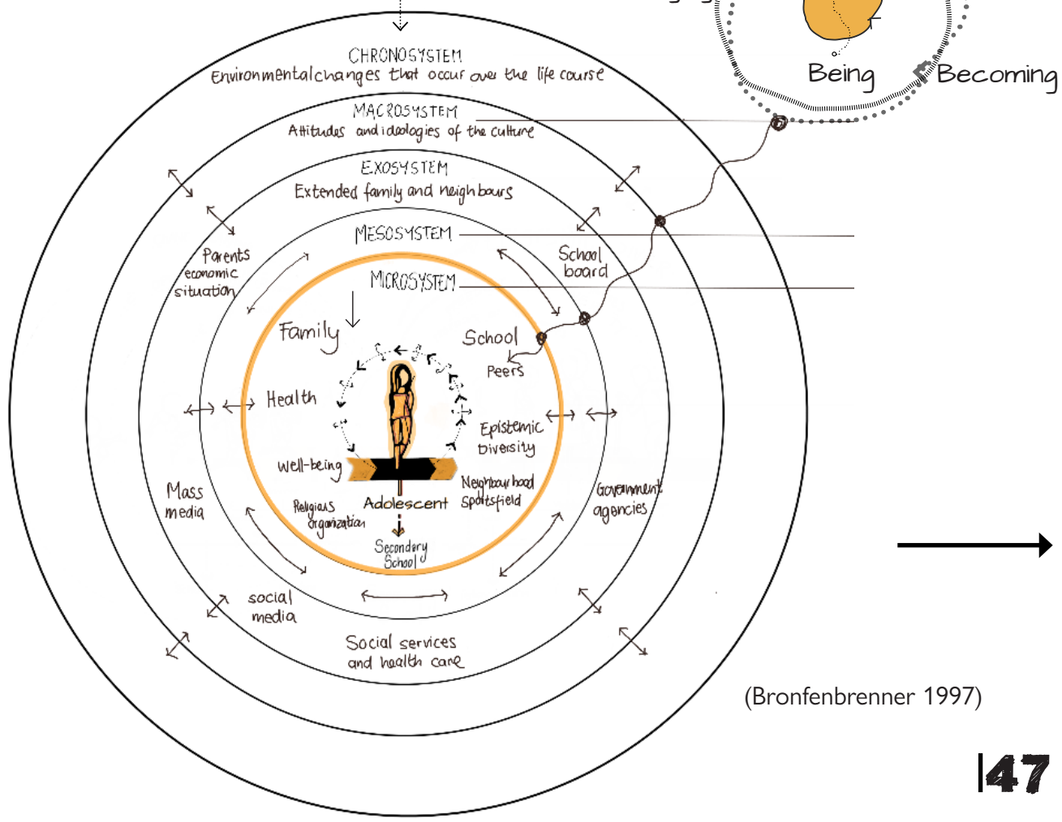


Figure 1.28_Theoretical Framework from Intangible to Tangible (Author 2022)

BRONFENBRENNER STORYTELLING



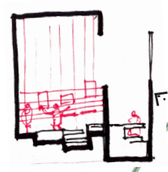


TANGIBLE

TANGIBLE
ADOLESCENT DEVELOPMENT

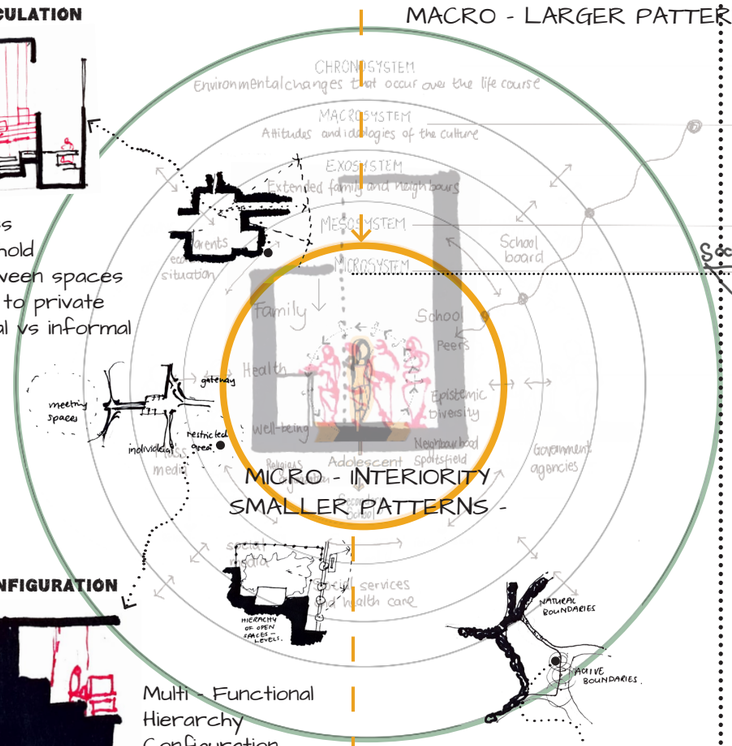
CHRISTOPHER ALEXANDER

CIRCULATION



Access
Threshold
In-between spaces
Public to private
Formal vs informal

MACRO - LARGER PATTERN

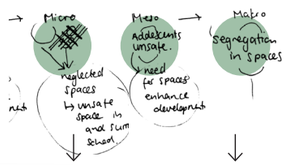


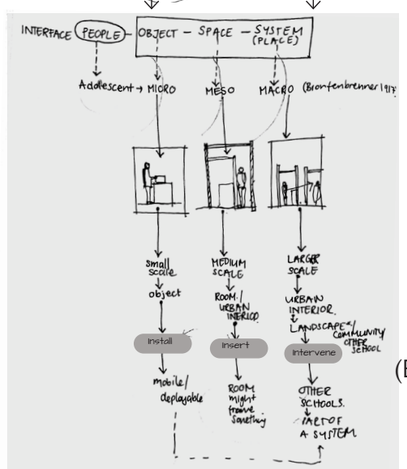
MICRO - INTERIORITY
SMALLER PATTERNS -

CONFIGURATION



Multi Functional
Hierarchy
Configuration
Terracing





SAFETY

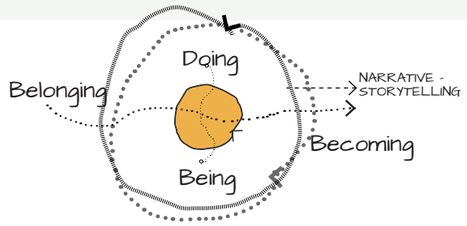


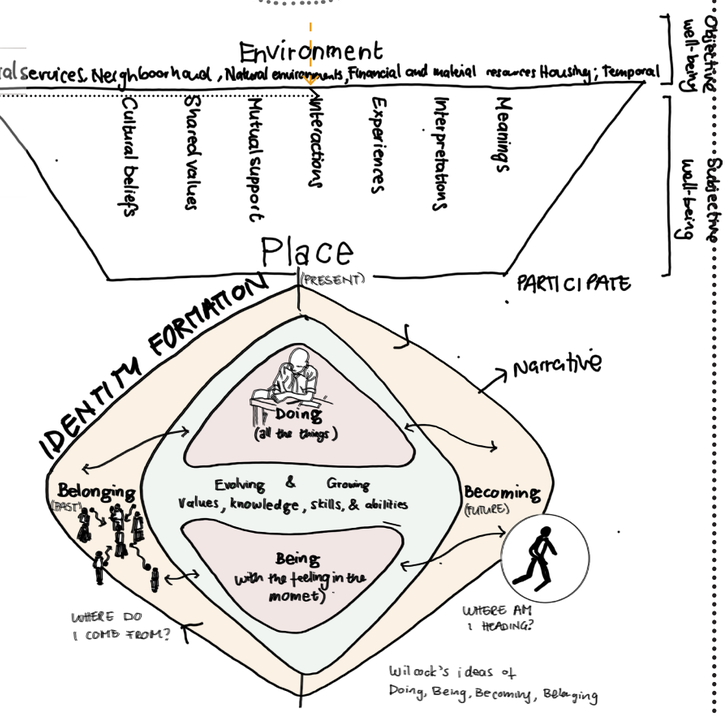
Visual Axis
Permeable
Boundaries
Legibility/ Order

(Alexander 1977)

(Brooker & Stone 2004)

INTERIORITY

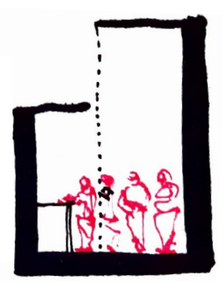




INTERIORITY

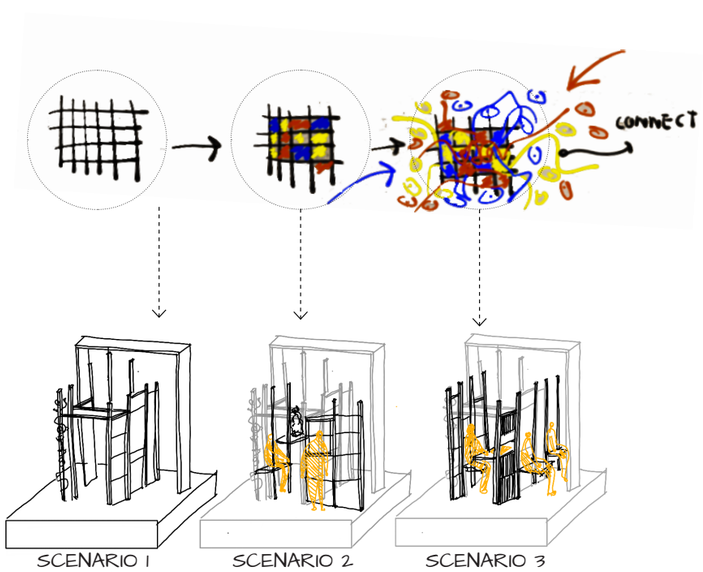
Intimacy
Hierarchy
Objective Well-being
Acoustic
Aesthetic
Lighting
Thermal Comfort



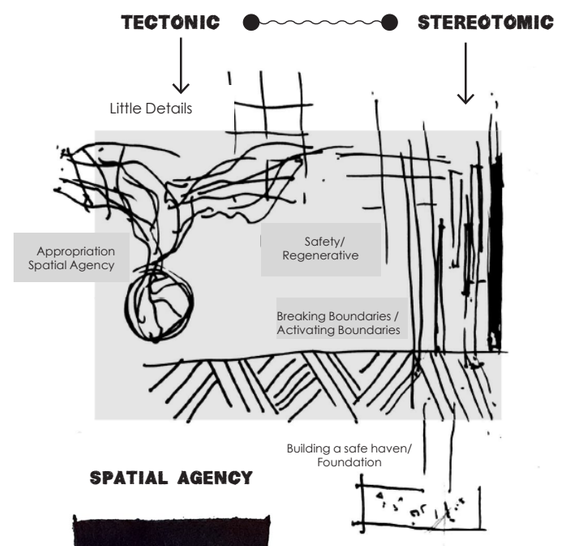


(Wilcock 2006)
(Mc Carthy 2005)

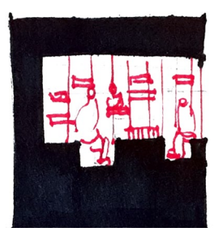
SPATIAL AGENCY



LEVELS OF APPROPRIATION - PROVIDING A FRAME PROVIDING FOR DIFFERENT SCENARIOS



SPATIAL AGENCY



Modularity
Flexibility
Appropriation
Multi-purpose
Inclusion

(Awan *et al* 2011)

Figure 4.29_Theoretical Framework from Intangible to Tangible (Author 2021)



1.6_RESEARCH QUESTIONS

1.6.1_MAIN RESEARCH QUESTION

Keywords: Identity/ Belonging/ Well-being/ Storytelling/ Reinterpreted typology/ Safety

How can a reinterpreted secondary school architectural typology facilitate storytelling for a safer typology for adolescents to foster identity and belonging in order to create well-being at Tsako Thabo Secondary school?

1.6.2_CONTEXTUAL QUESTION

Keywords: Creative Incubator/ Reinterpreted Typology/ Spatial typology/ Typology of Expression/ Epistemic diversity/ Safety/ Storytelling

How can a spatial intervention at Tsako Thabo Secondary School act as a catalyst through recognizing epistemic diversity, to promote safety and enhance the development of an adolescent within the surrounding urban interior and in-between spaces ?

1.6.3_THEORETICAL QUESTION

Keywords: Storytelling/ Adolescent development/ identity/ belonging/ well-being/ doing- being- becoming and belonging/ a pattern language/ spatial agency/ meaning-making/ social and physical segregation

How can storytelling in relation to spatial agency aim to create well-being through creating a safer typology to create meaning through expression to create a sense of belonging and identity?

1.6.4_DESIGN QUESTION

Keywords: Interior intervention/ catalyst/ spatial intervention/ urban interior/ multi-scalar intervention – insert, install, intervene/ people-object- space- system approach/ relational knowledge system/ typology of expression

How can a multi-scaler design intervention at Tsako Thabo Secondary School as a creative incubator act as a storytelling catalyst through installing, inserting, and intervening to create a social and physical cohesive space for adolescents within the surrounding area?

Methodology

RESEARCH DESIGN

1.7_RESEARCH DESIGN AND METHODOLOGY

1.7.1_ETHICS STATEMENT

The focus of this study lies within the research focus of the Unit of Urban Citizen Studio (UUC) under the supervision of Anika van Aswegen and the co-supervision of Dr. Carin Combrinck and Helga Lister. The study falls under the ethical considerations of the UUC (Reference number: EBIT/259/2020). The involvement of Helga Lister includes considerations of the Occupational Therapy Department and the Storytelling project.

As the aim is to undertake a qualitative study, the researcher must undertake interactive sessions with the participants, therefore the ethical guidelines have to apply. Through this process, regulations relating to the participants' anonymity, privacy, dignity, and rights are adhered to. Furthermore, the research is cognizant of entering a private space of the participant and therefore will have to show respect to the participants' values, rights, and needs (Silverman 2000:1, Thomas 2010:325). A series of questions are posed to the staff and adolescents of Tsako Thabo Secondary School and the PUA during the course of 2021 under the ethical considerations of the UUC.

The research project continues within the course of 2022 while using the research gathered in 2020 within the Urban Citizen Studio and the research gathered for the purpose of this study in 2021 is used as the main informants. Furthermore, secondary data is used to gather further information on the site. Photographs of the site that were previously taken as well as newly taken images will also be used for the purpose of the analysis of the space.

1.7.2_RESEARCH PARADIGM

The investigation is conducted under the framework of a constructivist and interpretivist paradigm to collate qualitative data (Thanh &Thanh 2015; Porter 2019). This paradigm allows the researcher to gather and interpret different narratives and stories from various backgrounds. Furthermore, this process allows the researcher to act as a facilitator by using PAR, co-design as well as meta-design. This approach allows the intervention to foster identity and belonging in the design process through to the design product.

The interpretivist paradigm aims to use a collaborative design approach, while working through the Reality Studio and with the Occupational Therapy Department of UP, as a hybrid method to collate data in relation to the ukuDoba method (Eskilsson 2020) as well as the COSU Methodology (Godjo et al. 2015). Those allow a co-design approach that enable data capturing in a manner in which the participants are involved, incorporated, and observed. During this process, the data collection process is closely analysed in collaboration with students from the Occupational Therapy Department at the University of Pretoria. The paradigm at hand allows the researcher to analyse the needs, effects, actions, and developments of the participants through a qualitative approach (Porter 2019).

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1.7.3_RESEARCH DESIGN AND RESEARCH STRATEGY

Through collaborative-, participatory-, and meta-design strategies, the intent is to investigate current spaces in the educational ecosystem in relation to the PUA and secondary schools in partnership with Tsako Thabo Secondary School. KoboTool Box, QGIS and Geonode are used to capture data by means of the ukuDoba method (Eskilsson et al 2020). This enables the researcher to gather the necessary information that is needed in order to see what adolescents need in a space to gain optimal development and to create safety and security (Porter 2019). Furthermore, it helps the researcher to understand the educational ecosystem of the specific context of Khalambazo and raises awareness of bullying. Within 2022, the analysis is taken further following a meta-design approach. This approach allows the researcher to draw conclusions from the means of how users behave in spaces through conclusions drawn from a site analysis (Giaccardi& Fischer 2008).

1.7.4 _RESEARCH PLAN - DATA COLLECTION AND ANALYSIS METHOD

For the collection of qualitative data, information is collected in and around the Mamelodi Campus within the time frame of 7 – 8 weeks, using the ukuDoba Method and through working within the Reality Studio and with the Occupational Therapy Department. The aim is to investigate how a sense of belonging and a sense of safety is manifested in the area. Through this, data is gathered through mapping and a series of questions posed to the staff and adolescents of the Pre-University Academy. Furthermore, the research strategy will be set out into different phases (Figures 1. 29 and 1. 31).

In their qualitative study, Vaajakallio et al (2009) investigate through an interpretivist's lens, the idea of designing through play. A series of case studies are undertaken with children in the form of collaborative-design (Vaajakallio et al 2009). Thus, it can be derived that for this qualitative study, a series of activities will have to be undertaken in the form of interviews,and games in which the adolescents point out their needs and associations with their surroundings. These co-design sessions are important to conduct to ensure the creation of identity and belonging within the design process right to the design product. The co-design sessions enable an analysis of the social patterns of the adolescents and is conducted to display and collate the data that will be gathered from the participants.



Figure 1.30_Participatory workshop sessions (Zorn 2021; Reality Studio 2021)

Vaajakallio (2012) in her qualitative study undertook a series of case studies in form of meta-analysis (Giaccardi & Fischer 2008), relating to the design of play, for different age groups, in which she created a framework to assist the participants. When analysing this framework, it was found that several familiar topics are used to set the basis. Through this study, it can be derived that a similar design technique will be conducted for this design investigation to capture the effect of the spaces of Tsako Thabo Secondary School on adolescents (Giaccardi& Fischer 2008). Through this method, the information will be captured to gather what design elements enable the development of the adolescents. The workshops and case studies are conducted through a series of model buildings and drawings. Furthermore, the workshops will depend on the tools and methods familiar and available to the adolescents to gain more accurate information (Porter 2019). Through a series of case studies and interviews with adolescents in Mamelodi, the developmental needs of the adolescents could be obtained. A series of interviews and conversations are conducted with members of the PUA to capture information concerning adolescents and their environment. In 2022 a meta-analysis is done by using the primary data obtained in the field as well as using secondary data in the form of document reviews from previous studies done at Tsako Thabo Secondary School (B Hons 2021). This process is further elaborated in Figure 31.

1.7.5_CONTEXTUAL MAPPING

The overall research strategy is divided into two sections that go over two years. In 2021 research is conducted in form of participatory action research and collaborative design this stage is divided into four phases. These phases allow for a qualitative and collaborative design approach using participatory design strategies that are influenced by the ukuDoba and COSU method. The Methodology is carried through in collaboration with Jade van Staden and Markus Zorn (Zorn 2020, Van Staden 2020). Furthermore, the research was conducted in collaboration as a group within the Reality Studio which enabled a hybrid approach through which remote and on-site research was conducted. Students from Sweden attended all workshops using WhatsApp calls. The data is also analysed through the collaboration where from an urban dictionary was created. The research was conducted through the following phases and workshops. Please refer to Addendum A for a more detailed explanation of each phase.

The second stage of the strategy is conducted informs of a meta-analysis. Throughout this stage the research gathered in 2021 is reanalysed through the lens of how the users being the adolescents interact with the space (Giaccardi &Fischer 2008). Secondary data is also considered in the forms of the theoretical framework and in the forms of previous studies that have been conducted on the Tsako Thabo Secondary School.

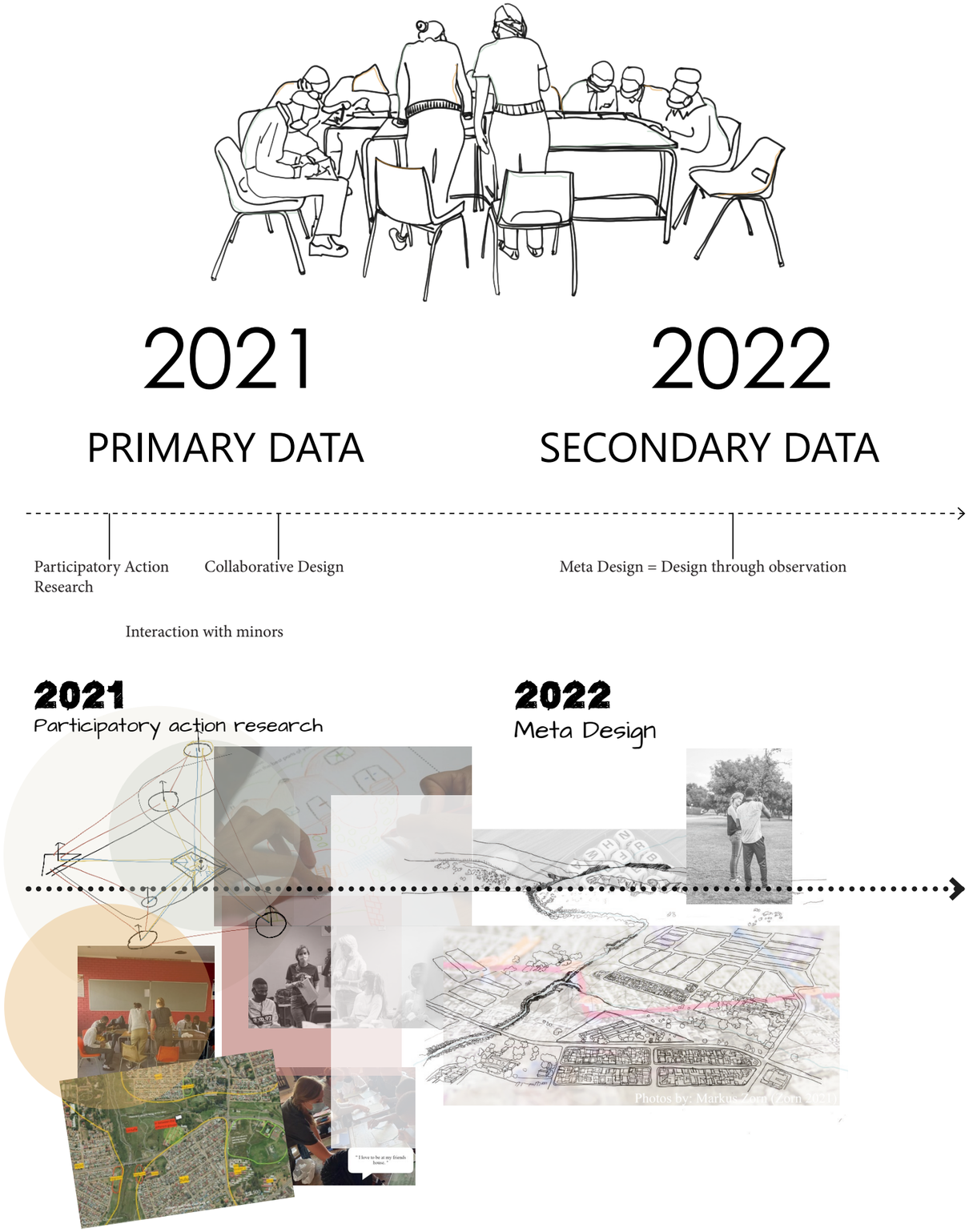


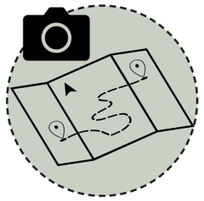
Figure 1. 31 Methodology Timeline (Author 2022)

How? - Methodology and Timeline

CONTEXTUAL MAPPING AND USER INTERACTION THROUGH PARTICIPATORY DESIGN WORKSHOPS

A combination of the Cosu and Ukudoba Method (Eskilsson 2020; Godjo et al. 2015.

PHASE ONE: UNDERSTANDING THE CONTEXT - EMPATHETIC MAPPING



PART 1 : TRANSECT WALK, REFLECTION AND PHOTOGRAPHY - SITE VISIT 1 AND 2

Collaboratively understanding the condition of identity and belonging of Mamelodi
Month: March/ April 2021



PART 2 : WORKSHOP 1 - MAPPING

Collaboratively understanding the condition of identity and belonging of Mamelodi
Month: March/ April 2021

PHASE TWO: UNDERSTANDING THE STREET-SCAPE - SCENARIO



WORKSHOP 2
Collaboratively identifying the problems and design requirements
Month: March/ April 2021

PHASE THREE: CREATING A TOOLBOX - CREATING A DICTIONARY



WORKSHOP 3
Collaboratively creating a toolbox for different design scenarios.
Month: March/ April 2021

PHASE FOUR: COLLABORATIVE DESIGN, TESTING AND REFLECTION



WORKSHOP 04
Testing the a initial design response through prototyping
Month: June- December 2021

PHASE FOUR: COLLABORATIVE VIRTUAL TECHNIFICATION, DESIGN AND MOCK-UP

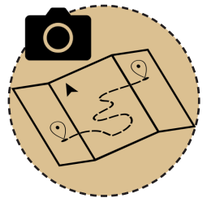
2021

2022

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

The methodology is conducted in relation to Meta Design Process (Giaccardi & Fischer 2008).

PHASE FIVE: UNDERSTANDING THE CONTEXT - EMPATHETIC MAPPING



PART 1 : TRANSECT WALK, REFLECTION AND PHOTOGRAPHY - SITE VISIT 1 AND 2

Collaboratively reflecting on the findings made in 2021 through going to site.
Month: Feb 2022

PHASE SIX: ANALYSING EXISTING DATA- REEVALUATING A SITE



Reflection and analysis of existing data through empathy mapping
Choosing one site to test the design intervention through the lens of storytelling
Month: March/ April 2022

PHASE SEVEN: CONCEPTUAL APPROACH AND ITERATIVE DESIGN INVESTIGATION



Do a study and analysis through the lens of the data to see which of the design scenario function best. Create design criteria/ design strategy from the design intentions established from the data gathered in 2020-2021.

Go through a series of design iterations and testing them according to the design principles.
Month: May -August 2022

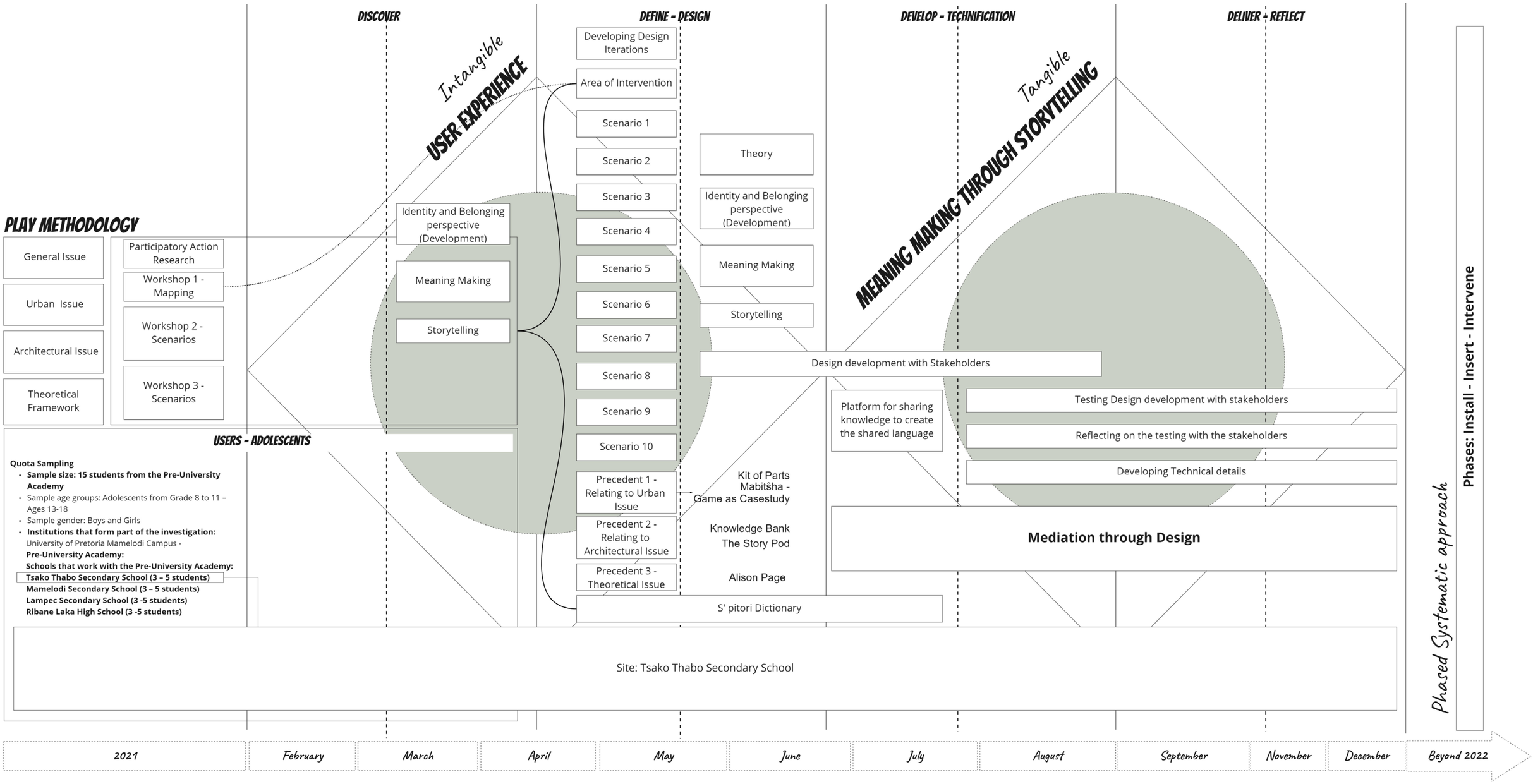
PHASE EIGHT: TECHNICAL INVESTIGATION



Undergo a technical analysis according to a technical strategy derived from the design principles.
Month: August - December 2022

Figure 1.32_Methodology (Author 2021; Author 2022)

METHODOLOGY | How and When? - Methodology



STORYTELLING = SPACE OF EXPRESSION = CREATIVE INCUBATOR / MAKER SPACE

Figure 1.33_Methodology (Author 2021, 2022)

Design Strategy & Conceptual Approach

CONCLUSION

1.8_DESIGN STRATEGY AND CONCEPTUAL APPROACH

1.8.1_SITE SELECTION

Tsako Thabo Secondary School was selected as a site through synthesizing all the findings gathered from the theoretical framework and the through the identification of the three issues and the problem statement through a site and building analysis and investigation. Through the analysis, it was found that the current typology creates hotspots for bullying within the school in between corridors, in ablutions, in classrooms as well as other dead ends or isolated areas. It was therefore found that there is a need for a safer space as well as a need for expression. This is explored through storytelling (Figure 1. 34).

1.8.2_DESIGN STRATEGY AND CONCEPT

Through this study, the objective would be to create well-being through storytelling considering the emotional development of the adolescent and therefore considering a sense of belonging and identity through connecting adolescents. This is achieved through a set of design principles and design criteria derived from the context and theoretical framework (Figure 1. 35). Furthermore, the aim would be to expand the current curriculum of Tsako Thabo Secondary School as an anchor and storytelling to share knowledge. The overall design strategy would be to work within the doing and being to create a platform for the adolescent to share their story to learn from each other and in order to promote a sense of safety (Willcock 1999). The aim would also be for the adolescents not to feel alone with their challenges or if they are bullied at home or in school but for them to have a platform in which they can share their stories and they can learn from the stories others tell. The aim is to reinterpret the current curriculum and co-curriculum through a reinvestigated typology in which the school allows for expression. Moreover, this would imply that the current curriculum would be used along with additional activities linked to storytelling. Thus, the strategy also aims to re-design Tsako Thabo Secondary School with a typology of expression as a creative incubator.

1.8.3_PROGRAMME

The typology of expression aims to reinterpret the school as a creative incubator that will facilitate the current expressions within the school which are: art, music, writing, and performing. Therefore spatial programs such as an amphitheater as a place of performance, a library, exhibitions as well as a maker space could form part of a storytelling hub as a creative incubator(Figure 1. 33 and 1. 34).



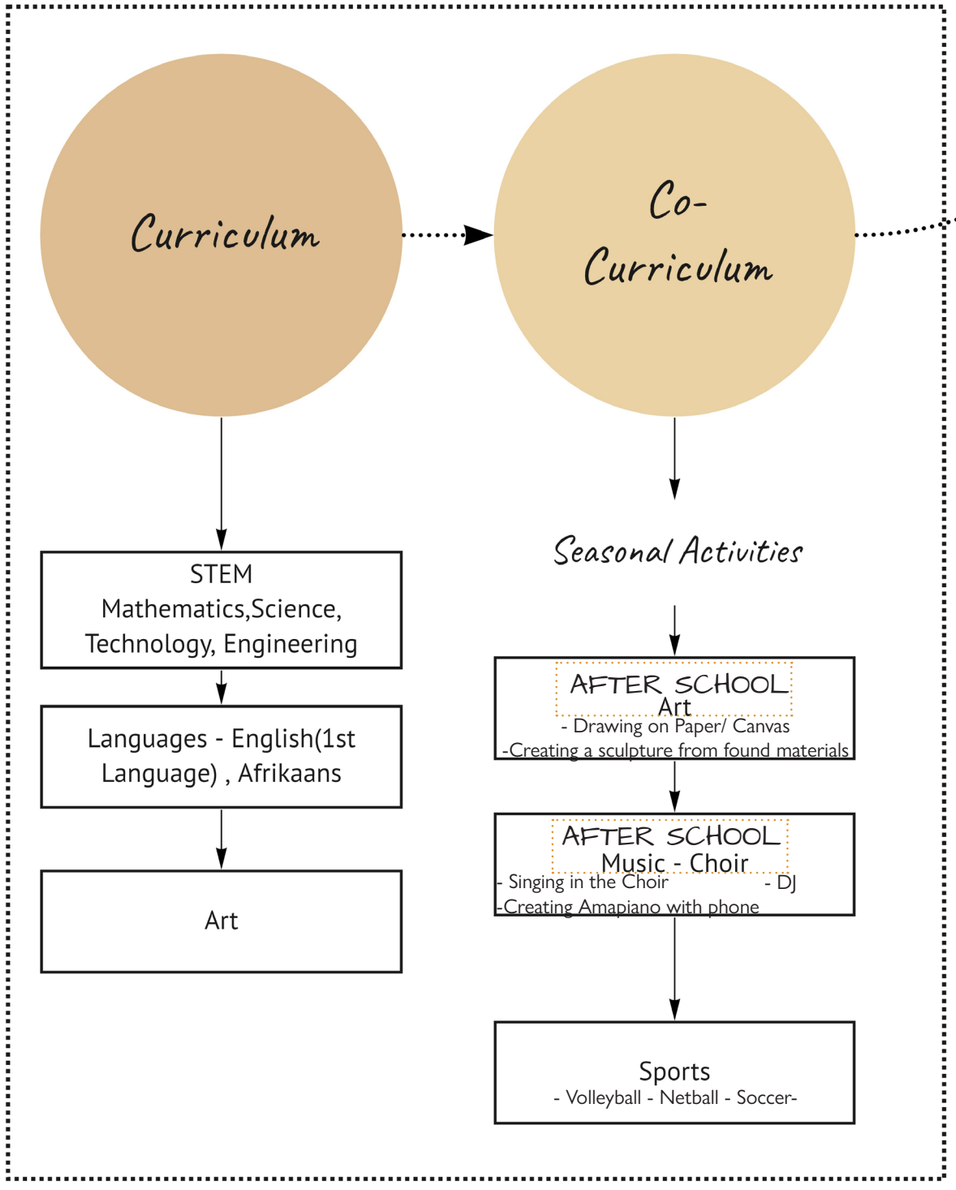
1.9_CONCLUSION

This is explored by considering five design principles from the design strategy: Safety, Spatial Agency, Interiority, Circulation and Configuration. These principles form a Design Criteria which is used to create a design to see the school as a Creative Incubator. This is unpacked in Part 2 of the mini-dissertation where the Design Research is unpacked according to the principles.

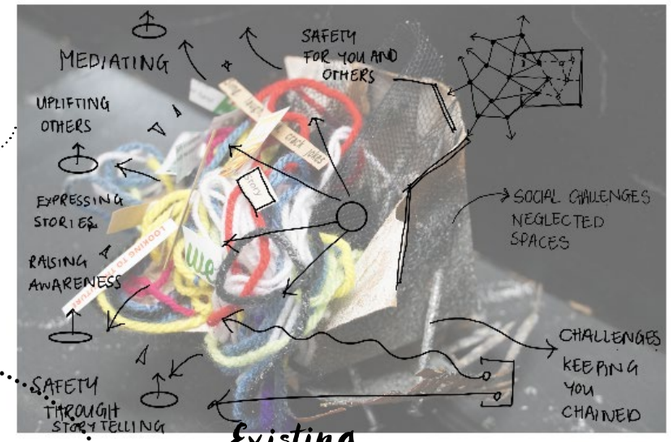
Figure 1.34_Creative Incubator(Author 2022)

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Existing Curriculum at Tsako Thabo Secondary School







Existing NARRATIVE

EXISTING CONDITION

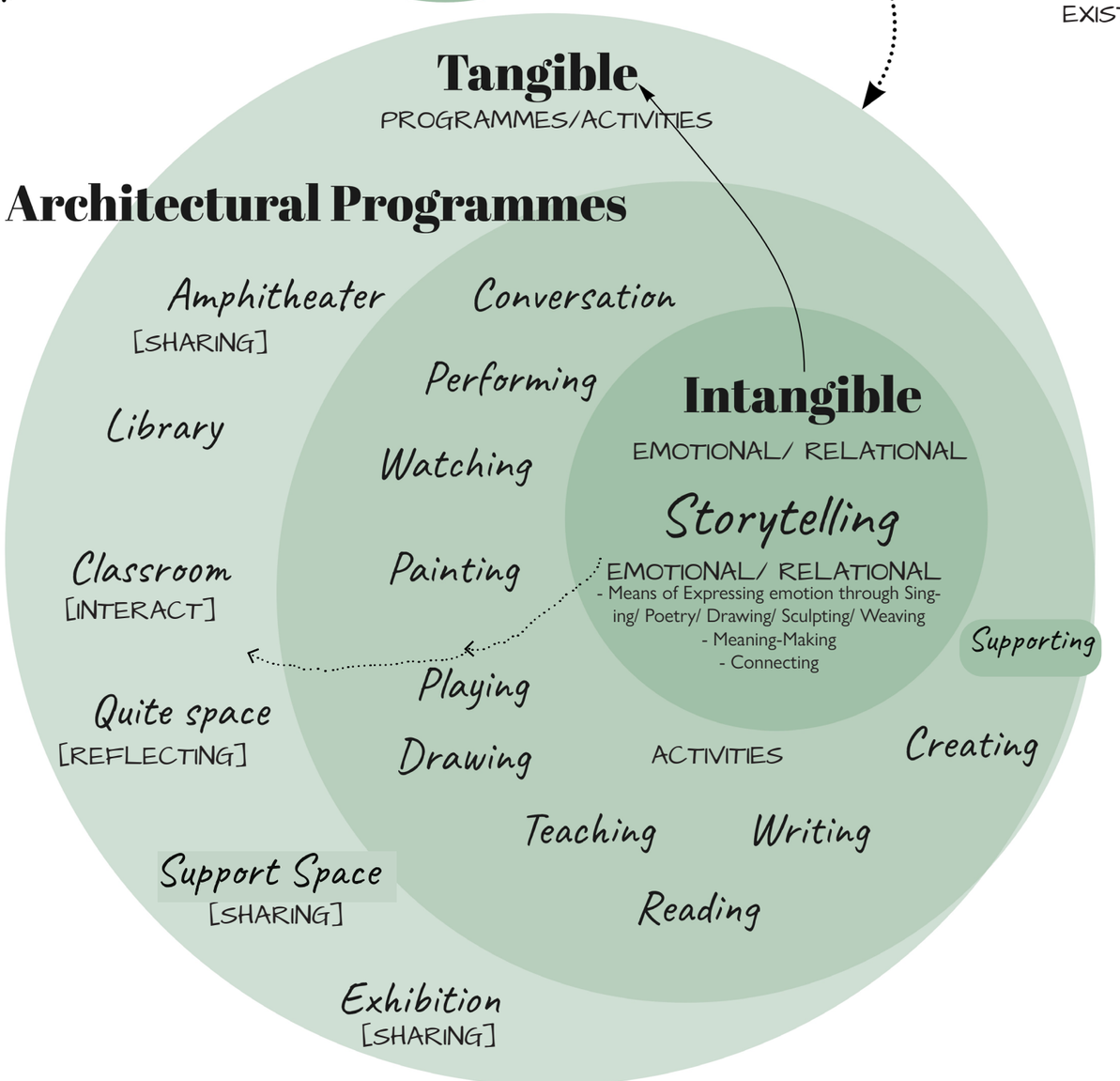


Figure 1.35_Programme (Author 2022)

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DESIGN STRATEGY | Conceptual approach

WHAT ?

AIMS

Creative Incubator

Creative Storytelling

Creating a space where Identity and belonging can be Fostered through creating Social cohesion through storytelling/ means of expression like a creative incubator

HOW ?

OBJECTIVES

Creating a Space for Sharing stories

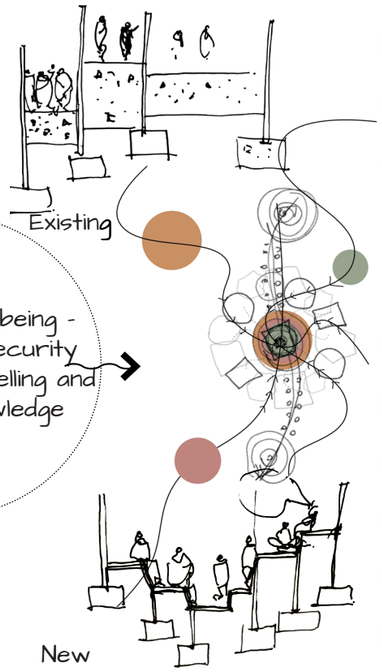
Creating a Space of for Expressing

Creating Maker spaces

Creating a Space for Informal Learning

Creating Well-being - Safety and Security through Storytelling and Sharing Knowledge

WHY ? CONCEPTUAL APPROACH



Sharing Knowledge

Creating a Typology for Storytelling School as Storytelling Hub

THEORY

Storytelling

ADOLESCENT DEVELOPMENT (Erikson 1968)

Safety

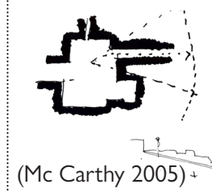
Belonging

Identity

Well-Being

Meaning making



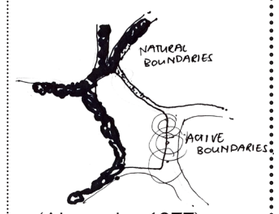


(Mc Carthy 2005)+

Christopher Alexander

A PATTERN LANGUAGE





(Alexander 1977)

DESIGN STANCE

Doing

Being

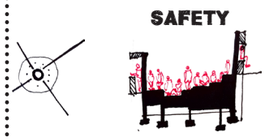
Becoming

Belonging

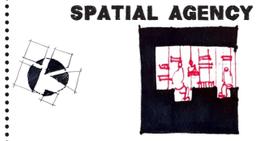
(Wilcock 2006)

DESIGN PRINCIPLES

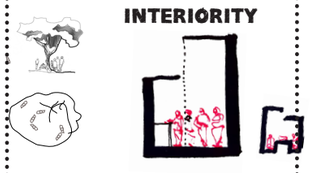
SAFETY



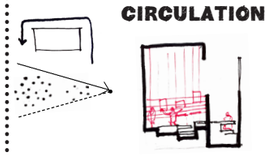
SPATIAL AGENCY



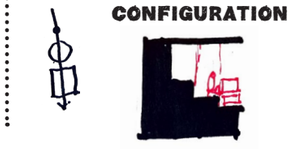
INTERIORITY



CIRCULATION



CONFIGURATION



DESIGN CRITERIA

-Visual Axis
-Permeable
-Boundaries
-Legibility/Order

-Modularity
-Flexibility
-Appropriation
-Multi-purpose
-Inclusion

Intimacy
Hierarchy
Objective
Well-being
Acoustic
Aesthetic
Lighting
Thermal comFort

Access
Threshold
In-between spaces
Public to private

Multi - Functional
Hierarchy
Configuration
Terracing

Epistemic Diversity

Create / Make → Share = Display/Exhibit

WHAT DO ADOLESCENTS TAKE FROM THIS ?

Skills sharing

Hope

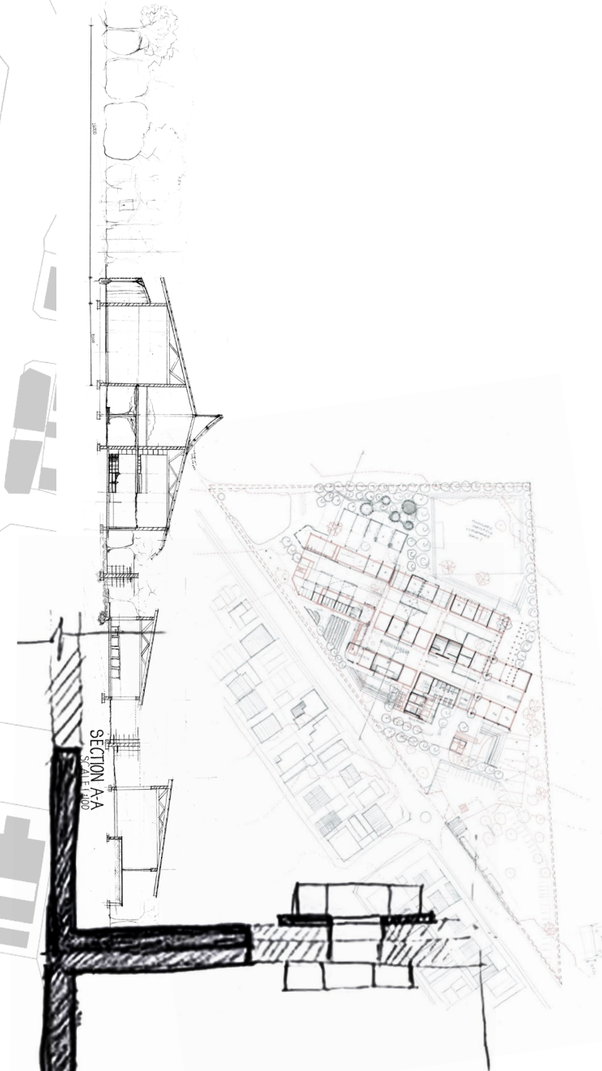
Knowledge about community

Knowledge that others are going through similar circumstances

Catalyst for Storytelling

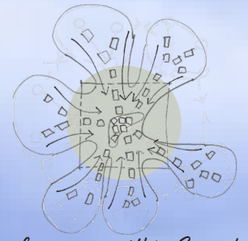
Enhancing the development of the Adolescent

Figure 1.36_Methodology (Author 2021, 2022)



PART 2

Design Research

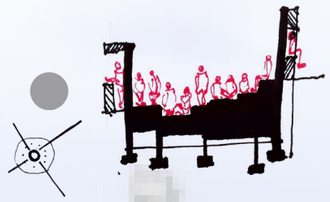


Need for safer spaces within Secondary Schools to ensure the development of identity and belonging. This causes a need for expression

Existing NARRATIVE

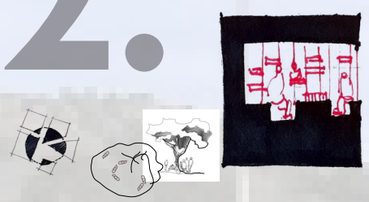
THE NEW Narrative

1. SAFETY



-Visual Axis
-Permeable
-Boundaries
-Legibility/Or-

2. SPATIAL AGENCY



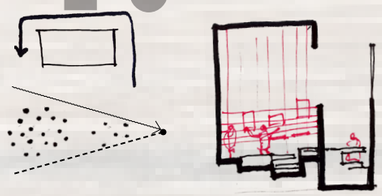
-Modularity
-Flexibility
-Appropriation
-Multi-purpose
-Inclusion

3. INTERIORITY



Intimacy
Hierarchy
Objective Well-being
Acoustic
Aesthetic
Lighting
Thermal Comfort

4. CIRCULATION



Access
Threshold
In-between spaces
Public to private
Formal vs informal
Education

5. CONFIGURATION



Multi - Functional
Hierarchy
Configuration
Terracing
Epistemic Diversity

25’ 42’ 33,43” S;
28’ 22’ 16,19” E

Tsako Thabo
Secondary School,
Tsomo street,
Mamelodi,Pretoria

Figure 2.1_ Design Principles (Author 2022)

THE EXISTING Narrative

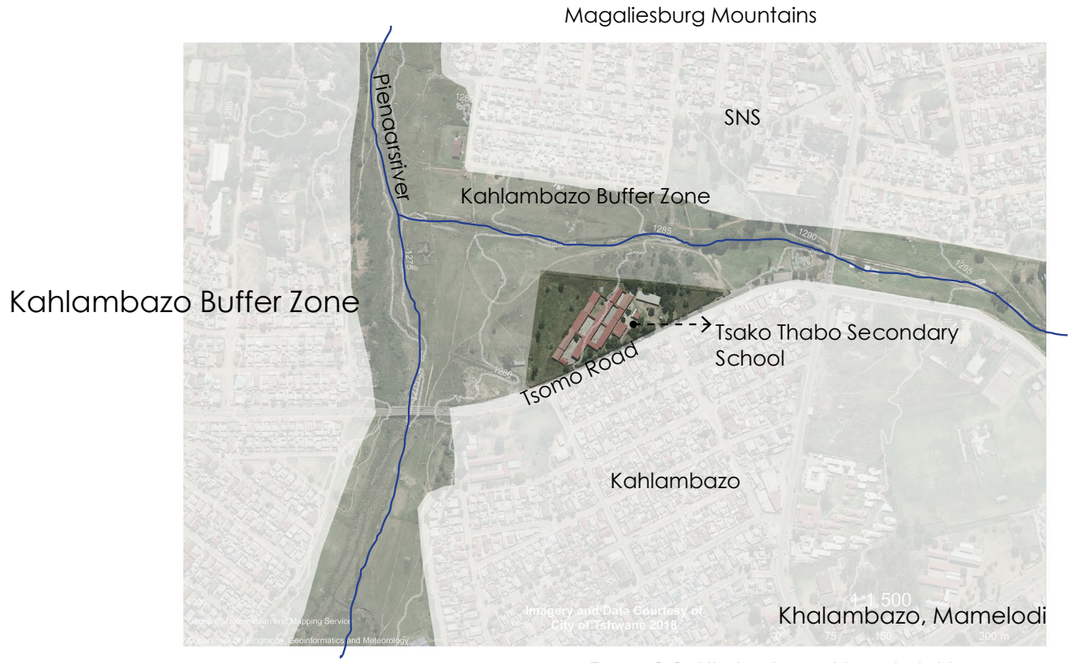


Figure 2.2_Khalambazo, Mamelodi Map

2.1_INTRODUCTION TO THE DESIGN RESEARCH

Reconsidering a expanded or new typology for secondary schools within Mamelodi for adolescents to create a safer school environment. Furthermore, a holistic identity for secondary schools within the context is investigated through research gathered from site analyses using a theoretical lens. This is done by reflecting on Christopher Alexander's (1977) theory, as discussed in part 1 of this dissertation, by considering principles regarding boundaries and the means of creating a home. This is done, to generate a safe and secure space as well as a place of ownership to create a safer school. This investigation will be conducted by investigating a expanded building typology for Tsako Thabo Secondary School by exploring the school as a creative incubator.

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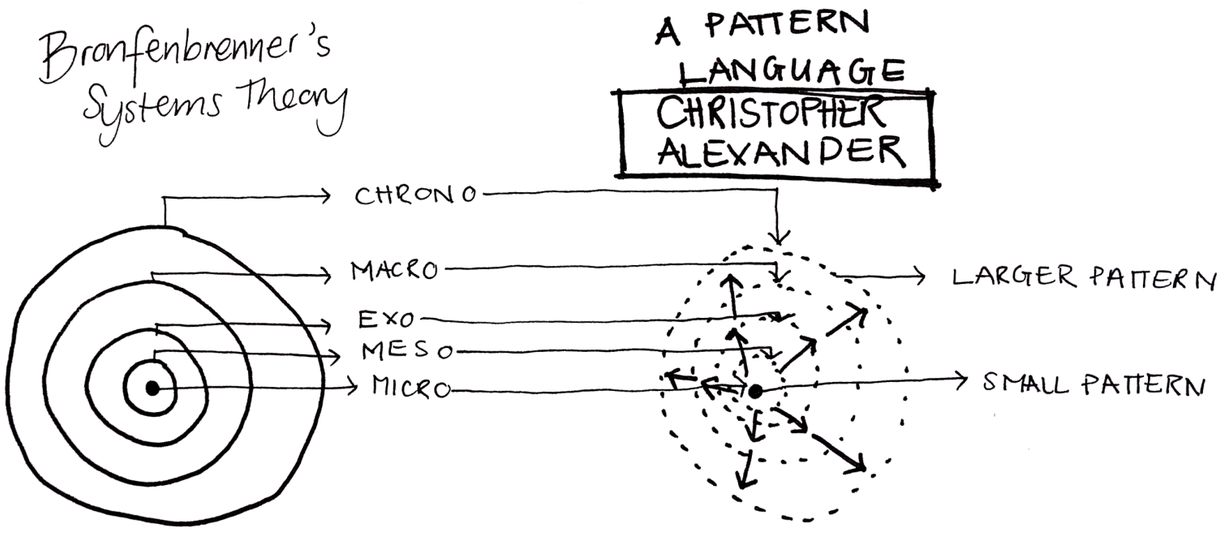


Figure 2.3_Diagram showing Bronfenbrenner's systems theory in relation to Christopher Alexander's a Pattern Language (Alexander 1977; Author 2022; Bronfenbrenner 1997)

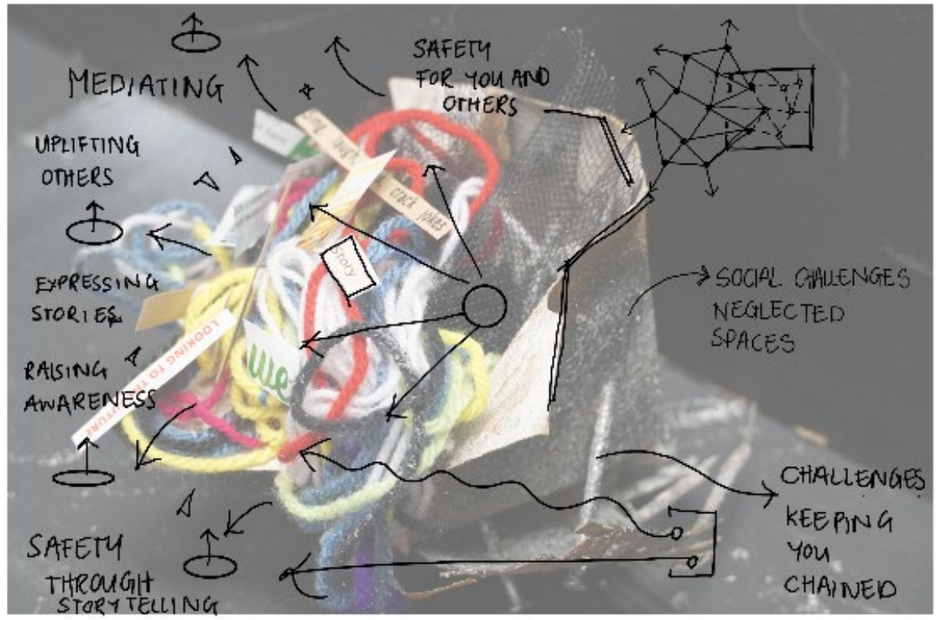


Figure 2.4_ Conceptual approach and Intent (Author 2022)

2.1.1 DEVELOPED ARGUMENT

In order to pursue a design investigation, the expanded typology needs to steer away from conventional school building typologies, where urban interiors and interiors are concerned, as a means to create interiority. Furthermore, the typology should be reconsidered, not from a teacher-centered design response but an approach that is more adolescent-focused. Through the investigation of the school and the participatory action research session conducted with the adolescents from the school, it was found that the existing linear school typology and configuration creates a series of boundaries leaving narrow corridors and hidden corners that become unsafe zones that in turn leads to adolescents becoming victims of bullying and violence. Through the collaboration with the Occupational Therapy (OT) Department of the University of Pretoria (UP) and through considering the theory of Doing, Being, Becoming, and Belonging (Wilcock 2006), it was found that a method of storytelling is used to foster a sense of safety to create a holistic identity and belonging for individuals (Hammell, 2014).

In order to focus the design response, certain informants are taken from the physical context as well as from the theoretical framework which considers the aspects and the overlaps of Bronfenbrenner's theory of development in relation to Christopher Alexander's (1977) theory of A Pattern Language as the main focus points (Figure 2.3).

This chapter shows a design development leading to a spatial design response. The design development is formulated through informants which include aspects drawn from the context including the physical context, the theoretical framework, and the user. The site and the building of the school must be examined to gather informants that are used to formulate a design strategy which is used to formulate design principles to formulate a design. The informants and the site are examined through Bronfenbrenner's (1997) Ecological Systems Theory in which the informants are placed on a scale ranging from a macro system to a microsystem. Informants are gathered from participatory action research workshops that were held in 2021. The informants gathered from the existing narrative of the context and the users of the building are examined through a theoretical framework which is then organized into a design strategy and conceptual approach to form a new narrative. Through the investigation, a design intent is formulated. To realize the design intent and strategy, and concept all informants gathered are configured into a set of design principles which is used to in form a design response. The design development is pursued through a series of design iterations. This is further explained in Figure 2.3. The informants will be unpacked within this chapter.

WHAT ?

AIMS

Creative Incubator

Creative Storytelling

Creating a safer school typology where identity and belonging can be fostered through creating social cohesion through storytelling/ means of expression like a creative incubator

HOW ?

OBJECTIVES

- Creating a space for sharing stories
- Creating a space of for expressing
- Creating maker spaces
- Creating a space for informal learning

Creating well-being - safety and security through storytelling and sharing knowledge

WHY ? CONCEPTUAL APPROACH



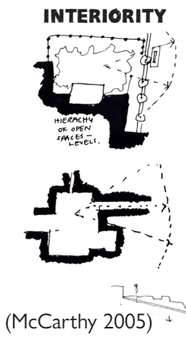
Creating a Typology for Storytelling
School as Storytelling Hub

THEORY

Storytelling

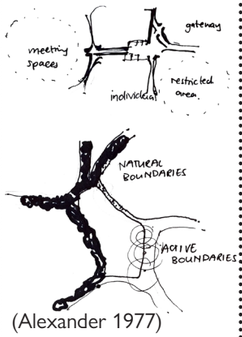
ADOLESCENT DEVELOPMENT

Safety
Belonging
Identity
Well-Being
Meaning making



(McCarthy 2005)

Christopher Alexander
A PATTERN LANGUAGE



(Alexander 1977)

DESIGN STANCE

- Doing
- Being
- Becoming
- Belonging

(Wilcock 2006)

DESIGN PRINCIPLES



DESIGN CRITERIA

- -Visual Axis
- -Permeable
- -Boundaries
- -Legibility/Order
- -Modularity
- -Flexibility
- -Appropriation
- -Multi-purpose
- -Inclusion
- -Intimacy
- -Hierarchy
- -Objective Well-being
- -Acoustic
- -Aesthetic
- -Lighting
- -Thermal Comfort
- -Access
- -Threshold
- -In-between spaces
- -Public to private
- -Formal vs informal
- -Education

Multi - Functional
Hierarchy
Configuration
Terracing
Epistemic Diversity

Create / Make → Share = Display/Exhibit

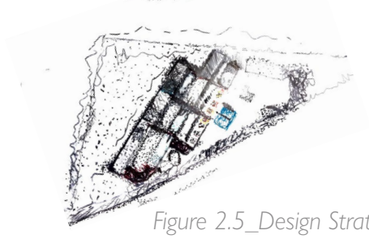
WHAT DO ADOLESCENTS TAKE FROM THIS ?

- Skill sharing
- Hope
- Knowledge about community
- Knowledge that others are going through similar
- Catalyst

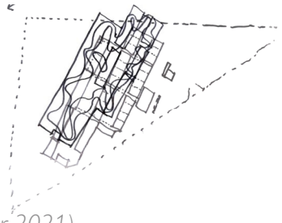
Enhancing the development of the Adolescent

Existing NARRATIVE

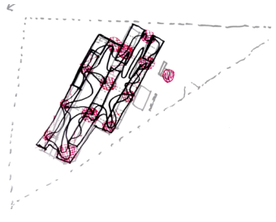
INTANGIBLE EFFECTS OF CURRENT TYPOLOGY



CURRENT TYPOLOGY NEED FOR STORYTELLING

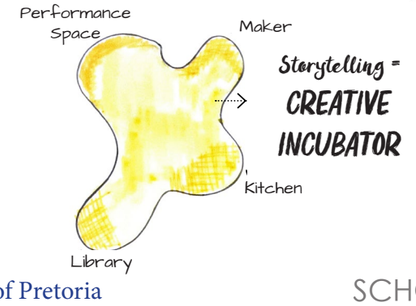


CURRENT TYPOLOGY CAUSES BULLYING - NOT PROVIDING FOR EPISTEMIC DIVERSITY



New NARRATIVE

NEED FOR NEW/ OPEN TYPOLOGY



NEW TYPOLOGY = SCHOOL AS A CREATIVE INCUBATOR

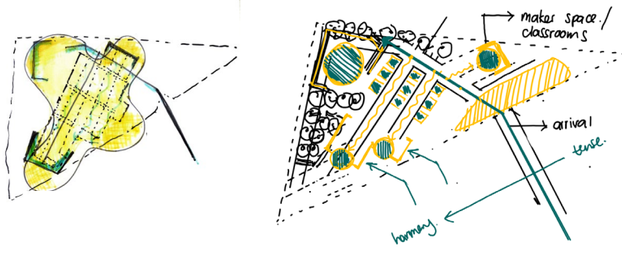


Figure 2.5_Design Strategy to principles (Author 2021)

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2.2_DESIGN INFORMANTS

In this section, the contextual and the theoretical informants will be viewed together to explain the design intent and to interpret the design strategy and design principles in the design.

2.2.1_THEORETICAL POSITIONING AND INFORMANTS

The project is viewed mainly through two sets of theories – going from an intangible health science theory to a tangible spatial theory as set out in part 1. The intangible theory is grounded on the occupational therapy discourse. Hammell (2014) in her journal article Doing, Being, Becoming and Belonging writes that occupation can be viewed as a medium for expressing and achieving a sense of belonging to create well-being. Through this, the purpose is to contribute to the well-being of others (Hammell, 2014). Occupational therapy is not just about doing, being, and becoming but also relates to the meaning of certain occupations or doings. The meaning of the occupations related to belonging and the relation to human well-being and health. In this case, these four ecological layers are considered through Bronfenbrenner's (1997) systems theory through the lens of an adolescent as explained in part 1.

Furthermore, storytelling according to the discourse of occupational therapy is used as a method to create belonging and identity to foster a sense of safety (Liao 2013). The aim of the project is to use storytelling as a medium within an architectural field to create well-being which in this case would be to create a space of occupation that fosters well-being. Storytelling within this project is a means for adolescents to express themselves to ensure their mental well-being and to share within a collective environment. Furthermore, storytelling becomes the way in which learning, and knowledge transfer takes place within the network of epistemic diversity and ultimately within the school. Storytelling is also a means of sharing your experience with others that are facing similar situations to uplift each other and through that build a network.

Furthermore, to make the intangible theory spatial, Christopher Alexander (1977) sets out a guideline in his book *A Pattern Language* discussing the principles of how a space could become safer by using principles where circulation, configuration, and interiority are considered with a set of criteria which can be seen on the far right of figure 2. 5 (Alexander 1977). Furthermore, when considering interiority, McCarthy's (2003) defines it as the quality of an interior being intimate, or an inside space referring to qualities of containment, enclosure, protection, and privacy. This interiority can also be seen as a principle in which intimate spaces are discussed which also addresses objective well-being as well as subjective well-being and it discusses the idea of creating a safe space not only within the interior. In part 1, spatial agency is also discussed as being part of the framework to create belonging and a sense of ownership and meaning in the spaces of adolescents. Both the theories of Hammell (2014) and Awan et al (2011) reveal that belonging, a level of appropriation, flexibility, modularity, multi-functionalism, and inclusivity is formed through creating spatial agency.

2.2.2_CONTEXTUAL INFORMANTS IN PERSPECTIVE OF THE THEORY

Tsako Thabo Secondary School is situated in Mamelodi East in Khalambazo. Furthermore, the school is situated on Tsomo Street and is surrounded by the Khalambazo buffer zone next to the Pienaar river at the foot of the Magaliesburg mountains. As established in chapter one, the school is situated in-between pre-established zones, which were configured in terms of ethnicity within the years of apartheid. The school was built in 1979 during the apartheid years (Achi & Venter 2019).

The macro analysis of Tsako Thabo Secondary School within its surrounding context highlights the segregation and the disconnection between different ethnic groups caused by the spatial arrangement of the urban context surrounding the school. This disconnection is also caused by a buffer zone adjacent to the Pienaarsriver surrounding the school and the urban configuration of different ethnic groups being placed within different suburbs as can be seen in the map (Figure 2.2). Further, it was found that epistemic diversity exists within the community of Khalambazo. Where epistemic diversity refers to the idea of not only sharing knowledge through institutional learning but also through other knowledge systems such as the value-based knowledge system consisting of the faith-based knowledge system, the value-based knowledge system, and the indigenous knowledge system, co-curricular knowledge system, and the entrepreneurial knowledge system (BHons 2020).

Furthermore, when zooming into the mesosystem of the school, which is the system where connections of the individual adolescents have with their friends and the relationships those connections or people have with each other. This system is relatable to Alexander's principles in how to appropriately design for individuals to make them feel safe through designing a home (Alexander 1977:491). When applying this principle of safety to the site it can be observed that there is a need for a safer school environment. It was found that currently, the adolescents feel uncomfortable within their surrounding context and therefore do not feel safe sharing information as their surrounding school environment does not allow it. In this case, Christopher Alexander views the idea of a home as a space of a complete sense of security and belonging including a sense of feeling comfortable to raise one's voice (Alexander 1977:667).

In part 1 it was found through the investigation of the microsystem that the existing typology is configured in such a way that the school buildings are all single storeys parallel to one another which can be seen in figure 2. 6 under safety. However, it was found through the PAR investigation that through the parallel linear axis, narrow corridors and passages are developed leaving unsafe zones within the school. The parallel configuration also creates boundaries, which creates a need for surveillance of the adolescents, as, through this layout, corners are created which are not under the supervision of the teachers. It has been found that when the learners are left unattended for a long amount of time adolescents become mischievous within these corners amongst which bullying occurs. Furthermore, the current classrooms are designed in such a way that the students also feel unsafe and uncomfortable as these spaces are in a poor condition, with poor ventilation and lighting as well as broken windows. A lack of maintenance and resources also leads to unattended or unutilized classrooms leading to a lack of space for the number of adolescents and staff members. Volleyball and other team sports are currently being

10 m by 7 m concrete paved courtyards, also leading to injuries as well as classrooms being vandalized on a frequent basis. Mainly through the existing linear typology boundaries are created through spatial elements, such as buildings of the classrooms as well as three layers of boundary walls. These can be seen in Figure 2.6 and 2.7.

Through these observations and findings, it can be said that there is a need for a school configuration that allows for surveillance of the adolescents to feel safe within their school. To ensure surveillance, the classrooms need to be configured in such a way as to allow for the staff to manoeuvre around the buildings and also allow a layout that is open and allows for transparency between the buildings. Furthermore, the adolescent does not feel comfortable within their school environment therefore the current typology does not enable adequate learning due to a lack of belonging. Through the existing unsafe typology causing the adolescents to feel unsafe and have a lack of belonging in the school and within their surrounding environment, the existing narrative tells a story of a lack of a holistic identity and a need for a safer school.

2.2.2.1_THE GENERAL RESPONSE TO THE CONTEXTUAL INVESTIGATION

To distill the informants gathered from the site, contextual, and building analysis in part 1 the informants were reorganized into design principles which form part of the larger design strategy this can also be seen by considering figure 2.5.

Through identifying, design informants from the site and building analysis, as well as from the theoretical framework design principles were compiled. Principles gathered from a site analysis in chapter 1 through Bronfenbrenner's ecological systems theory will be discussed. These principles are safety, spatial agency, Interiority, circulation, and configuration.

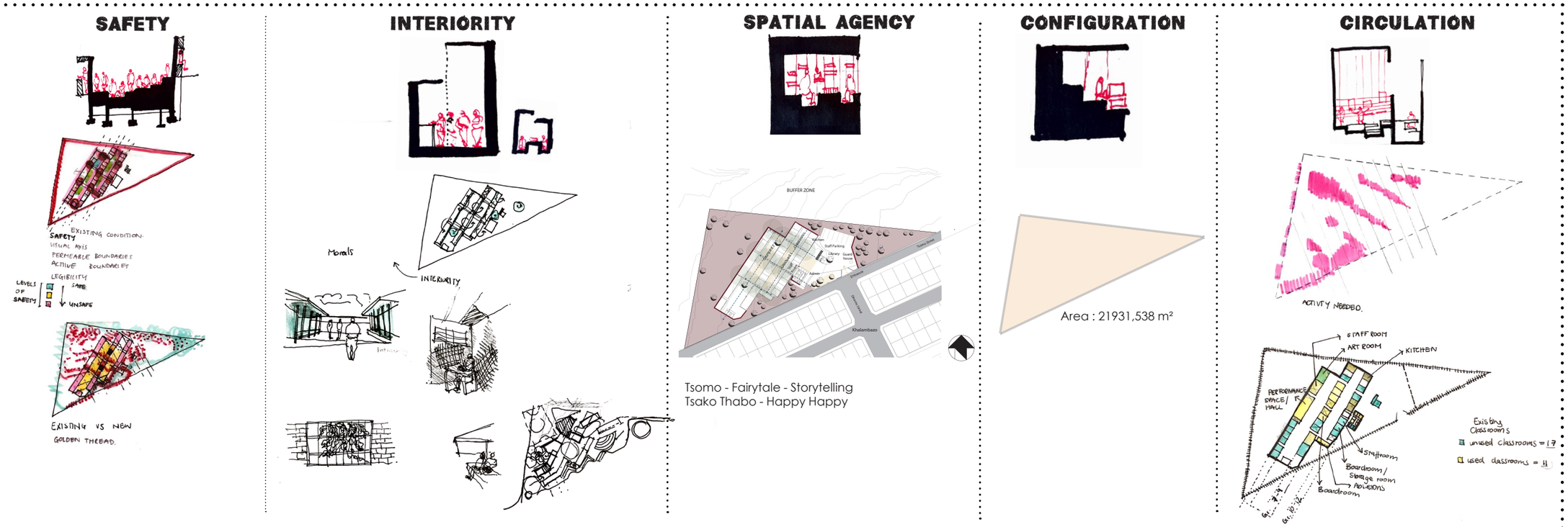


Figure 2.6_Macro Site Analysis (Veldsmann 2019, Author 2022)

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2.3_DESIGN STRATEGY - DESIGN PRINCIPLES



These five principles are derived from the contextual and theoretical informants, and they formulate the design strategy as can be seen in Figure 2.5. Each of the five principles also has a set of design criteria that establishes a framework to develop the design. The principles also further articulate a road map for the essay. Precedents are chosen according to the five principles and are analysed to explain the design intent which will lead to the developed design and iterations.

The principles can be summed up into one main conceptual approach and strategy as can be seen in figures 2.5 and 2.6 which is creating a typology for the interior of schools that promotes well-being with a focus on safety and security through storytelling and sharing knowledge and this is achieved through creating a school as a creative incubator. The new story of Tsako Thabo Secondary school refers to a safer learning environment, which fosters identity and belonging, and ultimately allows adolescents to express themselves. The new narrative moves away from the traditional closed typology to a transparent, inclusive, intimate, safer, and open typology.

2.3.1_SAFETY

To consider safety architecturally within the contexts, the informants lead to principles or the need for surveillance, permeability, and activation of boundaries, circulation, and legibility is considered. To create a safer school typology from the macro scale to the micro scale, the typology should be legible.

2.3.2_SPATIAL AGENCY

Through considering spatial agency within the theoretical framework in part 1 the set of criteria for this principle would be to allow for appropriation and to create a design that is multi-purpose and inclusive. To achieve these, the design should also be modular and flexible.

2.3.3_INTERIORITY

Through considering McCarthy's (2006) theory and definition of interiority and through considering Hammell's theory(2014) within the OT discourse the design criteria consist of intimacy, hierarchy, objective well-being, acoustics, aesthetics, lighting, and thermal comfort.

2.3.4_CIRCULATION

Through the consideration of the contextual analysis in terms of Alexander's(1977), it can be said that the points of criteria are points of access, thresholds spaces, in-between spaces, the relation between public and private spaces, the relationship between informal and formal spaces.

2.3.5_CONFIGURATION

Through the consideration of the contextual analysis in terms of Alexander's (1977) and considering the current configuration of the school the following design criteria were considered to create a new safer school typology: to have legibility within the space, to use terracing and level changes to define certain spaces and to implement hierarchy. Furthermore, to configure the school in such a way as to provide for the multiple ways of learning related to epistemic diversity.

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2.4_

DESIGN BRIEF

PROJECT DETAILS

PROJECT TITLE



SITE LOCATION
Tsako Thabo Secondary School, Tsomo Street,
Mamelodi, Pretoria

BUILDING DESCRIPTION
School was constructed in 1979 within the years of apartheid, which was built with a linear typology. Existing school has 28 classrooms of which 17 are unused and 11 are used.

BUILDING FUNCTION
Secondary School for adolescents from Grades 8 to 12.

SITE AREA
21931,538 m^2

BUILDING AREA
13087,148 m^2

NUMBER OF LEARNERS
803

NUMBER OF TEACHERS
14

PROGRAMME
Creative Incubator - Library, Classroom, Multi-functional-display area, Performance Space

CLIENT

The Principal of Tsako Thabo Secondary School requested to redesign their school in order to make the school a safer space as the adolescents (12- 18 years) are currently being bullied. The department of Basic education has therefore also taken this problem into consideration through the broader context and is therefore aiming to create safer schools. Therefore, the main aim of the design is to create a new safer typology.

TARGET AUDIENCE

The youth or more specifically the adolescents aging from 12 to 18 years going to Tsako Thabo Secondary School are feeling unsafe within their school which is currently affecting their learning. It is thus also that there is a need for cohesion between the learners as well as a holistic identity that ensures that each learner feels as if they belong.

DESIGN

MULTI-SCALAR APPROACH AND BRONFENBRENNER
The primary objective of the design is to create a new typology as a system where the school functions as the creative incubator. Part of the incubator is different nodes that are connected by carefully curated pathways acting as a funnel from the main arrival to the different nodes. The different nodes become active through how the objects or the furniture are maneuvered and into different configurations providing for different programmes.

SYSTEM INTENTIONS - EXTERIOR INTENTIONS
The school is designed as a creative incubator which in this case is a space that functions as a safe haven as well as a space that provides adolescents to be prepared for their future as the school builds up their well-being through the new school typology.

SPACE INTENTIONS
This typology provides for more protected spaces that also allow for levels of appropriation. The spaces are designed as nodes that facilitate storytelling through different ways of expression such as a library, a performance space, an informal and flexible classroom, and a maker space as well as an exhibition space.

OBJECT INTENTIONS - INTERIOR INTENTIONS
The aim of these nodes is to allow the adolescents to take ownership of their space in the light of spatial agency and appropriation to create a sense of belonging. The aim is also to provide a space of expression and storytelling to let the adolescent's voices be heard.

TECHNOLOGY

SUSTAINABLE BUILDING TECHNOLOGY
Sustainable building technologies and methods will be required in order to be more feasible.

OLD VS NEW
The old materials used for the existing building will be recycled and re-used in order to be more feasible.

The new building style will be mimicking the old in order to remain within a familiar typology however building features will be introduced through organic shapes which represent the informal learning, the storytelling and the means of expression.

SPATIAL AGENCY - THE USE OF MATERIALS STEREOTOMIC VS TECTONIC
In order to support the multi-scaler approach and in order to allow for spatial agency the aim is to use lightweight materials for an object or spatial features that should be able to be configured by the user. Fixed building elements order the space into different spaces to increase legibility.

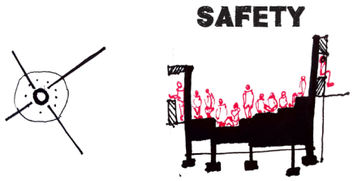
FACILITATING STORYTELLING THROUGH CREATING A NEW AND SAFER SCHOOL TYPOLOGY

© University of Pretoria

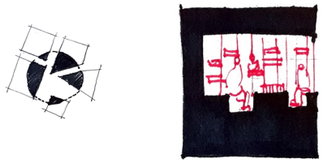
		CORRIDORS AND CIRCULATION	LIBRARY, AND OTHER BUILDINGS	COURTYARDS, OPEN FIELDS AND SPORTS FIELD	CLASSROOM

DESIGN STRATEGY

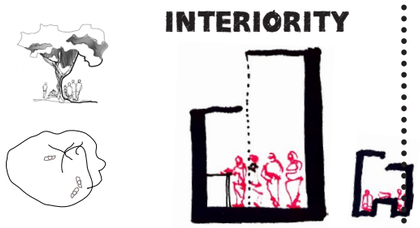
SAFETY



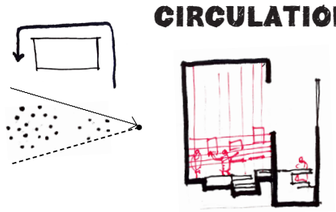
SPATIAL AGENCY



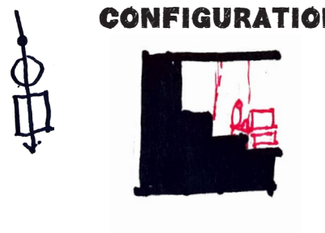
INTERIORITY



CIRCULATION



CONFIGURATION



DESIGN CRITERIA

-Visual Axis
-Permeable
-Boundaries
-Legibility/Order

-Modularity
-Flexibility
-Appropriation
-Multi-purpose
-Inclusion

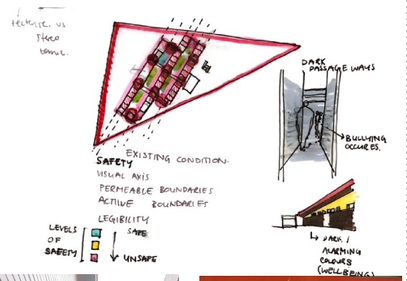
Intimacy
Hierarchy
Objective
Well-being
Acoustic
Aesthetic
Lighting
Thermal Comfort

Access
Threshold
In-between
spaces
public to private

Multi - Functional
Hierarchy
Configuration
Terracing

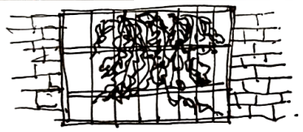
Epistemic
Diversity





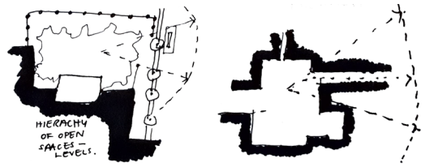


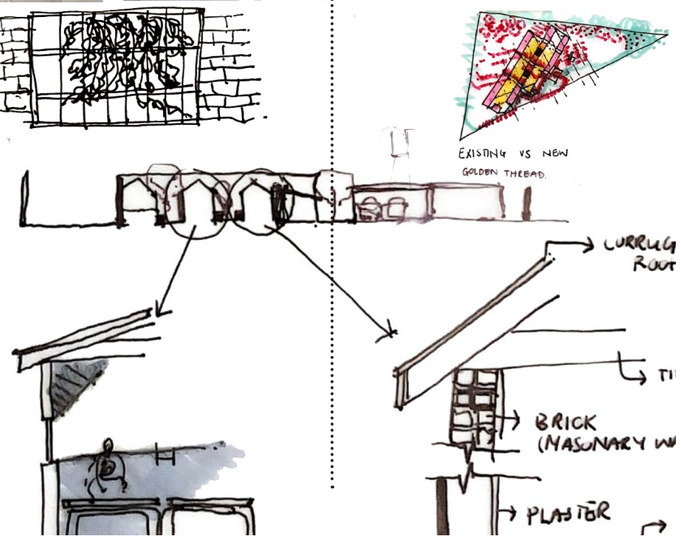




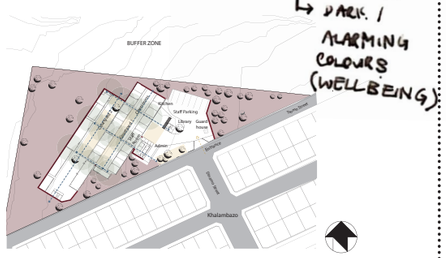














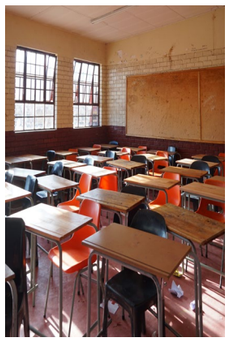


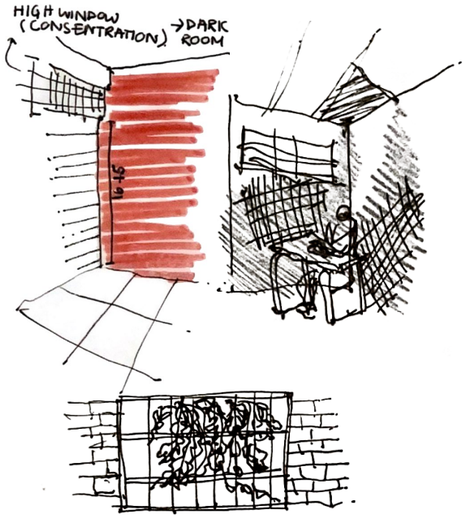














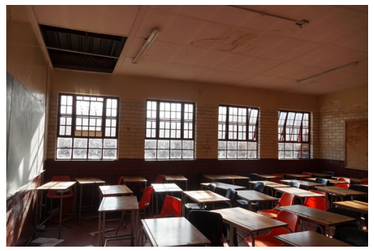


Figure 2.7_ Principles and the area of intervention (Author 2022)

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DESIGN INTENT

Precedents

2.5_DESIGN INTENT - PRECEDENTS STORYTELLING WITHIN A SCHOOL SETTING

Precedent studies are conducted to see what role storytelling as a creative incubator plays in a school. The design intent is to use the design principles that were established through the contextual and theoretical informants as a design strategy and as a tool to refine the design brief and start an iterative design development. To get to the design and to make the current intangible design principles tangible, a series of precedents were analysed. The precedents were chosen in terms of their programmes and their context and ultimately to see how a school as a creative incubator, which in this case is the means of expression through storytelling, can be implemented into a secondary school.

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PRECEDENTS

Usasazo Secondary School - Wolff Architects

Information and all Figures Adapted from (Wolff 2003)







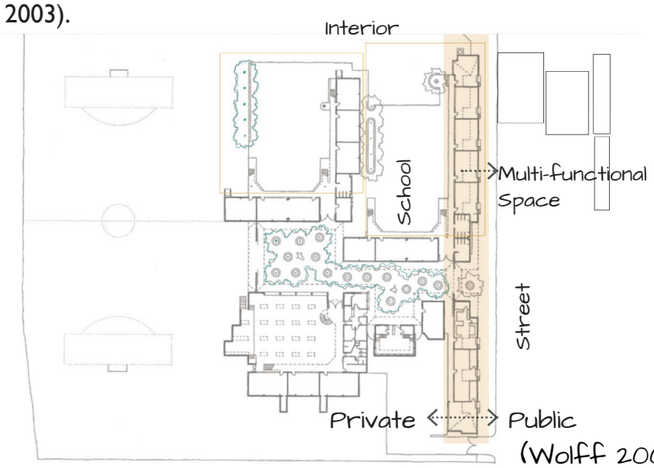




Building type: Secondary School
Architect: Wolff Architects
Year: 2003
Location: Bangiso Dr, Victoria Merge, Khayelitsha

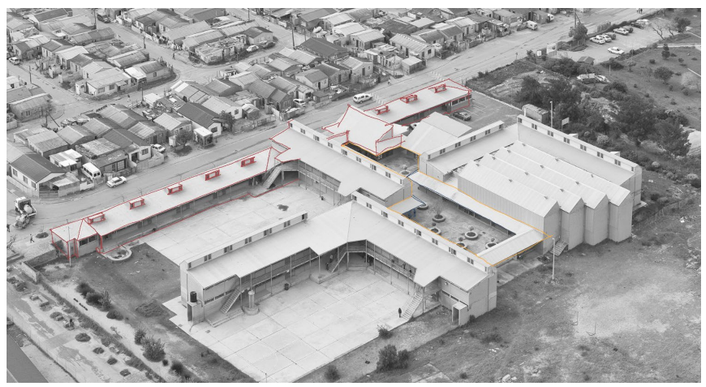
DESIGN INTENT

The design consists of multi-functional spaces and re-evaluates the role of a boundary by activating the boundary by providing multi-functional spaces which are accessible to the community and to the school. The purpose of this is to promote safety through the activation of the street edge (Wolff 2003).



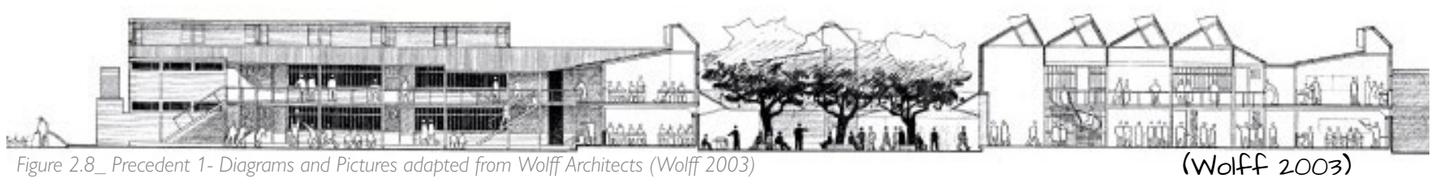
(Wolff 2003)







(Wolff 2003)

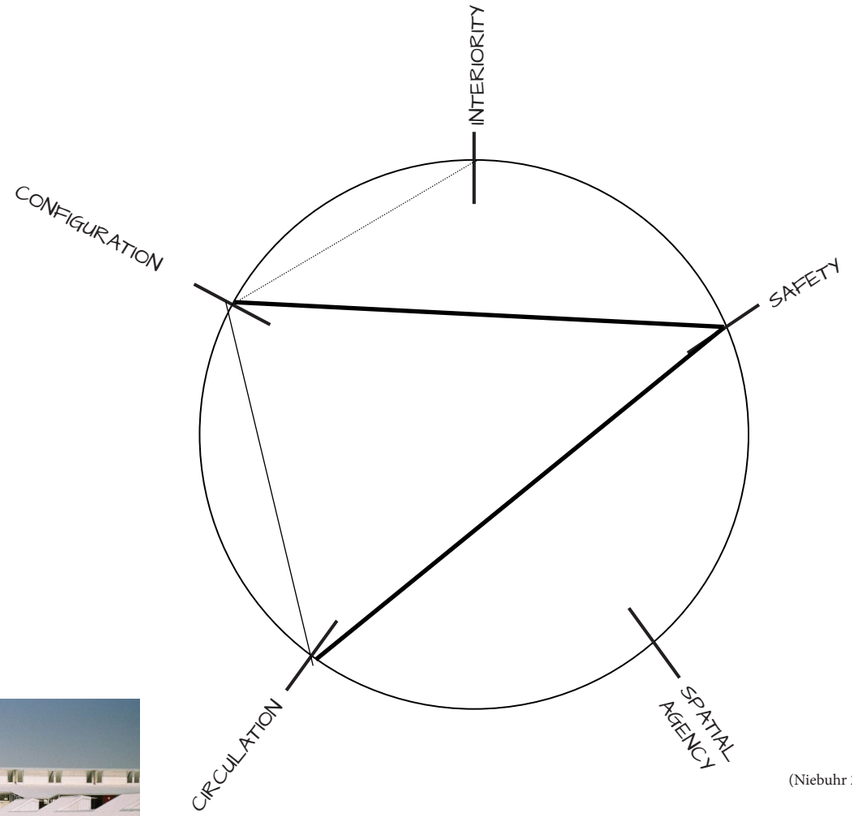


(Wolff 2003)

Figure 2.8_ Precedent 1- Diagrams and Pictures adapted from Wolff Architects (Wolff 2003)

SHARING KNOWLEDGE

CREATING WELL-BEING FOR ADOLESCENTS THROUGH STORYTELLING



(Niebuhr 2022)

CONCEPT AND DESIGN

PROJECT SUMMARY

The client of the project is the provincial government. The school has 37 classrooms, a hall, a library, a computer room, and an administration block. The architects decided to expand the brief of the project to accommodate for more entrepreneurial training, by allowing the school to be adaptable to new Further Education and Training. The classrooms were designed to form the boundaries of the school to adapt the classrooms and make them accessible to the public through added hatches (Wolff 2003).

REFLECTION AND KEY INSIGHTS

Activating the boundary through how the school is configured allows for public engagement which further creates and promotes safety. Through viewing the design of the school through the lens of Alexander's theory on boundaries, Alexander suggests that the boundaries should have a threshold as to have a boundary with layers that would promote a further sense of security (Wolff 2003). Through having all classrooms access to the public, the adolescent might still feel unsafe even within the school. Therefore, what can be taken further from this project is that the design of boundaries and spaces such as classrooms should be multi-functional and should allow for appropriation and spatial agency (Wolff 2003).

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THE GREEN SCHOOL SOUTH AFRICA
GASS Architecture Studios
Information and all Figures Adapted from unless otherwise shown (Archdaily 2021)

Building type: Secondary School
Interior Architects: D12 Interiors
Architect: GASS Architecture Studios
Year: 2021
Location: Paarl

DESIGN INTENT

The design creates a sustainable multi-functional school campus for secondary school learners and aims to promote a safe environment for the adolescents as well as to promote their learning through the observations of their surroundings through connecting clusters of classrooms through landscape elements that aim to educate (Archdaily 2021).





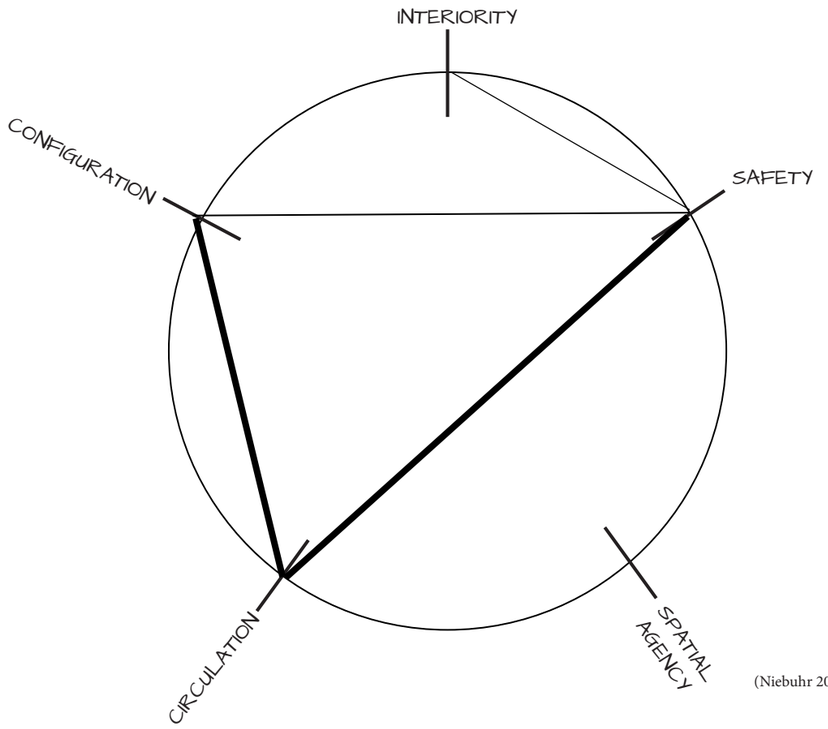
Figure 2.9_ Precedent 2 (Archdaily 2021)





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SHARING KNOWLEDGE
CREATING WELL-BEING FOR ADOLESCENTS
THROUGH STORYTELLING



(Niebuhr 2022)

CONCEPT AND DESIGN

PROJECT SUMMARY

The project consists of one carefully curated route which leads into the three clusters of classroom which allows the adolescents to expand on their knowledge whilst meandering through the campus. Furthermore, each cluster of classrooms is designed so that there is one central courtyard which is used in breaktimes for surveillance and each classroom is orientated to face the central courtyard in order to help the learners to stay focused during their class times. When considering the interior of a classroom the designed intention was to make the classrooms easily adaptable.

REFLECTION AND KEY INSIGHTS

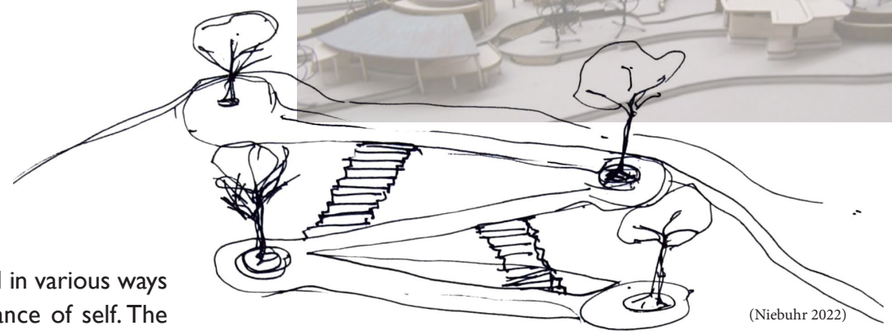
Reflecting through the lens of the design principles, safety was considered through designing protected clusters of classrooms that all face a central courtyard that is under surveillance. Through this it is also evident that circulation becomes important. It can be seen when referring to the figures , that the fixed element which would aim to enhance the development of the learners were fixed such as the tinted windows. Furthermore, bookshelves can be interpreted to be semi-fixed as well.

REVELATION AND RECONNECTION
A storytelling place at the Tswaing Crater
Jeanne-Elmè Visser

Information and all Figures Adapted from (Visser 2010)

Building type: Storytelling center
Architect: Jeanne-Elmè Visser
Year: 2010
Location: Tswaing Crater
Type of Project: MProf mini-dissertation

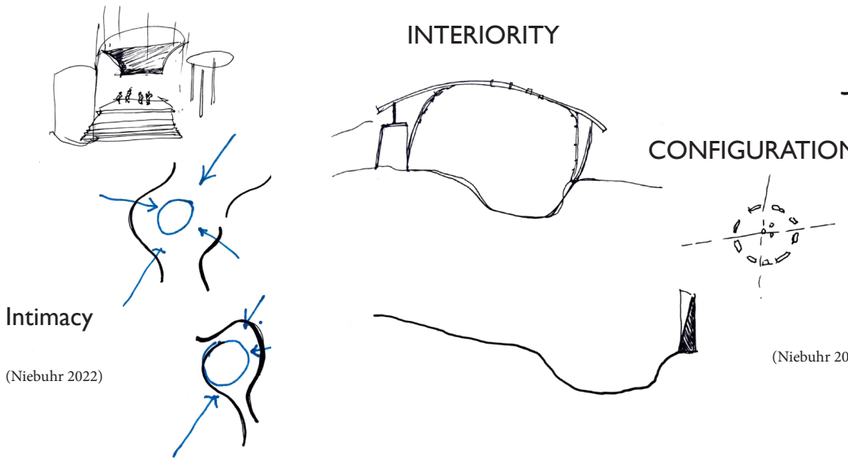




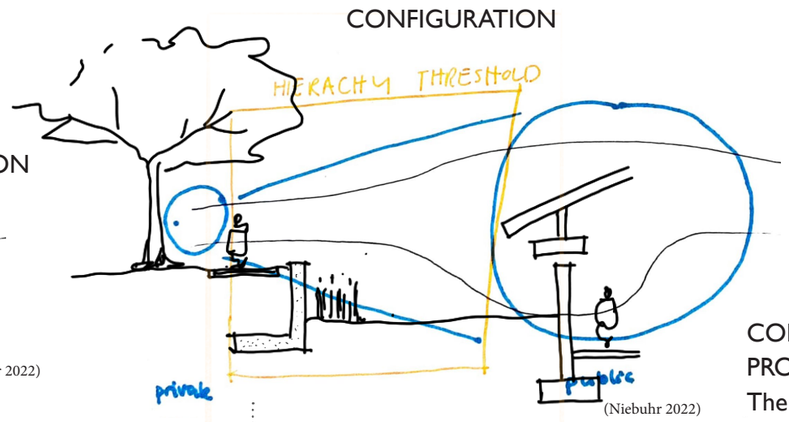
(Niebuhr 2022)

DESIGN INTENT

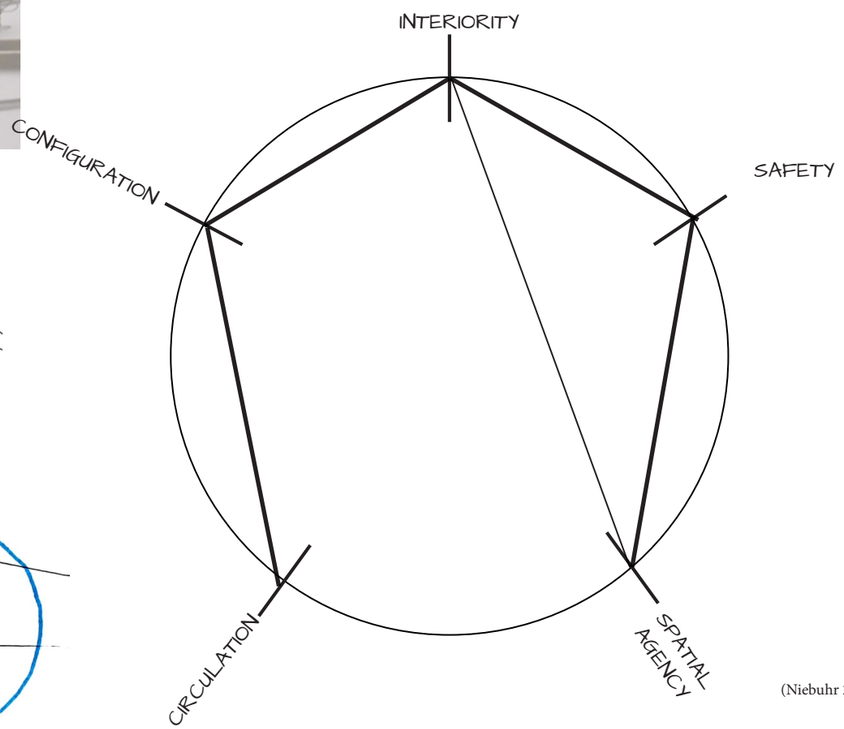
The design provides a space in which stories can be shared in various ways to recreate the significance of the space and the significance of self. The main aim of the design is therefore to use design to reconnect the user to its environment (Visser 2010).



(Niebuhr 2022)



(Niebuhr 2022)



(Niebuhr 2022)

CONCEPT AND DESIGN

PROJECT SUMMARY

The project is situated at the Tswaing Crater Nature reserve, and it attempts to reconnect the user to its environment by recognizing the significance of the place by creating meaning to the Tswaing Crater by establishing meaning for users by making the nature reserve meaningful to them (Visser 2010).

REFLECTION AND KEY INSIGHTS

To create meaning and to promote well-being through using storytelling as a medium to create a space, a variety of spaces should be created, and a level of agency should be provided in order for the user to establish and resonate and establish an own association to the place. Furthermore, the project shows that it is important to define private and public spaces in order to create a variety of expressions so that the space provides for the collective storytelling but also for the individual. Therefore, interiority and intimacy become important where spaces are defined by a certain hierarchy and configuration in order to promote well-being through the configuration and the circulation between these spaces (Visser 2010).



(Visser 2010)



(Visser 2010)

Figure 2.10_ Precedent 3 (Visser 2010)

THE SCOTTISH STORYTELLING CENTER
Malcom Fraser Architects
(Archdaily 2021)

Building type: Storytelling center/ Library
Architect: Malcolm Fraser Architects
Year: 2006
Location: 43-45 High St, Edinburgh, United Kingdom

DESIGN INTENT

The design aims to be adaptable and multi-functional in order to allow for the appropriation of different programmes such as a story theatre including a court, a restaurant, offices, and a library for the storytelling forum (Archdaily 2021).





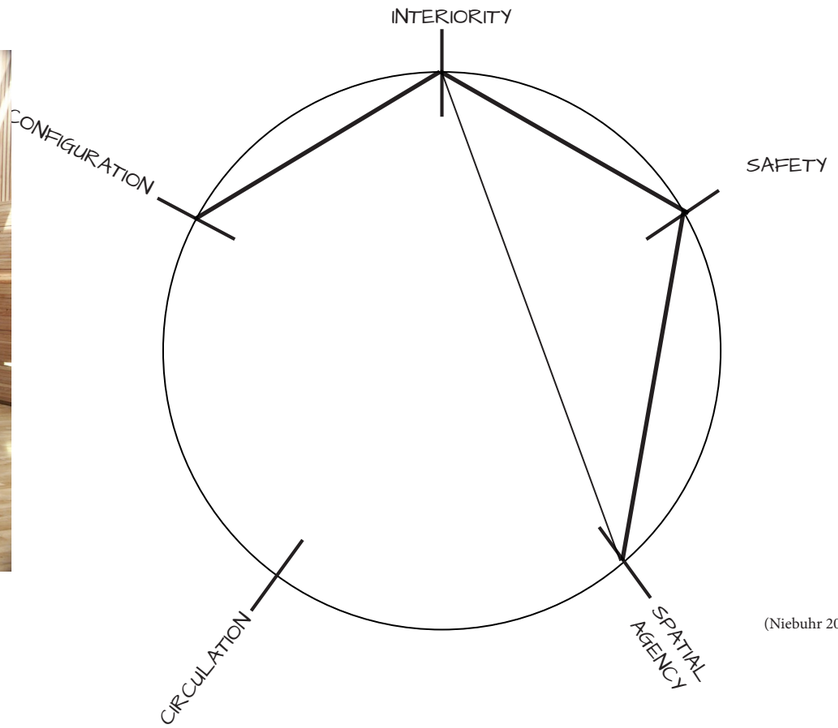
Figure 2.11_ Precedent 4 (Archdaily 2021)





SHARING KNOWLEDGE

CREATING WELL-BEING FOR ADOLESCENTS
THROUGH STORYTELLING



(Niebuhr 2022)

CONCEPT AND DESIGN

PROJECT SUMMARY

The project was created in order to create storytelling, place, and building workshops. Furthermore, the aim of the project was to support the existing oral traditions of Scotland (Gaelic traditions). Furthermore, the aim of the project was to create a versatile space that would house the different programmes which would accommodate the different forms of storytelling. The Storytelling that is accommodated for is in forms of stories that are read by different authors and through display of visuals. The storytelling court being one of the spaces which was designed shows levels of appropriation through having an adaptable space that can house both the programme of displaying stories as well as performing (Archdaily 2021).

REFLECTION AND KEY INSIGHTS

By implementing a simple feature two programmes can be accommodated. Furthermore, what can be taken from this study is how storytelling can accommodate spatially through programmes such as a library, an exhibition space and a performance space as well as a public space such as a storytelling court or restaurant (Archdaily 2021).

LIBRARY OF MUYINGA
BC Architects
Information and all Figures Adapted from (Pintos 2012)

Building type: Community Library
Architect: BC Architects
Year: 2012
Location: Muyinga, Burundi

DESIGN INTENT
The design creates a community library that broadens the knowledge and skills of children and adolescents as well as other community members throughout the construction process and through the finished design product of a library. Therefore, the main design intent is to promote learning (Pintos 2012).



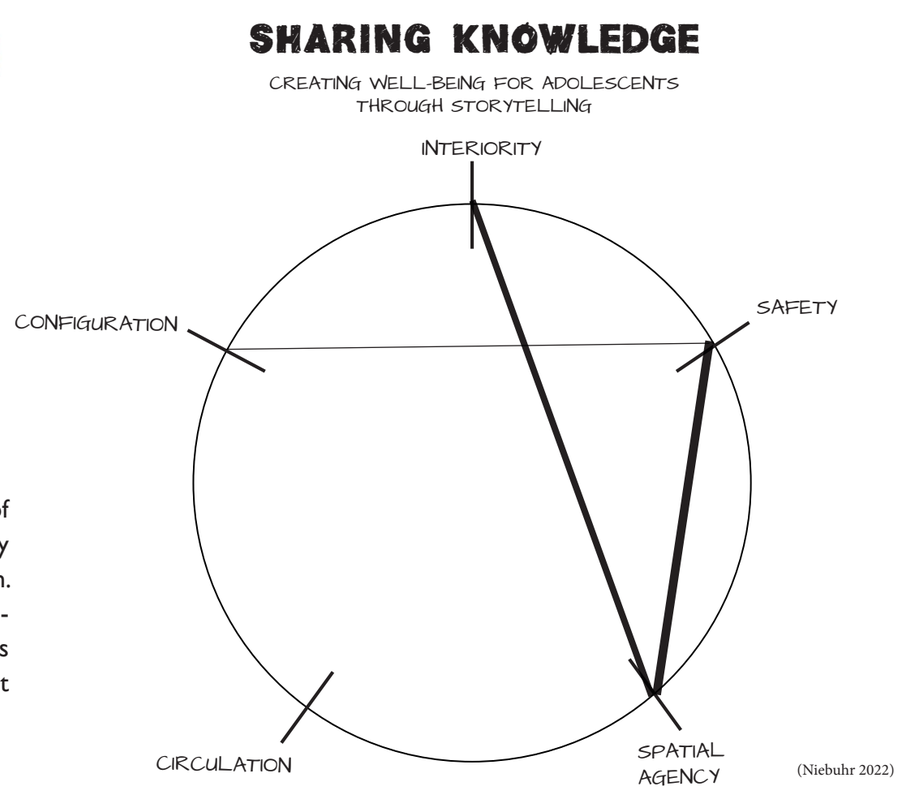




Figure 2.12_ Precedent 5 (Archdaily 2021)

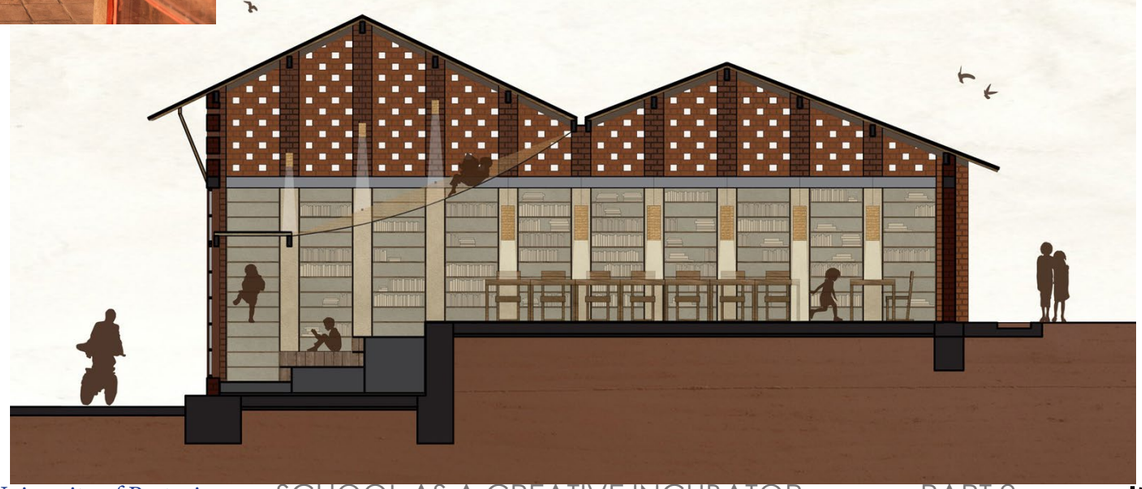


PROJECT SUMMARY
The library is the first library of Muyinga and it forms part of a school for deaf children. The library was built with mostly compressed earth blocks through a participatory approach. Before starting with the design a thorough analysis of vernacular architecture was done which led to providing insights into the form and the materials that were used in the project (Pintos 2012).



(Niebuhr 2022)

REFLECTION AND KEY INSIGHTS
When interpreting the projects through the principles, the project allows for agency by allowing the community to be part of the design and construction process. This further does create belonging. Additionally, the project is configured in such a way that there is surveillance and controlled access to provide a sense of safety. Although the project allows for agency and appropriation within the design process, the finished project although it has versatile spaces for seating and storage, does not allow for an extensive level of appropriation, however a lot of inspiration can be taken from the configuration of the library. The interior of the library is configured to link to the contextual vernacular spatial elements. Moreover, the library, therefore, is not set out like conventional libraries but is context-specific allowing for versatile seating, shelves and storage spaces (Pintos 2012).



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2.5.1 CONCLUSIONS DRAWN FROM THE PRECEDENT STUDY

As a result of the precedent study, the design principles were made tangible. It was found that in order to create a safer space permeability can be achieved by activating and terracing the boundaries. Furthermore, it was found that spatial agency can be created by providing a space that can function for multiple purposes and that allows for appropriation. Furthermore, it was found that to achieve safety circulation and configuration can be achieved through transparency and through providing an active route, connecting different nodes. Lastly, it was also found that interiority can be achieved by creating intimate spaces by providing agency and by considering lighting and comfort within the space.

By considering Figure 2.13 on the right it can be seen that in order to create a safer typology that allows for expression all of the principles that are drawn from the precedents need to function together.

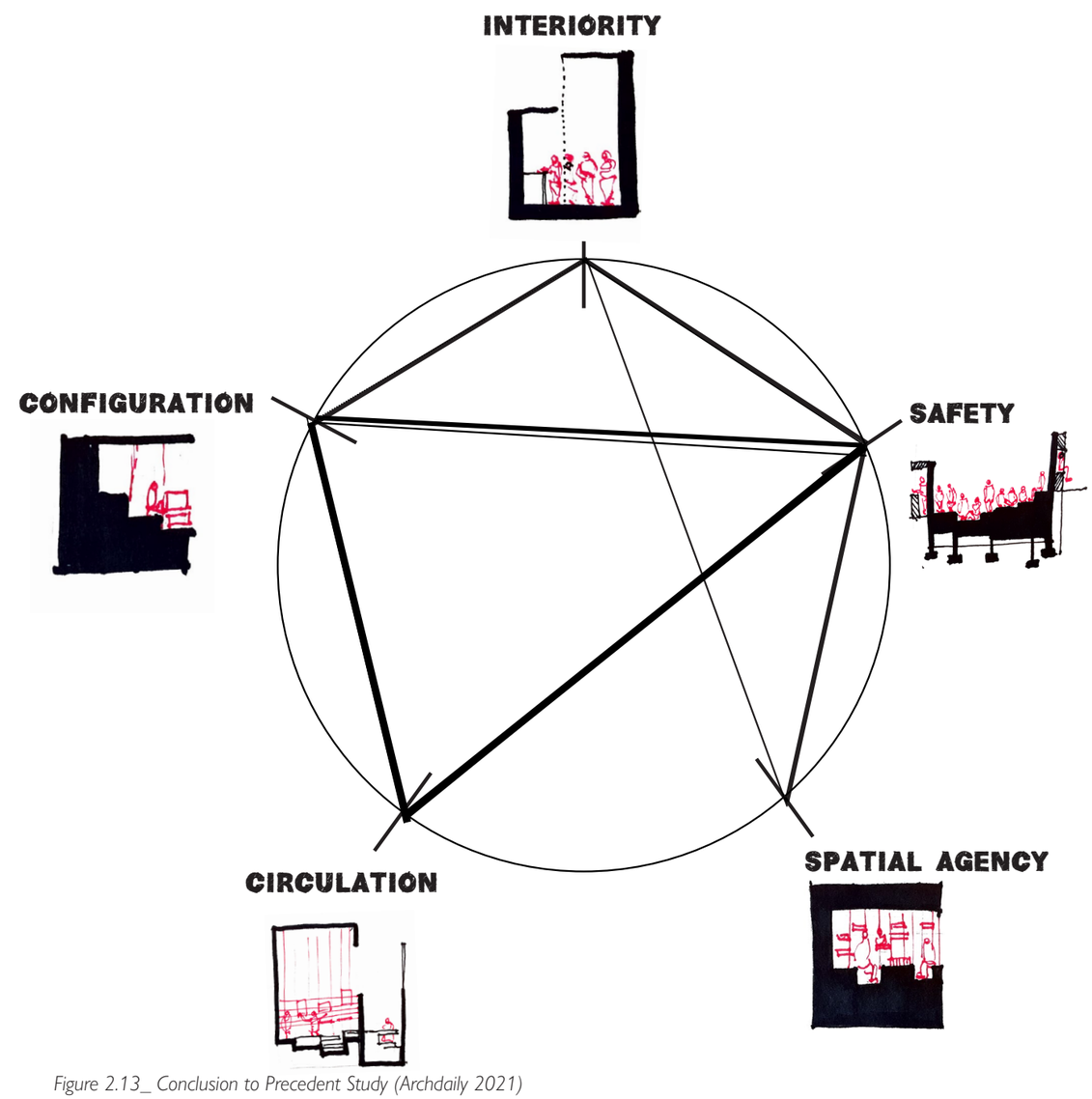


Figure 2.13_ Conclusion to Precedent Study (Archdaily 2021)

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2.6_PROGRAMME - THE CREATIVE INCUBATOR

Through the precedents study, it was found how the creative incubator can become tangible through the lens of the design principles. We can thus start defining the school as a creative incubator as a means of a place of storytelling, learning, and sharing knowledge.

The creative incubator becomes the school and is a space for the expression of emotion and feelings by individual and collective adolescents whilst still learning and building upon the current curriculum to allow for expression and learning in versatile ways. In addition, the aim is to make the school semi-public to promote constant activity as well as promote lifelong learning. Therefore, the school will go from a public to a private area where access is controlled. The connection to the public will mostly be curated for the performance, market and library space.

Through the contextual analysis and through understanding the adolescent's needs which in this case is for the adolescent to have a safer environment to learn in, to create belonging, and to ensure a promising future for all the learners at the secondary school, a spatial programme can be generated.

Through the collaboration with the occupational therapy students and through considering the informants, it was found that storytelling and the idea of sharing a story or knowledge with another individual creates a sense of belonging and identity. This would become tangible through the programme that provides spaces for storytelling forming part of the school. These programmes would be a library, a classroom, a performance area, and a display area.

Furthermore, if we observe the current curriculum that exists within the institutional as well as the co-curricular knowledge system of the school the current curriculum could cater to the need to foster storytelling within the school through the creation of a new typology of the school as a creative incubator. Through the analysis within the school through PAR and Co-design activities, it was found that interest in a means of expression is already occurring within the school through curricular subjects such as art, music, and other languages. Further co-curricular activities such as volleyball, soccer, and choir also show a means of expression and great interest from the learners as well as willingness to participate. These subjects and activities show a relation to the means of expression which is required for storytelling. Thus, the main programmatic aim would be to use the current routine and curriculum as a catalyst in relation to storytelling to create spaces in which these subjects could become a means to foster storytelling, to create belonging and identity. Through further investigation, it was found that the current spaces which are used for these subjects do not provide a safe space as well as for a space in which ideas, knowledge, and expressions can be shared with each other.

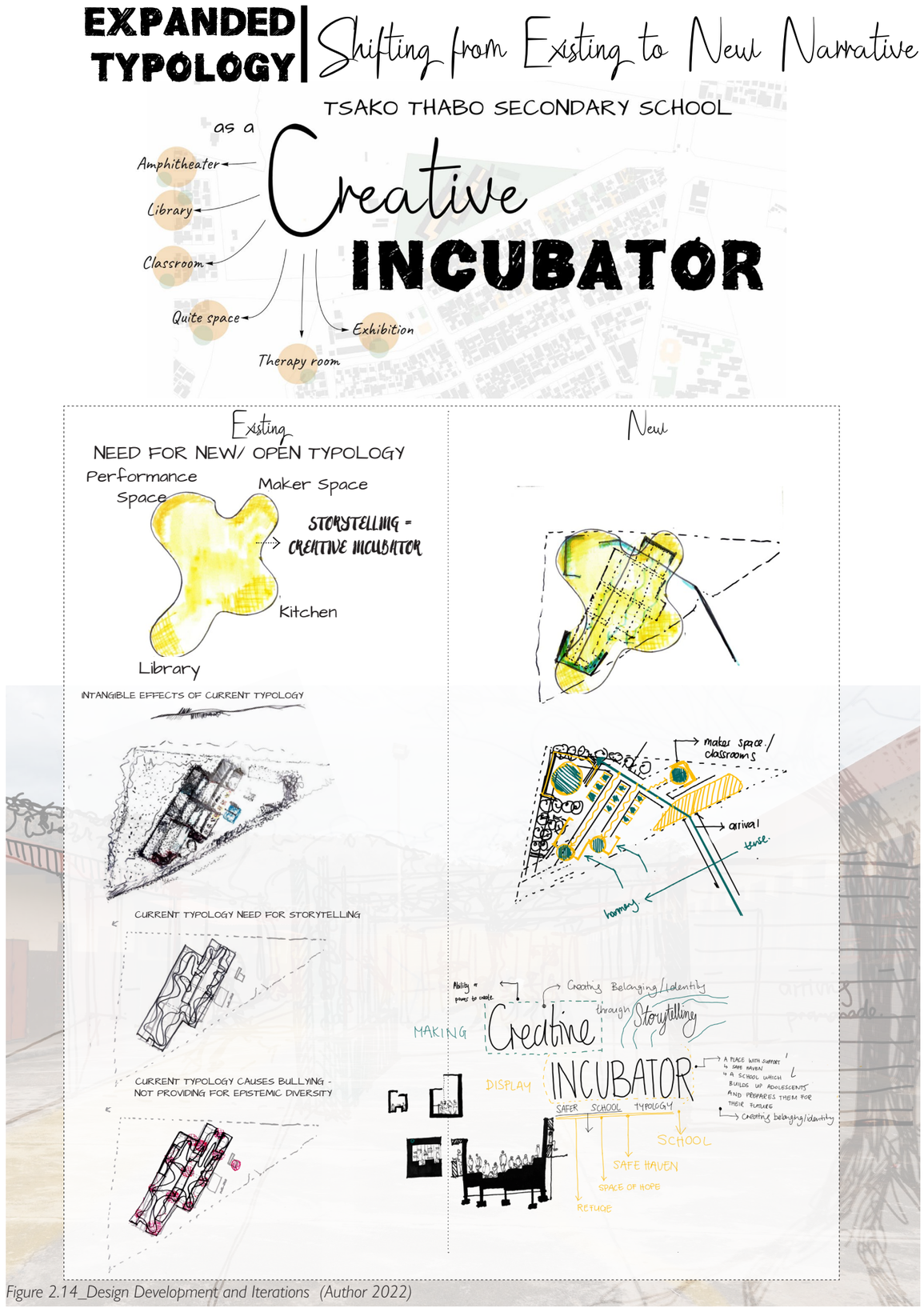


Figure 2.14_Design Development and Iterations (Author 2022)



Figure 2.15_Conceptual Maquettes and exploration of Design principles spatially (Author 2022)

ACCOMMODATION LIST

The Rooms and minimum sizes and requirements were created according to DBE Guidelines 2012 and SANS 10400. Please refer to the Addendum for the full accommodation list and the regulations.

- CREATIVE INCUBATOR ROUTE - 2920 m²
- CLASSROOM - 2389 m²
- PERFORMANCE SPACE - 343,26 m²
- LIBRARY - 279 m²
- ADMINISTRATIVE BLOCK - 497 m²

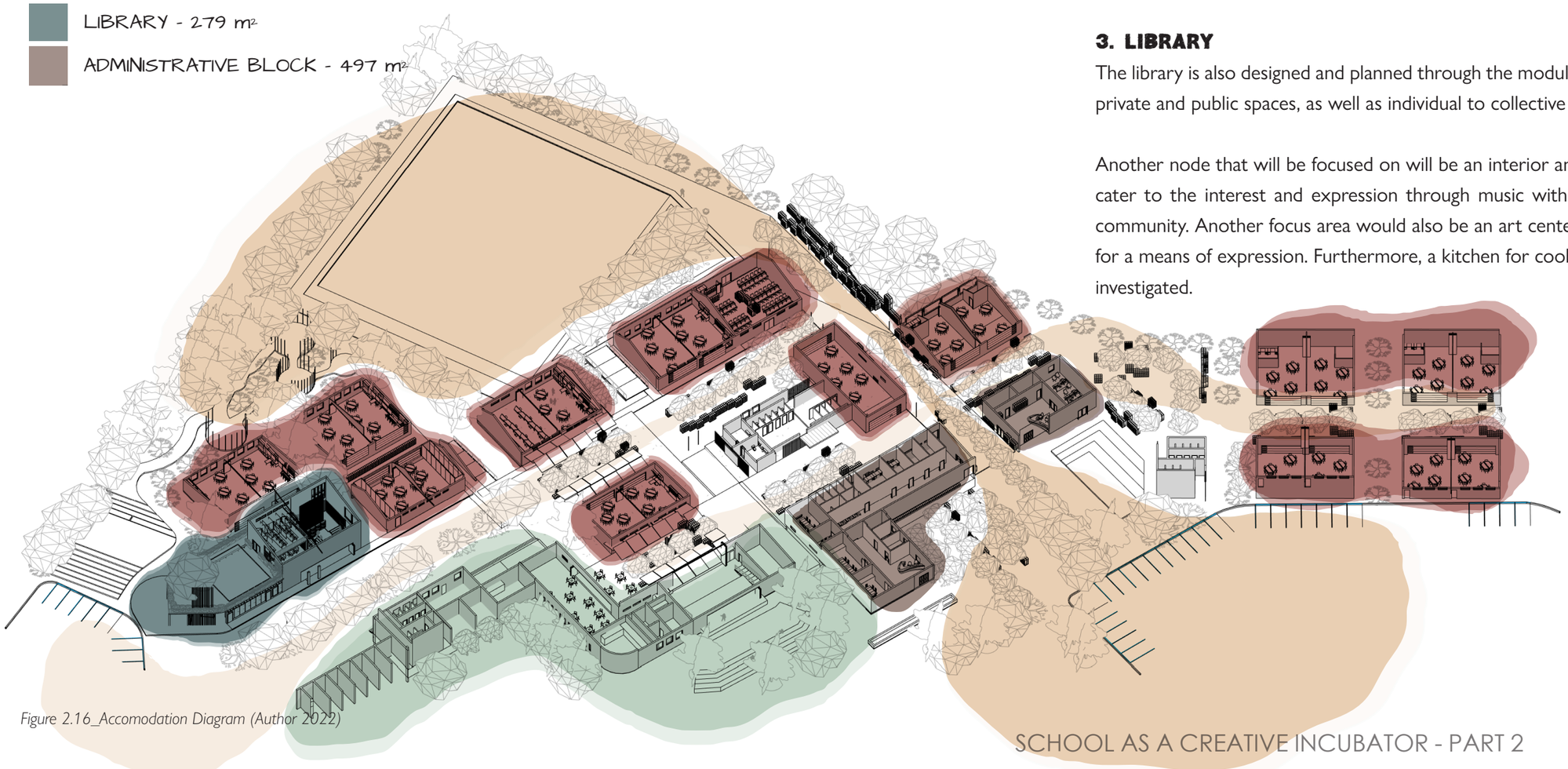


Figure 2.16_Accomodation Diagram (Author 2022)

To create a safer space in which the expression of emotions feelings and knowledge can be exchanged by the learners a creative incubator is proposed which becomes a space in which storytelling as a means of an underlying therapy method becomes part of the current curriculum through using it as a foundation and building on it through the design intervention (Wilcock 2006). By coordinating and reorganizing the current subjects into spatial scenarios additional programmes were established to expand the current curriculum.

The following programmes will be and will be investigated in more detail

1. CREATIVE INCUBATOR ROUTE - DISPLAY AREA/ MODULAR SYSTEM

The design is placed on a modular system of 300 mm x 300 mm. This module run through the whole site and defines certain areas. One of the areas are the existing courtyards which will be forming part of an incubator route. This route will also function as a multi-purpose display and seating area consisting of the modular unit which provides for areas of display and seating as well as storage within a garden.

2. CLASSROOM

To create a means of expression through appropriation and spatial agency a multi-purpose classroom providing for all curricular and co-curricular activities is proposed. The classroom is also designed according to the modular system.

3. LIBRARY

The library is also designed and planned through the modular system. A new typology provides for both private and public spaces, as well as individual to collective spaces.

Another node that will be focused on will be an interior and exterior performance space which could cater to the interest and expression through music within the school as well as sharing it with the community. Another focus area would also be an art center of maker space including exhibition space for a means of expression. Furthermore, a kitchen for cooking and collaborating with the community is investigated.

2.7_DESIGN DEVELOPMENT

If we consider the Creative Incubator and its different nodes divided into the different programs such as the performance space, the library, the informal classrooms, the maker spaces, and the kitchen we can analyse them together with the design principles. In this section the design is unpacked through a series of iterations thereafter through zooming into the final iteration, each of the nodes will be unpacked according to the principles through a matrix as is seen in figure 2. 14. By considering the floor plan we can see the configuration of the space.

Through creating an open school typology by creating a creative incubator on a larger scale the aim is to let the users arrive and then move from a tense and busy arrival into a calmer environment. The aim is thus for the corridor to act as a funnel to lead to the different nodes of the creative incubator. This can be seen in Figure 2.17.



Figure 2.17_Making the Programme Spatial (Author 2022)

2.7.1_ DESIGN DEVELOPMENT AND ITERATIONS OF THE CREATIVE INCUBATOR

The design principles and maquette explorations were used as a foundation for the development of the design iterations as can be seen in Figure 2.22 . Throughout this process, the principles were translated into the context into a design.

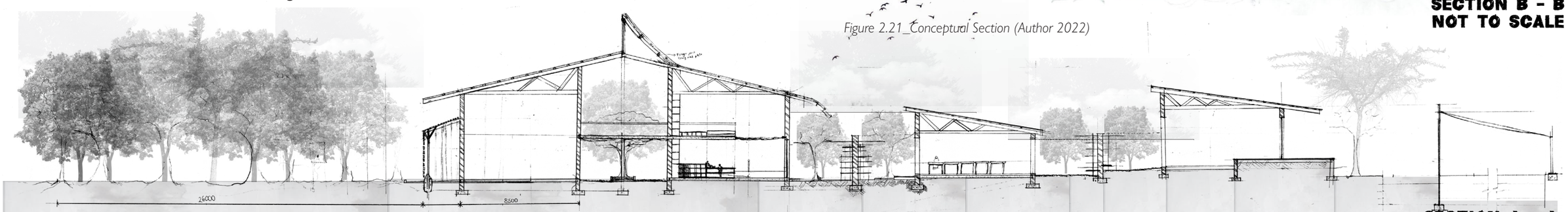


Figure 2.18_Conceptual section (Author 2022)

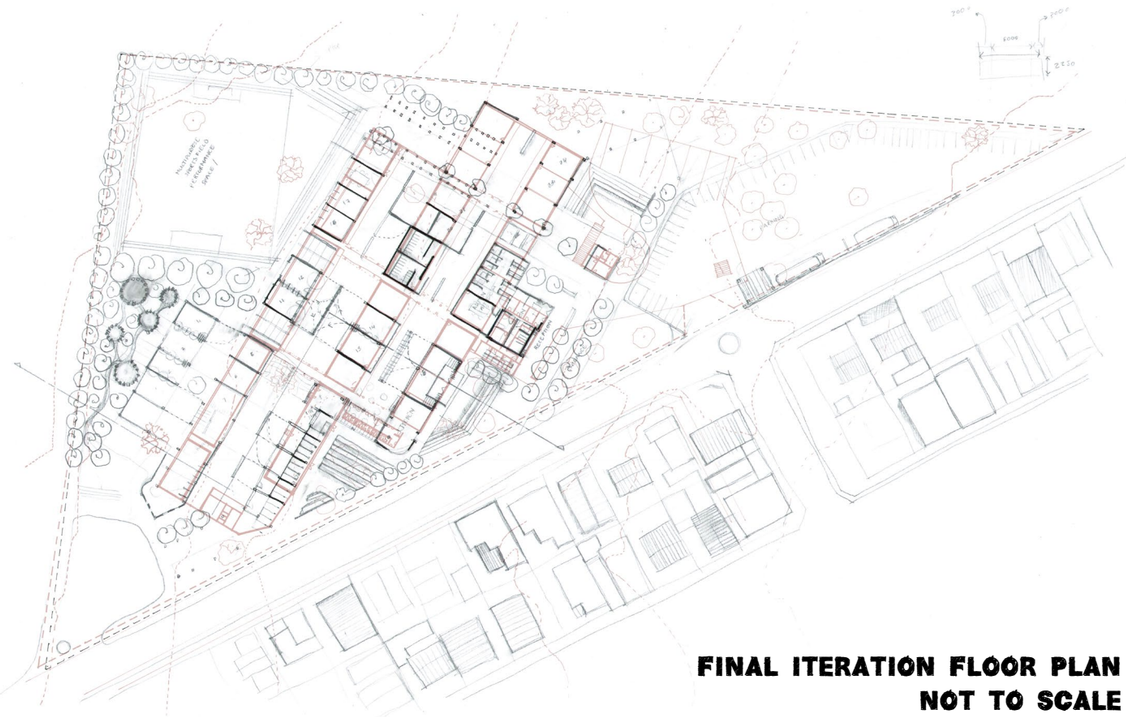


Figure 2.19_Initial Floor plan overlayed onto existing floor plan (Author 2022)

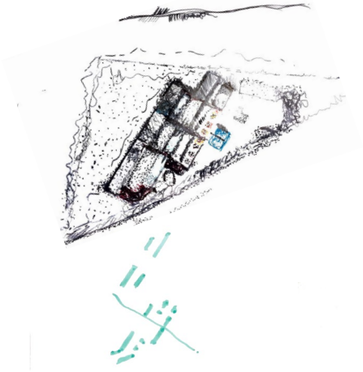


Figure 2. 20_Conceptual Section (Author 2022)



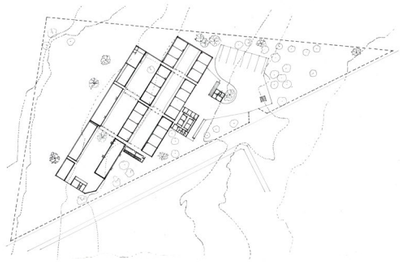
Figure 2.21_Conceptual Section (Author 2022)

PRINCIPLE EXPLORATIONS

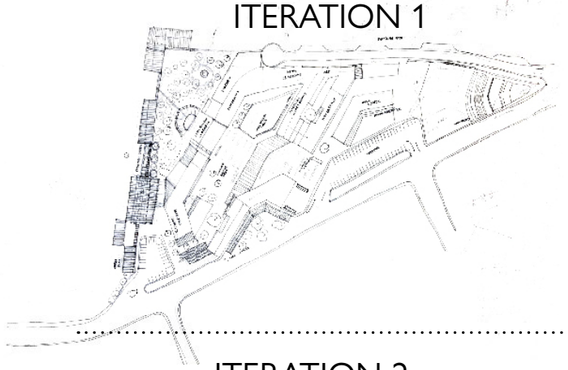


LAYOUT EXPLORATIONS

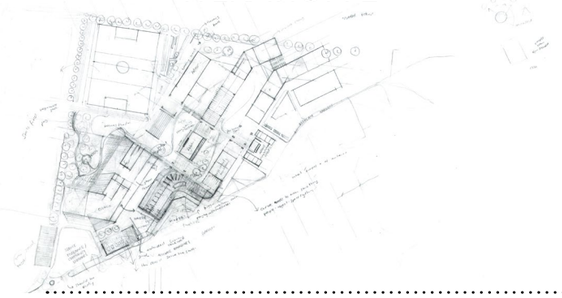
EXISTING FLOOR PLAN



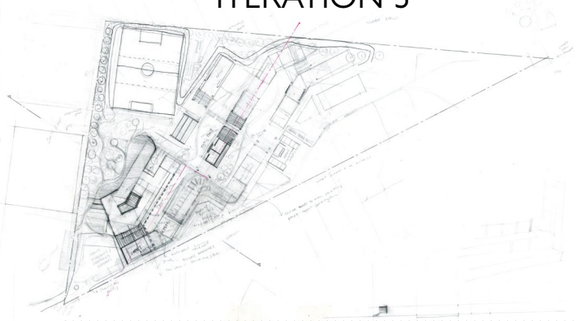
ITERATION 1



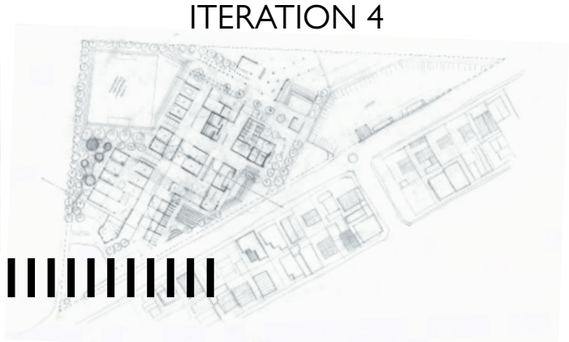
ITERATION 2



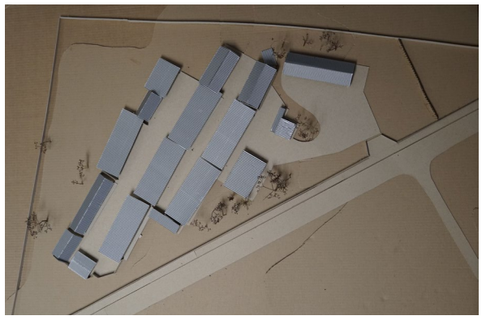
ITERATION 3



ITERATION 4



MAQUETTE EXPLORATIONS



ISSUES

1. NARROW CORRIDORS
2. BUILDINGS ACT AS BOUNDARIES
3. CURRENT CONFIGURATION CREATES BULLYING ZONES
4. NEED FOR EXPRESSION
5. DEAD ENDS ARE CREATED



REFLECTION

1. A LOT OF THE EXISTING IS DEMOLISHED
2. STILL CREATING DEAD ENDS
3. GRID NEEDS TO BE EXPLORED MORE
4. CONFIGURATION NEED TO BE MORE PROGRAMME SPECIFIC AND MORE SPECIFIC TO THE DESIGN PRINCIPLES



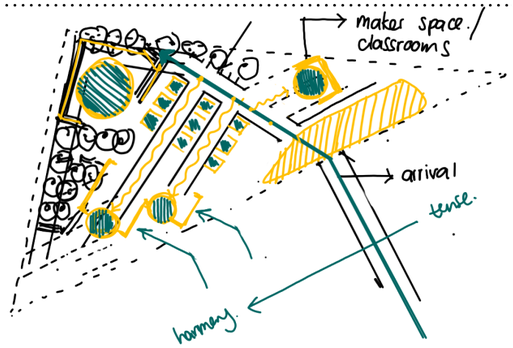
REFLECTION

1. ALEXANDER'S THEORY IS IMPLEMENTED - ACTIVATION OF BOUNDARIES AND TERRACING
2. BRINGING IN THE COMMUNITY
3. TRYING TO MAKE CORRIDORS MORE OPEN FOR SAFETY TO CREATE MORE TRANSPARENCY



REFLECTION

1. USING CIRCULATION AND TRYING TO CREATE MORE INTIMATE SPACES THAT LINK TO THE PROGRAMME
2. STILL NO CLEAR WAYFINIDING ROUTE
3. CONFIGURATION OF PROGRAMMES IS DEVELOPED
4. PLACEMENT OF NODES IS DEVELOPED BUT STILL NO CONNECTION BETWEEN NODES



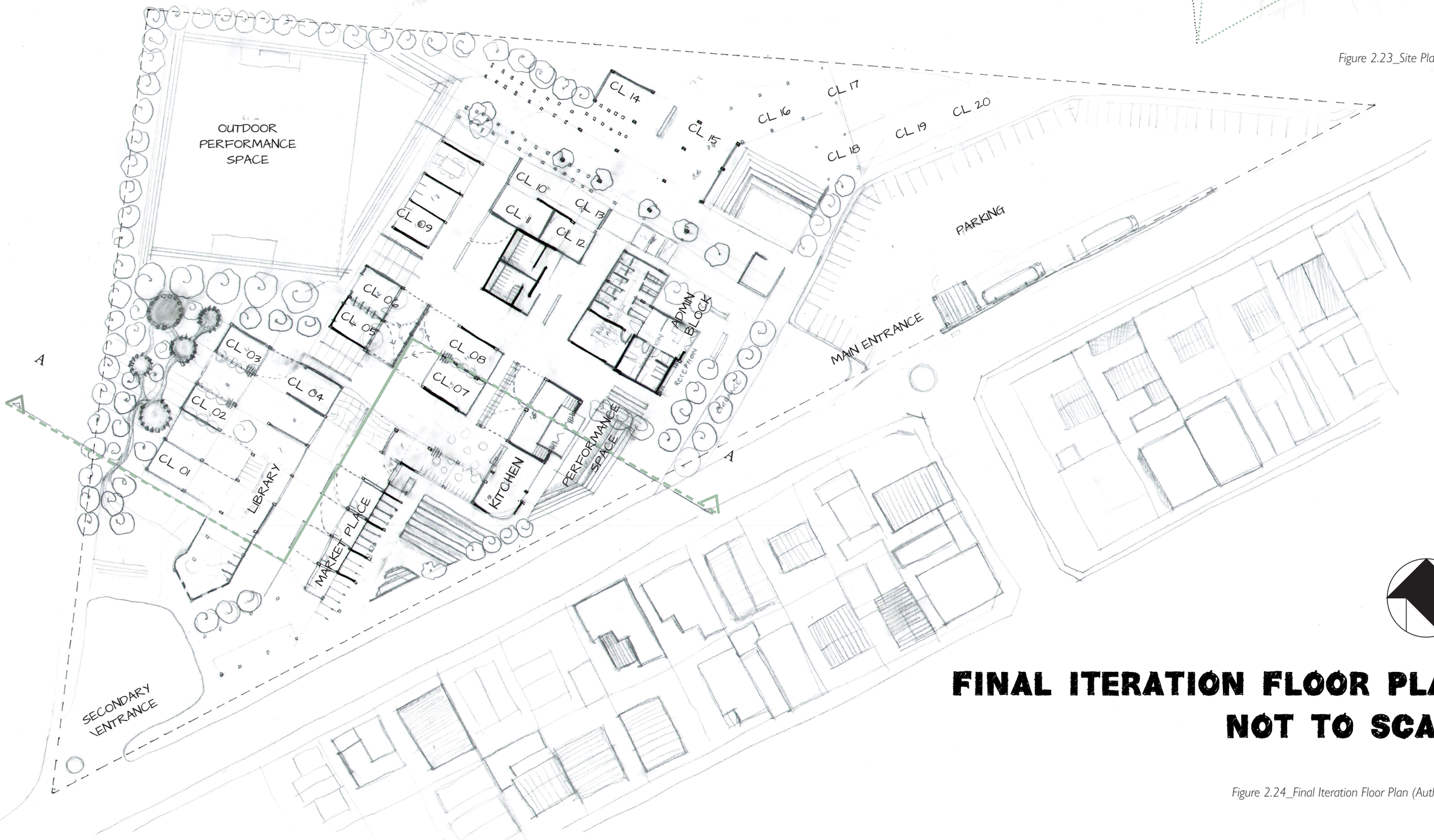
REFLECTION

1. CONCEPT IS MANIFESTED MORE.
2. CLEARER ROUTE IS IMPLEMENTED LINKING TO THE EXISTING CONTEXT ACTING AS A CONNECTING AGENT BETWEEN THE NODES.

Figure 2.22_Series of Iterations (Author 2022)



Figure 2.23_Site Plan (Author 2022)

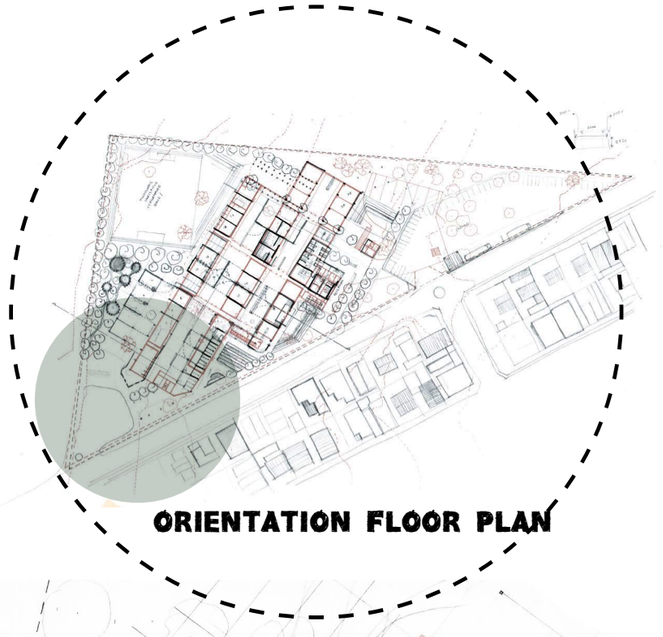


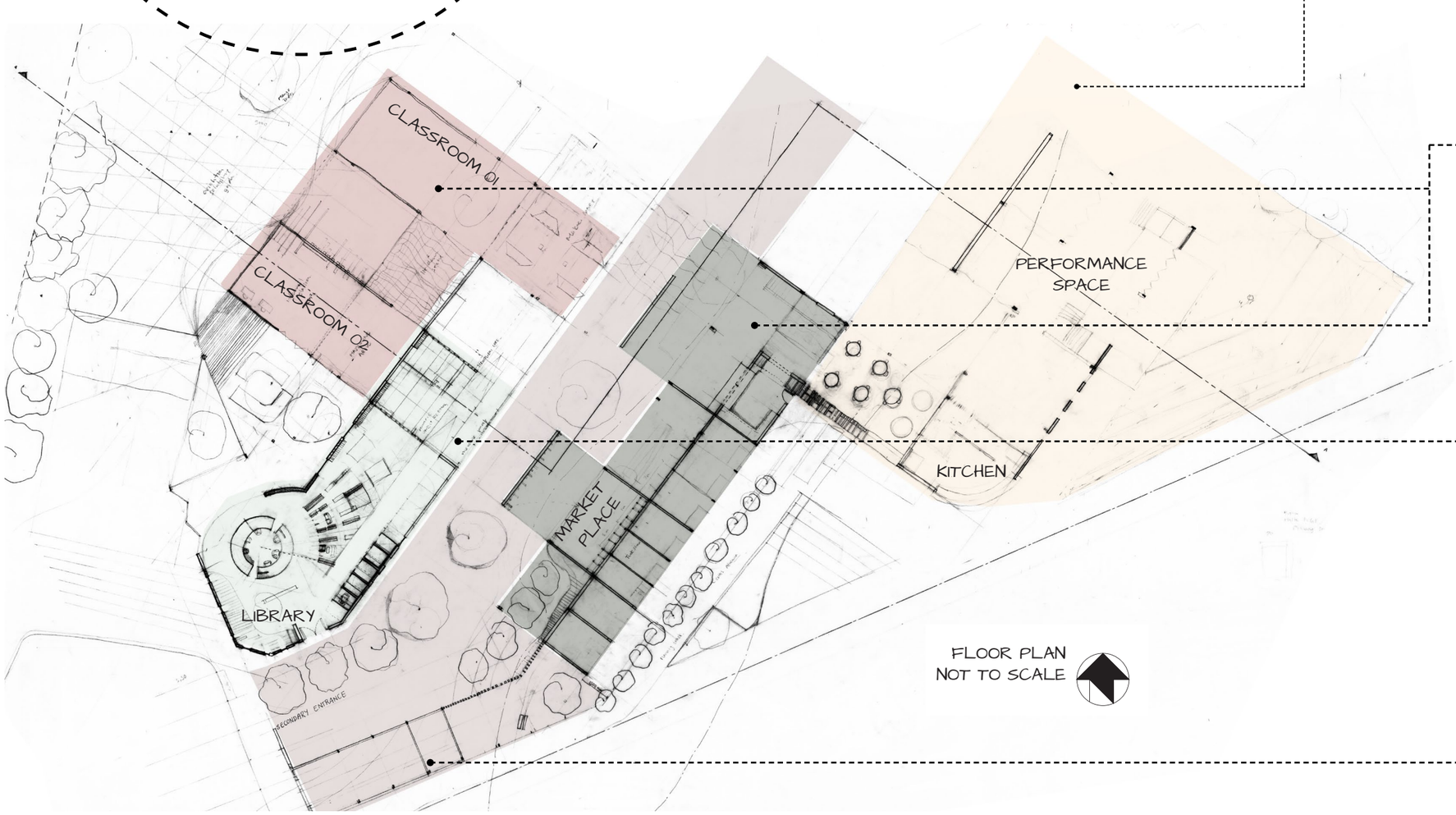
FINAL ITERATION FLOOR PLAN
NOT TO SCALE

Figure 2.24_Final Iteration Floor Plan (Author 2022)

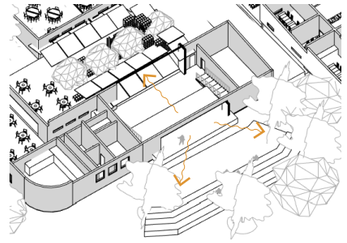
2.7.2_DESIGN DEVELOPMENT OF THE NODES

In order to view the design through the eyes of the adolescent, the illustrations on the next two pages unpack the school as a creative incubator by zooming into different nodes. The nodes are explained in relation to one another through a matrix unpacking the node with the principles.

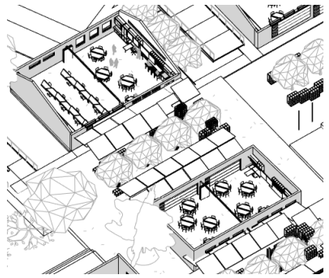




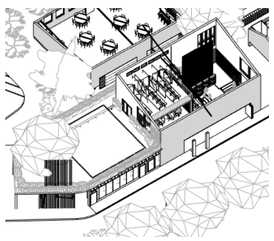
PERFORMANCE SPACE



CLASSROOM AND MAKER-SPACE



LIBRARY



DISPLAY AND SEATING UNIT



Figure 2.25_Floor Plan of Nodes (Author 2022)

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PERFORMANCE SPACE

-Storytelling through performing or singing
-Connection between community and school
-Stage can open up to community and to the school





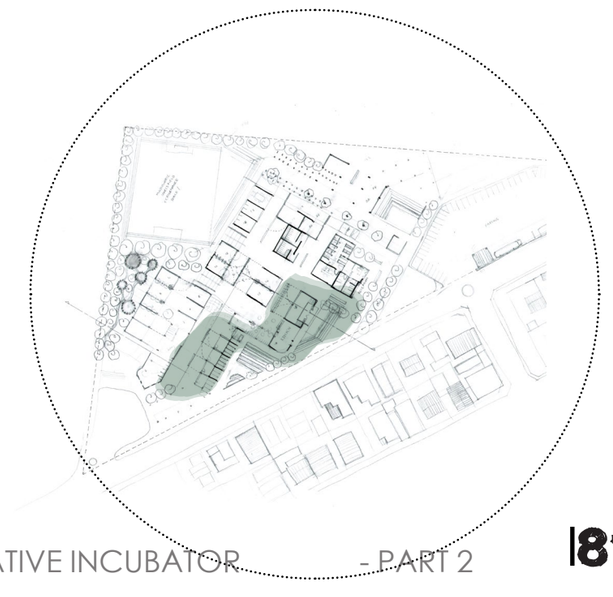


Figure 2.26_Node 1 - Performance space (Author 2022)

CLASSROOM AND MAKER-SPACE

-Consist of a modules of four which provides for multi-purpose
-Can be used for different seasons e.g. exam, teaching for individual work and for group work, as well as equipment based work.



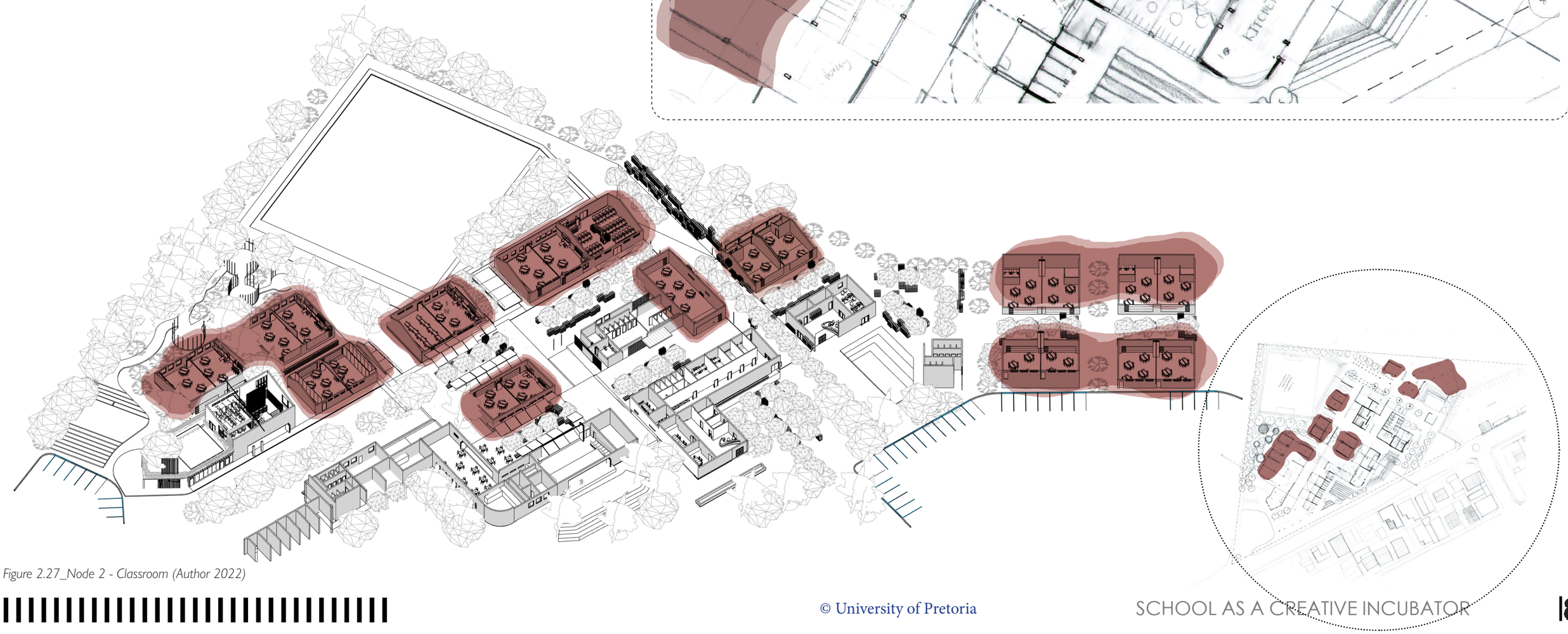


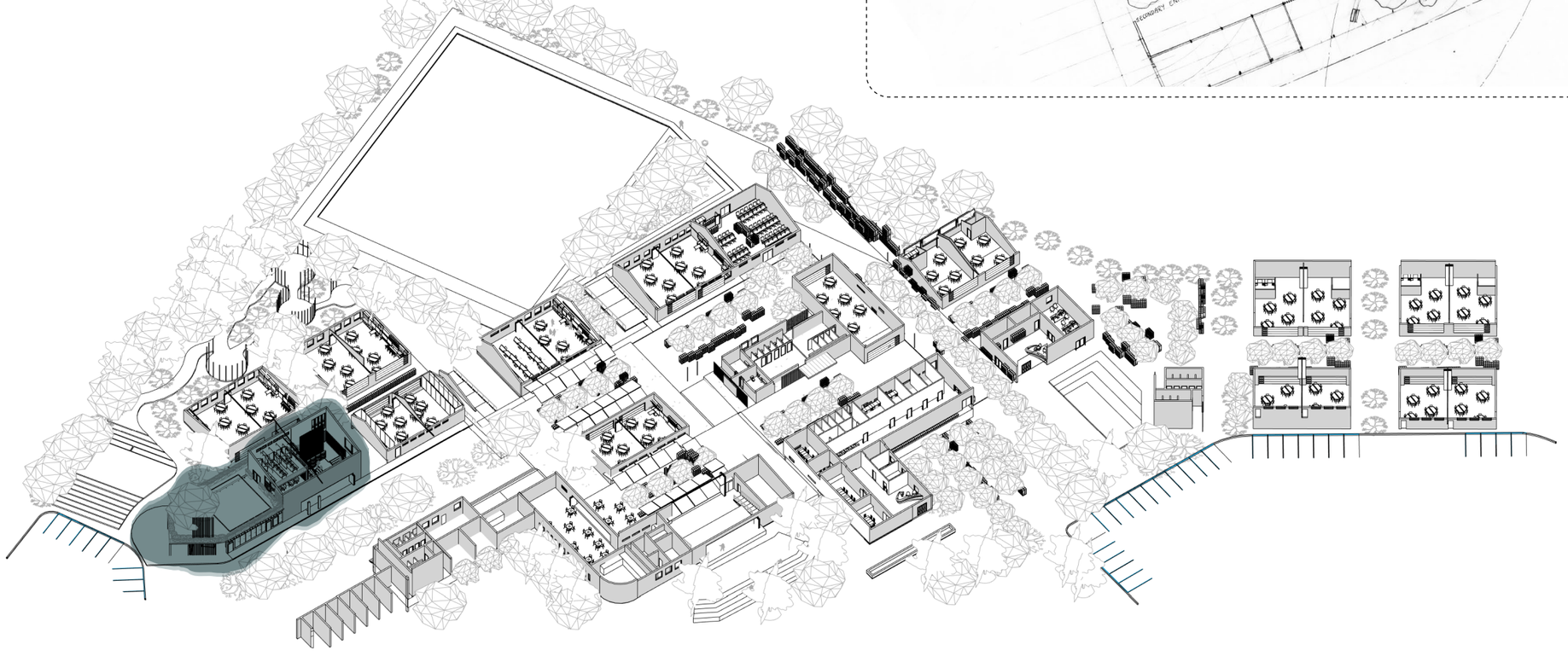
Figure 2.27_Node 2 - Classroom (Author 2022)

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LIBRARY

-Expanded typology of a library
-Not only individual based learning or working, but also collective working
-Contains multi-purpose furniture to allow for appropriation





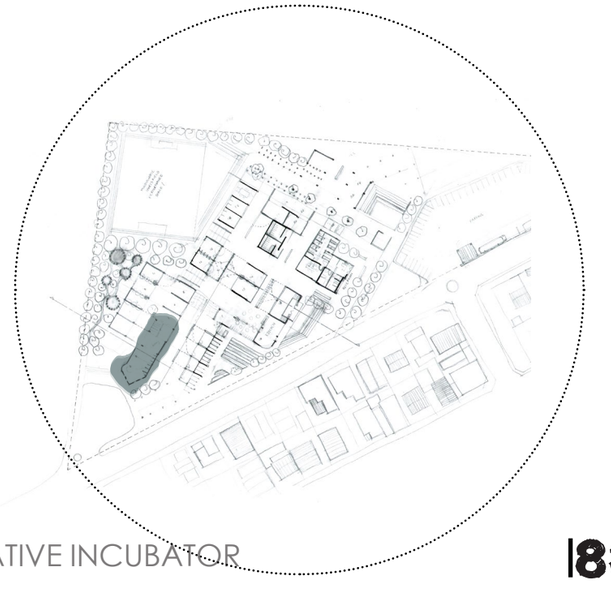


Figure 2.28_Node 3 - Library (Author 2022)

THE INCUBATOR ROUTE DISPLAY AND SEATING UNIT

-Consist of a unit of a modular system
that allows for seating and display areas
-Modules are created within the incubator route
and this module is carried through
into classroom and library furniture

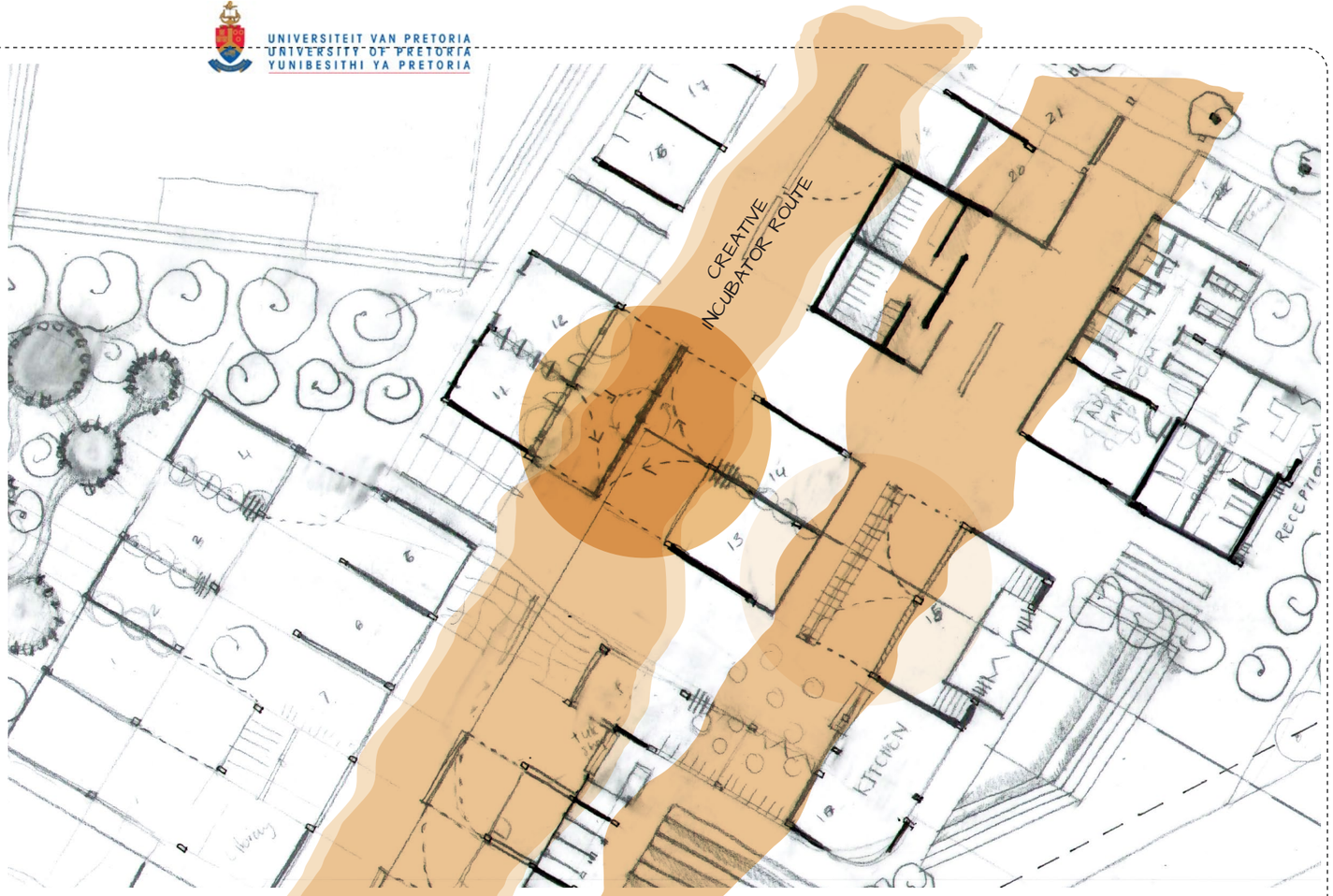






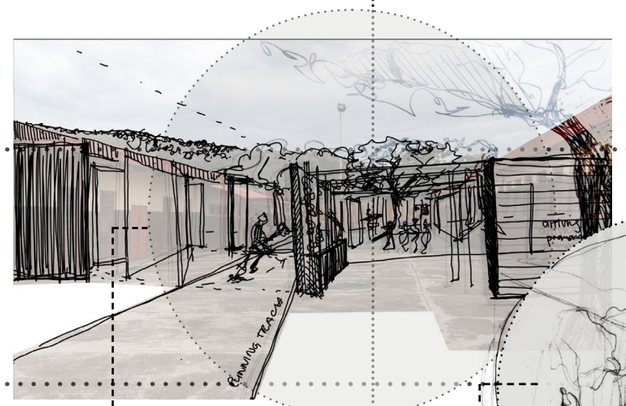
Figure 2.29_Node 3 - Library (Author 2022)

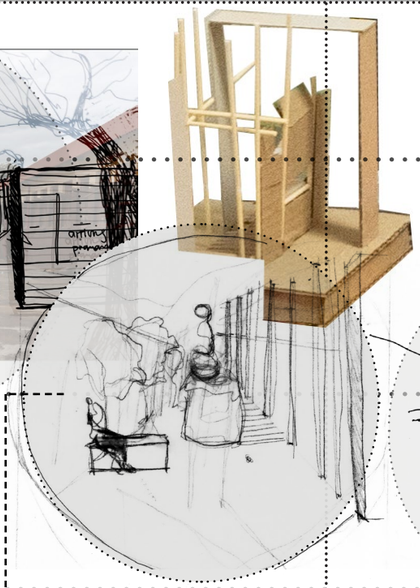
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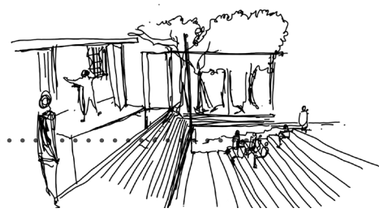
- PRINCIPLES TO CONTEXT MATRIX -

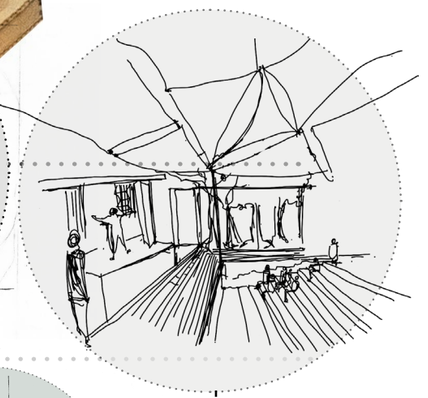
DESIGN STRATEGY	DESIGN CRITERIA	LIBRARY	CLASSROOM MAKER - SPACE	MODULAR DISPLAY AND SEATING	PERFORMANCE SPACE
			PROGRAMME /NODES		
SAFETY	-Visual Axis -Permeable -Boundaries -Legibility/Order				
SPATIAL AGENCY	-Modularity -Flexibility -Appropriation -Multi-purpose -Inclusion				
INTERIORITY	Intimacy Hierarchy Objective Well-being Acoustic Aesthetic Lighting Thermal Comfort				
CIRCULATION	Access Threshold In-between spaces Public to private Formal vs informal Education				
CONFIGURATION	Multi - Functional Hierarchy Configuration Terracing Epistemic Diversity				

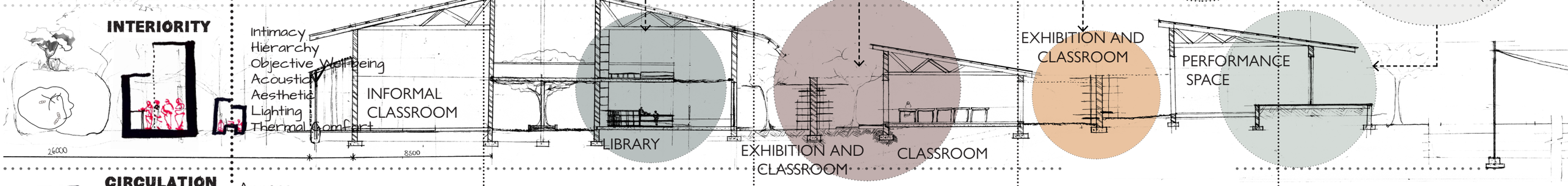


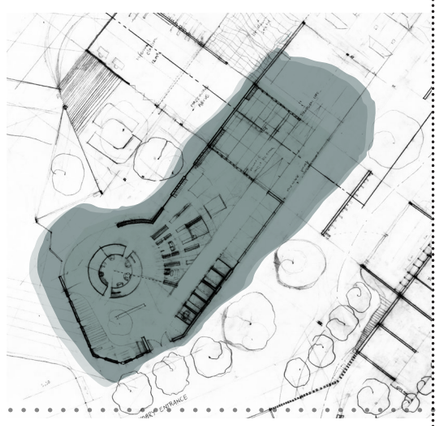














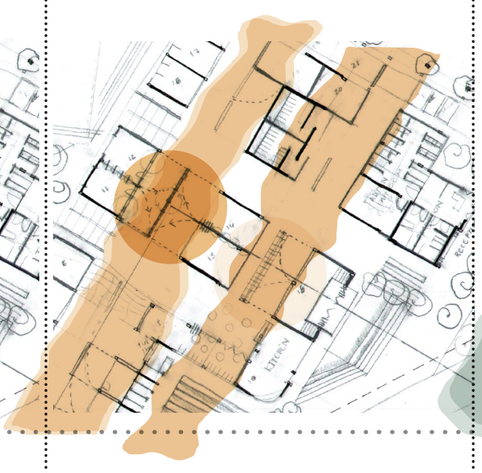


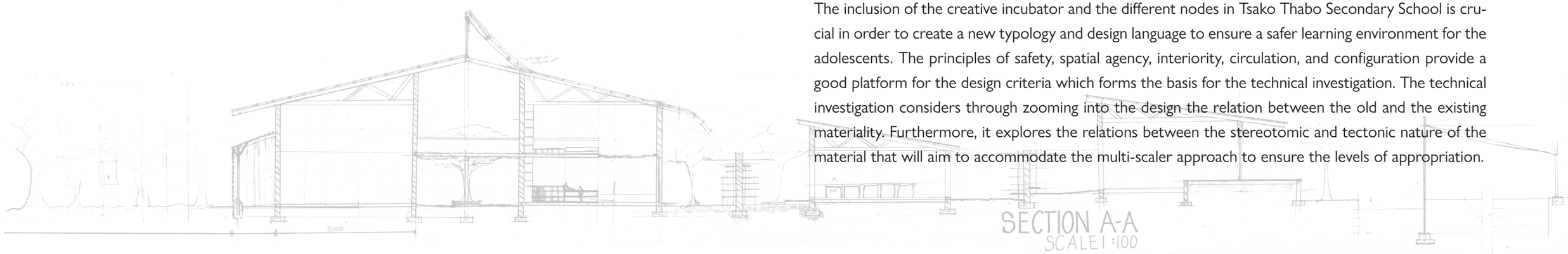


Figure 2.30_Principles to Context (Author 2022)



2.8_CONCLUSION

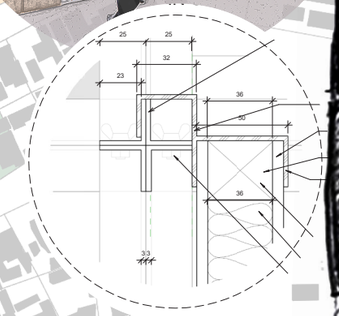
The inclusion of the creative incubator and the different nodes in Tsako Thabo Secondary School is crucial in order to create a new typology and design language to ensure a safer learning environment for the adolescents. The principles of safety, spatial agency, interiority, circulation, and configuration provide a good platform for the design criteria which forms the basis for the technical investigation. The technical investigation considers through zooming into the design the relation between the old and the existing materiality. Furthermore, it explores the relations between the stereotomic and tectonic nature of the material that will aim to accommodate the multi-scaler approach to ensure the levels of appropriation.



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PART 3

Design Synthesis

3.1 INTRODUCTION

In part 3 of this document, the design resolution is finalized, and a technical resolution is explained through a technical strategy which is discussed through the lens of a technical question guided. Technical principles guided the development through the lens of storytelling by focusing on materiality, appropriation, and safety which are derived from the design principles and design criteria.

The design resolution will be represented in such a way as to explain the new narrative which speaks to creating a safer school typology fostering identity and belonging for adolescents at Tsako Thabo Secondary School. The new narrative explaining the revised typology of a secondary school will be unpacked through a technical investigation. The technical issue will be investigated through a technical strategy which is tested through a methodological testing phase investigating the three programmatic nodes.

3.2 NEW NARRATIVE - DESIGN RESOLUTION

3.2.1 PROGRAMME - OVERALL DESIGN INTENTION

As previously discussed, it was found that through the site analysis through Bronfenbrenner's theory and the macro to microsystem affecting the individual it was found that there is a need for the adolescents of Tsako Thabo Secondary School to express themselves and there is a need for a platform and a space to allow them to voice their concerns and opinions. Predominantly it was found that there is a need for a safer school. This means that there is a need for a school that provides a school with surveillance and the intimacy of interiority. Furthermore, the programme of the school should also provide for a means of expression which also includes the configuration and circulation of the space to be configured and programmed in such a way as to provide a space that ultimately fosters identity and belonging, and safety through allowing a means of expression.

As introduced in part 2 of this document the intention of the project is to create a revised, expanded and **safer** school typology as a means to create a school as a creative incubator that allows the adolescent to express and share their knowledge in order to create a safer school for the adolescents which fosters identity and belonging through spaces and programmes that allow for storytelling to occur.

3.2.2 PROJECT PHASING

The new intervention creates an expanded school typology as the school is a creative incubator. The intention of this intervention is to provide a space in which different forms of storytelling takes place allowing the adolescent to express themselves and voice their concerns and voice anything that they are currently experiencing whether through an individual private setting or within a collective group of people. The school as a Creative incubator consist of nodes that form part of how storytelling is expressed within this school and how expressing feeling and concerns will take place which is based and taken on how the expression is currently conducted.

The programme of the creative incubator is thus a library, a classroom, an exhibition space, performances spaces as well as multi-functional courtyard spaces. Each one of these programmes is considered as nodes within the project which form part of a route that creates the new narrative of the design of the creative incubator.

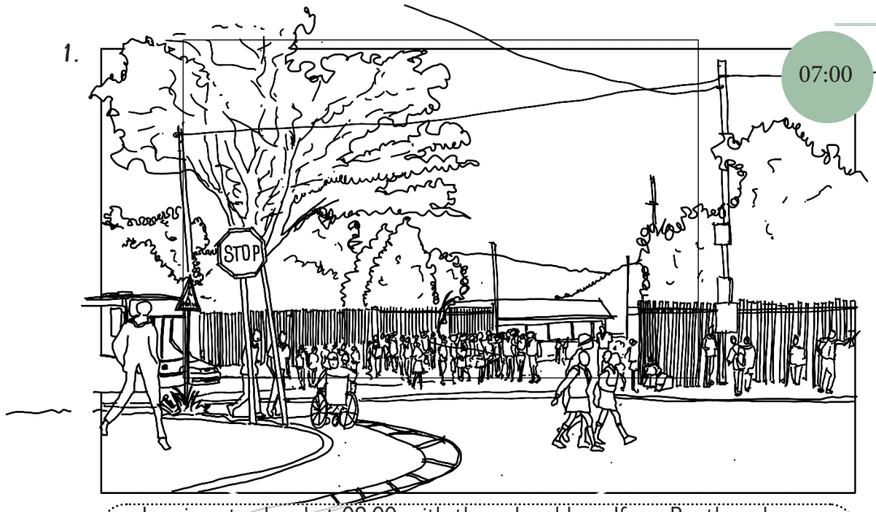
The new narrative thus provides spaces that allows the adolescent to arrive from a seemingly tense environment to the entrance through the configuration of the school and through the consideration of wayfinding through different floor finishes and signage from a tense and busy environment to an incubator route which funnels the adolescents into a calm environment which leads into courtyards as gardens in which exhibition and artworks are displayed. Furthermore, this incubator route further leads to the other nodes such as all the classrooms and the performance space. Lastly to the far west, the library provides a very calm environment. Therefore, the main overall intention of this configuration is to ultimately create a space in which adolescents can express themselves through **storytelling**. To provide a space in which the adolescent can tell their stories through expression they should be provided spatial agency for the adolescents to be able to express their stories freely through **appropriating** the space. This new narrative can be seen in Figure 3.1.

For the purpose of this dissertation, the nodes that will be resolved in detail will be the Library, two types of classrooms and the exhibition. As illustrated in Figures 3.2 and 3.3. These nodes are connected by the incubator route. However, if we zoom into the micro-scale the connection between materials and the details of how the materials work together provides a connection and common ground which also symbolizes the connection of sharing knowledge through storytelling. In a similar approach, the way the materials work together is meant to talk to how storytelling takes place through viewing the stereotomic vs tectonic nature of the project.

Reinterpreted Narrative

AKANI'S STORY
(Grade 10)

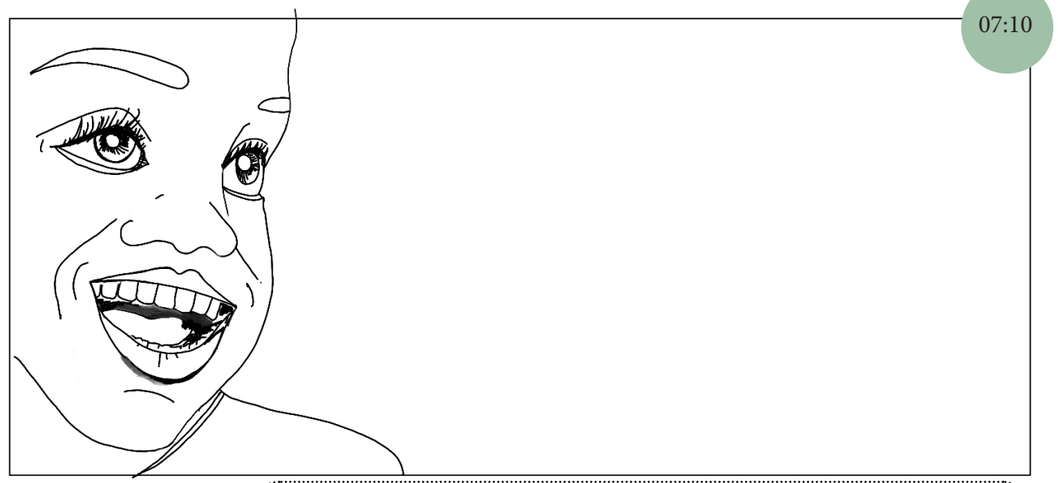
1.



07:00

I arrive at school at 08:00 with the school bus. If my Brother drops me of he can just drive through the drive through.

2.

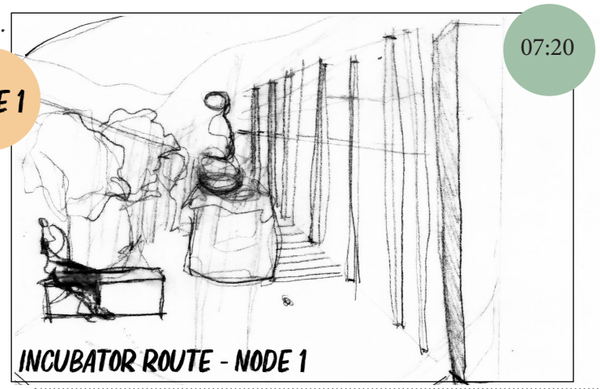


07:10

When i arrive I see my friends and I am looking forward to the day. I am looking forward to share stories through conversation.

3.

NODE 1

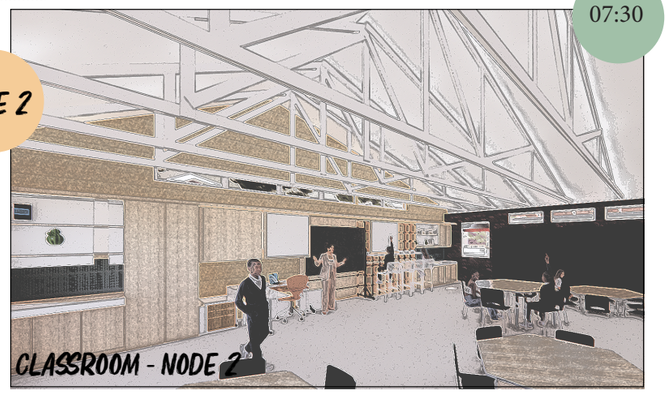


07:20

While we wait for the class to start we sit down on the benches by the artwork. Through looking at the artworks we start talking and discussing our and other peoples artworks.

4.

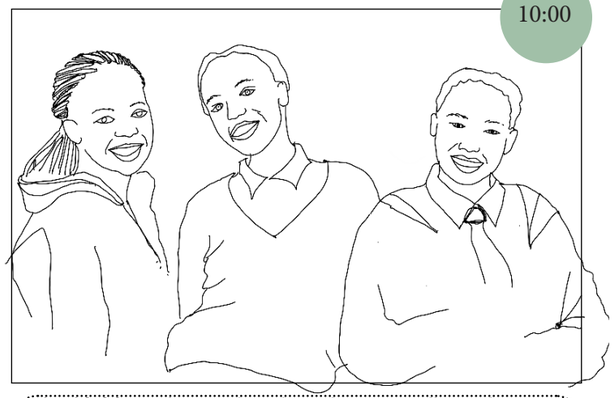
NODE 2



07:30

When the school bus rings we make our way to the class and have our first lesson. Where the teachers sometimes calls me to the front to slide the pin boards ready for the class.

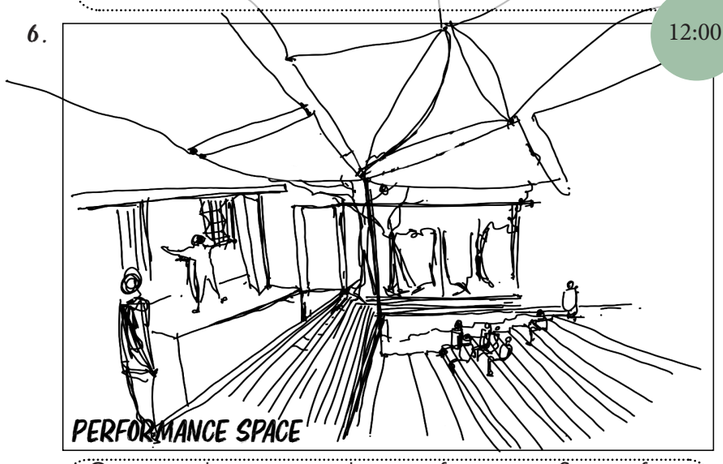
5.



10:00

At 10:00 we have a break and we are allowed to go down to the break space. I usually love to play soccer there.

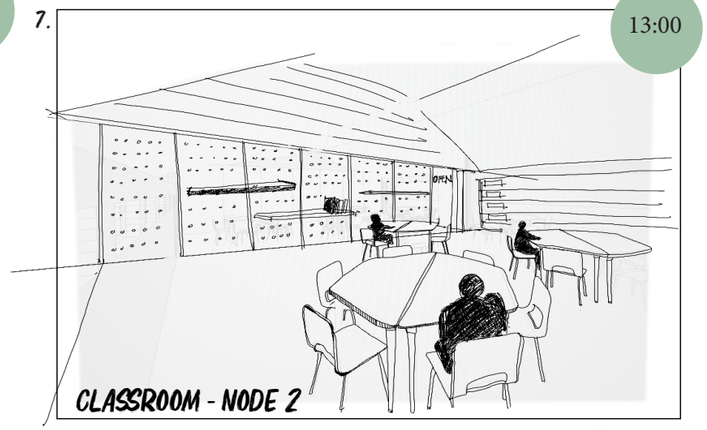
6.



12:00

On some days we even have performances. Some of my friends love music and they share it with us every Friday in the big break.

7.



13:00

After the big break it is time to go to class again. These classes are sometimes a little smaller because the afternoon we have more specialized subjects like art and science.

8.



14:00

When school is done and my brother comes to fetch me I like to go to the library to do my homework. Sometimes if me and my friends have to work on a group project we also like to do that here.

Figure 3.1_New Narrative (Author 2021)

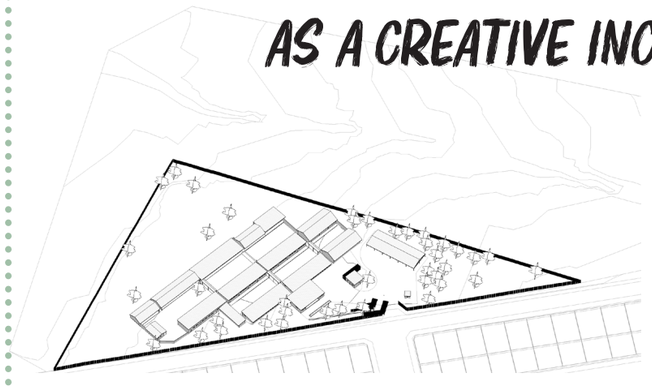
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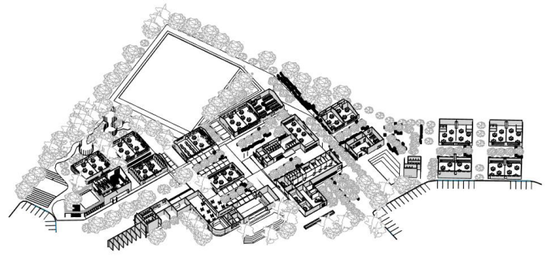
The project is also divided into phases according to the nodes. By referring to Figures 3.2 and 3.3 these phases can be seen. The design is placed on a modular system of 300 x 300 mm which is carried throughout the building into the furniture and the structure.

Phase 1 of the project would be to create the library. Secondly, phase 2 of the project would be to build and reconfigure the framework of the school which would include creating a new framework for the classrooms, which takes into consideration the design principles as discussed in part 2 of this document which are safety, spatial agency, interiority, circulation, and configuration. Phase 3 of the project would be to create the exhibition and seating unit which would add to the tectonic framework and allow the users to expand on the stereotomic framework through a tectonic framework upon the modular system.
Through this, it can thus be seen that there will be a stereotomic and tectonic framework was the stereotomic framework add to the existing stereotomic nature of the building and the tectonic adds lightweight materials providing agency for the users.

Tectonic materials are used for the reinterpreted narrative through the use of a modular system that creates the exhibition, the classroom, and the library space. The existing stereotomic materials and new materials are meant to act as a framework for the newly introduced materials that allow for appropriation.

TSAKO THABO SECONDARY SCHOOL
AS A CREATIVE INCUBATOR





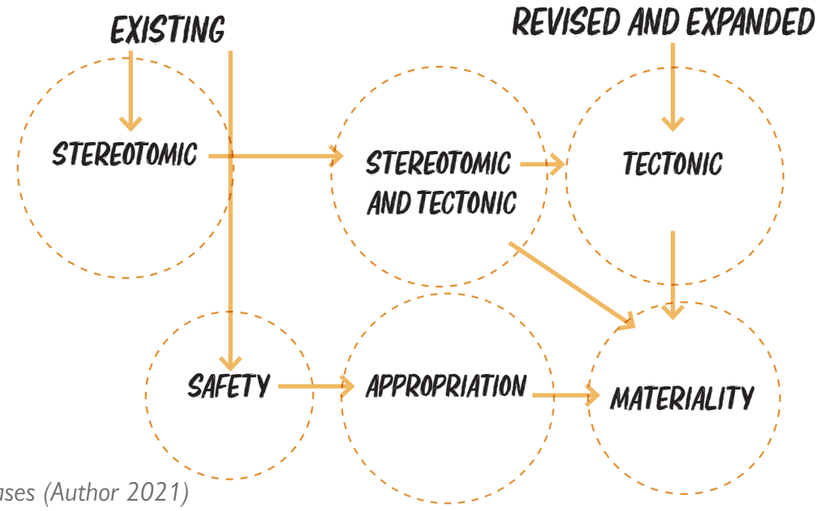
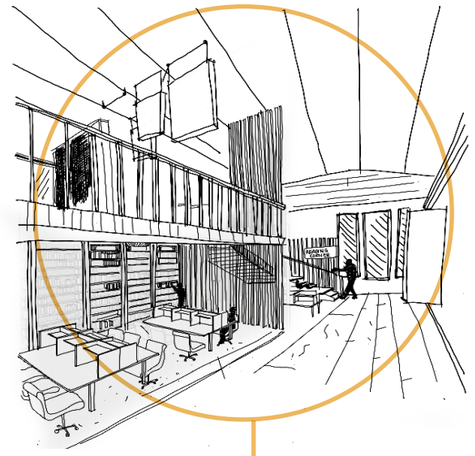


Figure 3 .2_Project Phases (Author 2021)

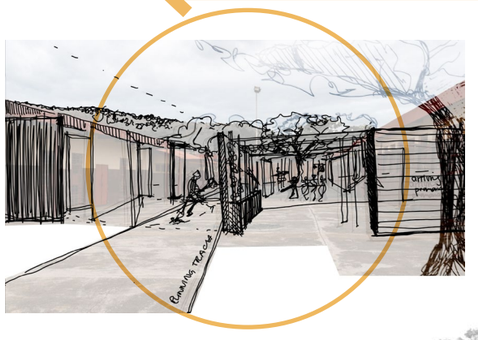
PHASE 1
LIBRARY



PHASE 2
CLASSROOMS AND FRAMEWORK



PHASED APPROACH





PHASE 3
EXHIBITION SPACE
IN-BETWEEN SPACES

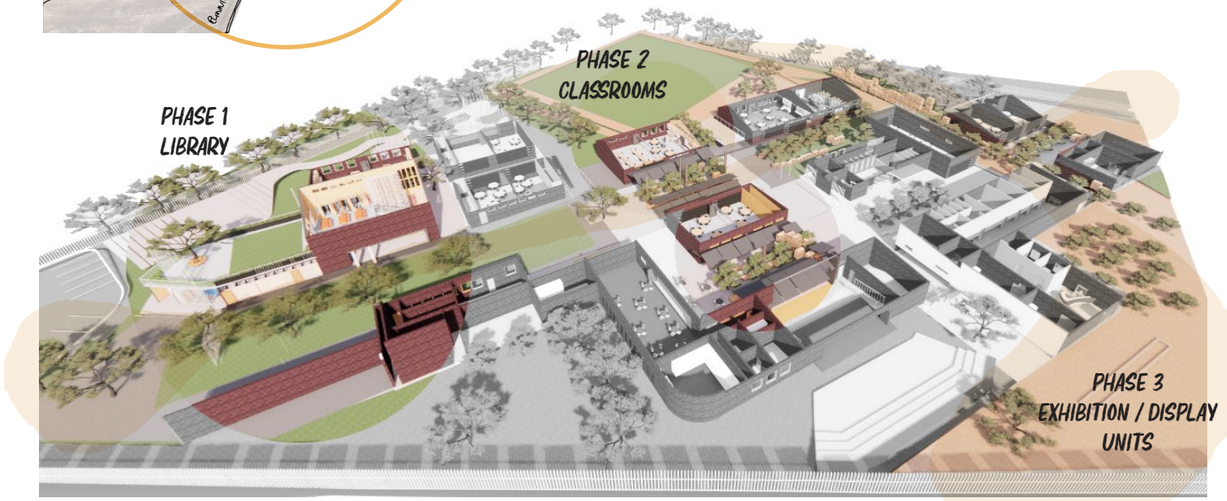


Figure 3 .3_Project Phases (Author 2021)

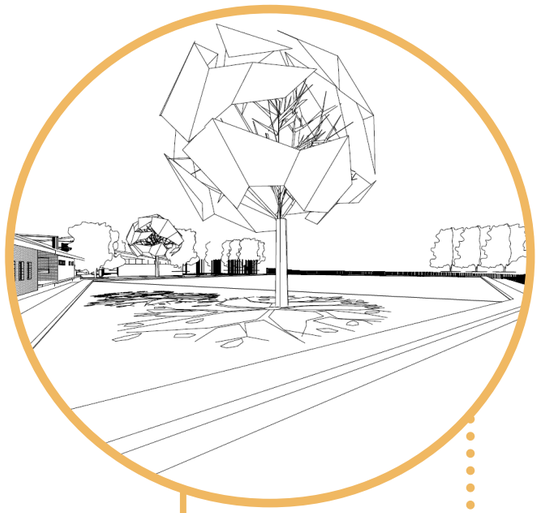
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Reinterpreted Narrative

SPATIAL DEVELOPMENT



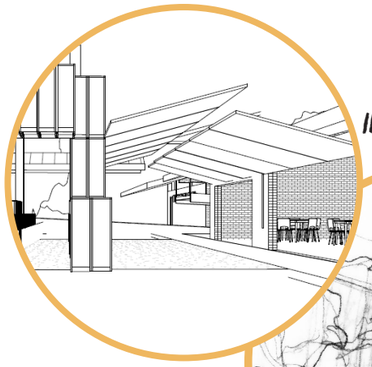
LIBRARY - INDIVIDUAL ZONE



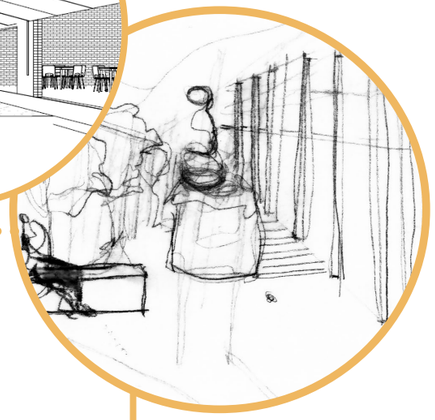
OUTDOOR BREAK-SPACE
AND PERFORMANCE SPACE



INCUBATOR ROUTE
EXHIBITION UNIT AND GARDEN
IN-BETWEEN CLASSROOMS IN
BREAK-SPACE



INCUBATOR ROUTE



INCUBATOR ROUTE
OUTDOOR EXHIBITION AND
SEATING UNIT
THROUGHOUT THE GARDEN-
CONNECTING NODES



LIBRARY COLLABORATIVE ZONE



ENTRANCE



CLASSROOM



PERFORMANCE SPACE



Figure 3.4_Diagram showing various Nodes within the school which forms part of the Creative Incubator (Author 2021)

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TECHNICAL
Investigation

3.3 TECHNICAL INVESTIGATION

The design and technical investigations are driven by a process of observation, research, experimentation, exploration, iteration and refinement as shown in parts 1 and 2. Methodological testing includes computer-aided drawings depicting an investigation in which different scenarios are explored and tested. Furthermore, the testing includes a material matrix as well as prototyping in which detailed connections are built. The methodological testing phase is guided by a technical strategy built upon technical principles which are derived from the design principles which were unpacked in part 2.

To answer the technical question, the technical principles were derived from the design criteria. The principles within the design criteria were summarized to form four principles that summarize the project to its core intention.

Storytelling and *safety*, as the main intention of the project, form the overarching themes of the project. The Design criteria were created through the design principles to achieve *safety* and *storytelling*. For the purpose of this study, these two themes will be unpacked through appropriation in order to foster identity and belonging (Louw &Louw 2014). To create a space for *appropriation, materiality* is explored.

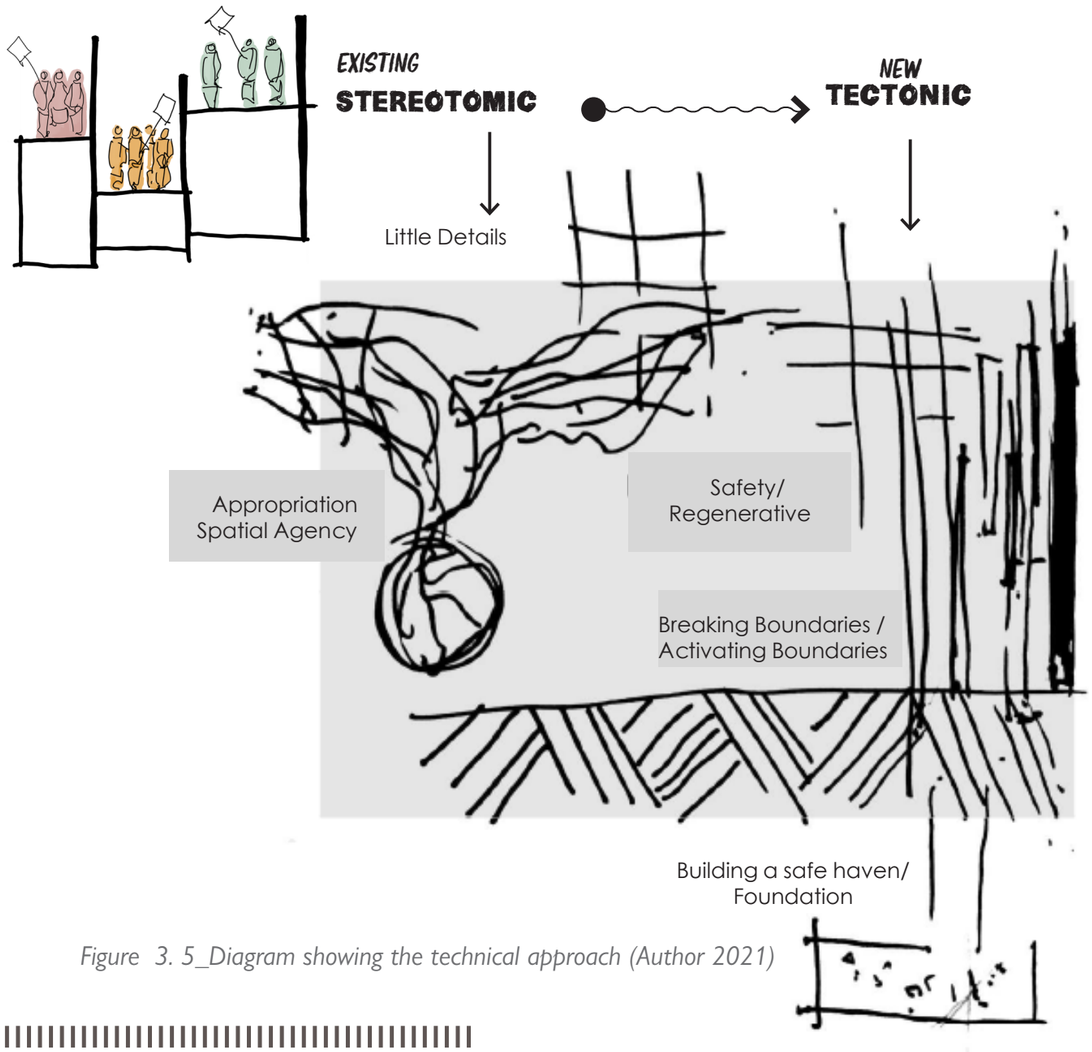


Figure 3. 5_Diagram showing the technical approach (Author 2021)

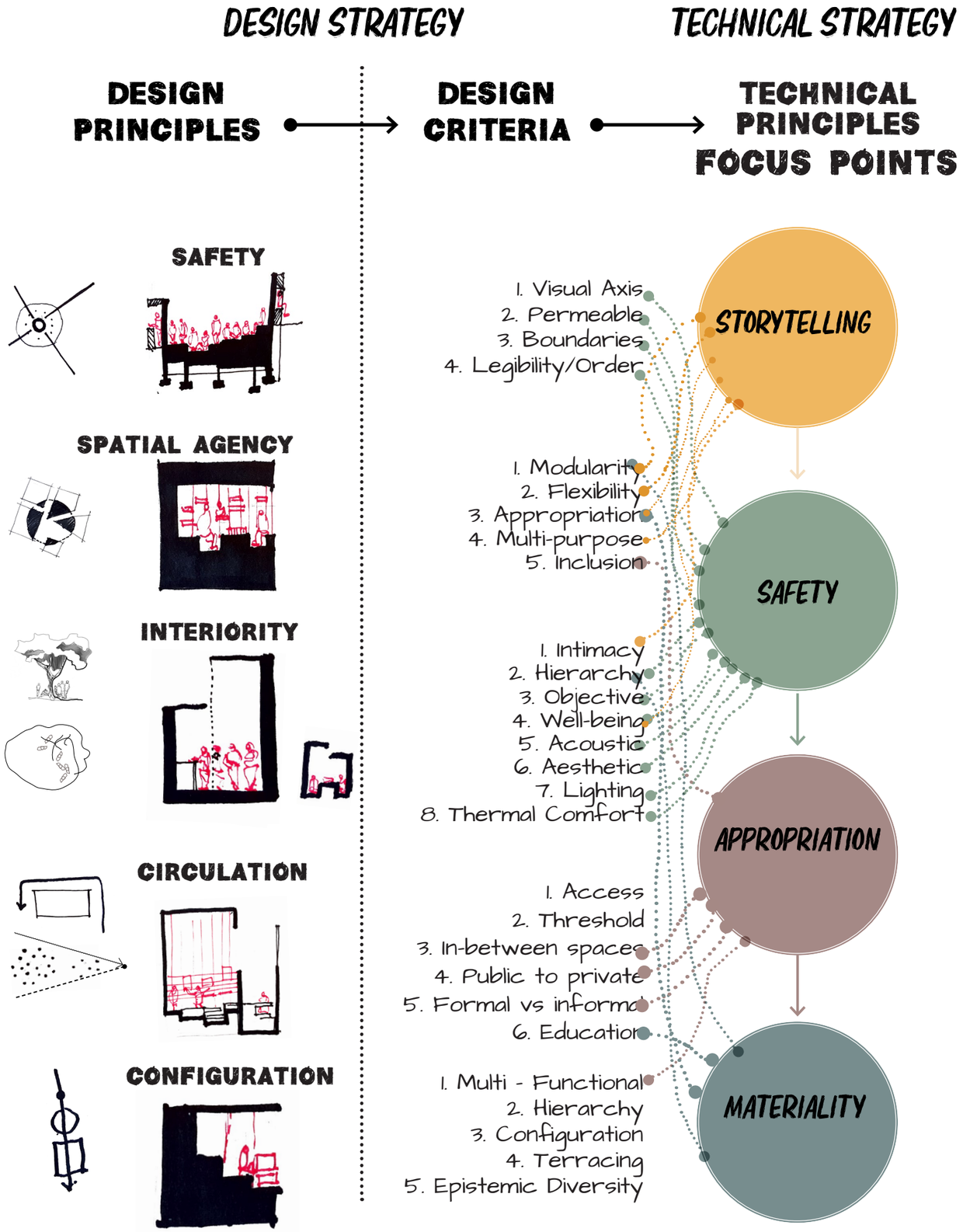


Figure 3. 6_From Design Principles to Technical Principles (Author 2021)

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3.4 TECHNICAL ISSUE

Through the site and building analysis that was conducted through the lens of Bronfenbrenner's and Christopher Alexander's theory, it was found that the composition of materials as well as how the materials are configured together creates harsh, cold, and inhumane spaces. Tall heavy brick walls configured close to one another create narrow corridors as well as dead ends which create corners within classrooms, corridors courtyard spaces, and within other buildings to become unsafe. Therefore, it can be said that the way the materials are configured and used with each other to create the current school buildings and typology creates an unsafe environment for the adolescents to learn in therefore the current school typology prevents the development of identity and belonging as the adolescents need to learn within unsafe harsh environments. There is a need for materials to create a gentler environment within space within the school such as the library, the classroom, the courtyard, and break space as well as the performance area. Therefore, the connection between materials and architectural details becomes important by creating more user-friendly environments which allow for adaptation and appropriation and soften the spaces that are currently created through the harsh composition of materials-(UUC 2021). The details are unpacked in Figures 3.12 to 3.38.

3.5 TECHNICAL QUESTION

How can innovative appropriation enable spatial agency through: Safety, Materiality and Storytelling?

3.6 TECHNICAL METHODOLOGY - METHODOLOGICAL TESTING

THE TECHNICAL PROCESS

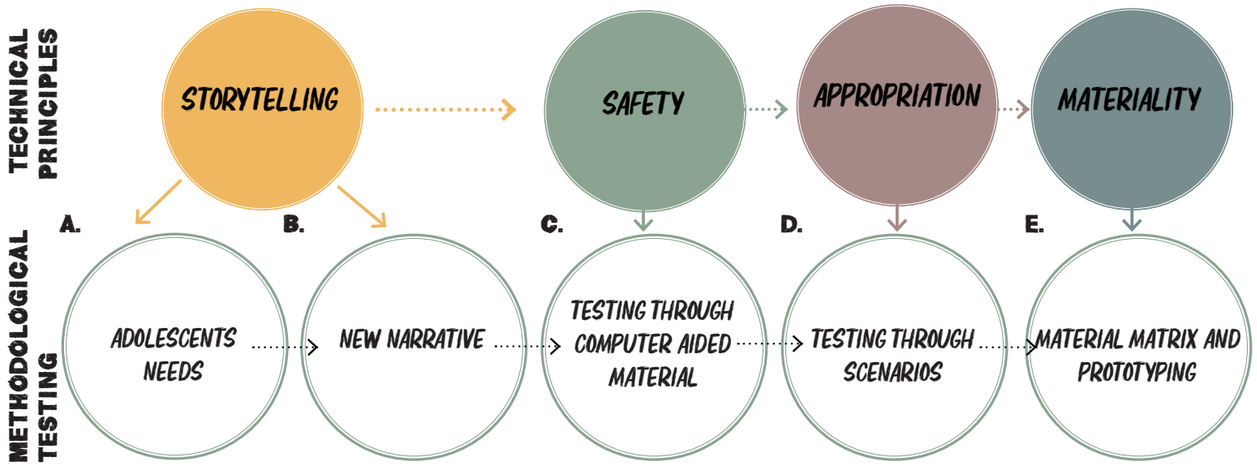


Figure 3. 7_Diagram explaining the Methodological testing process according to the Technical Principles (Author 2021)

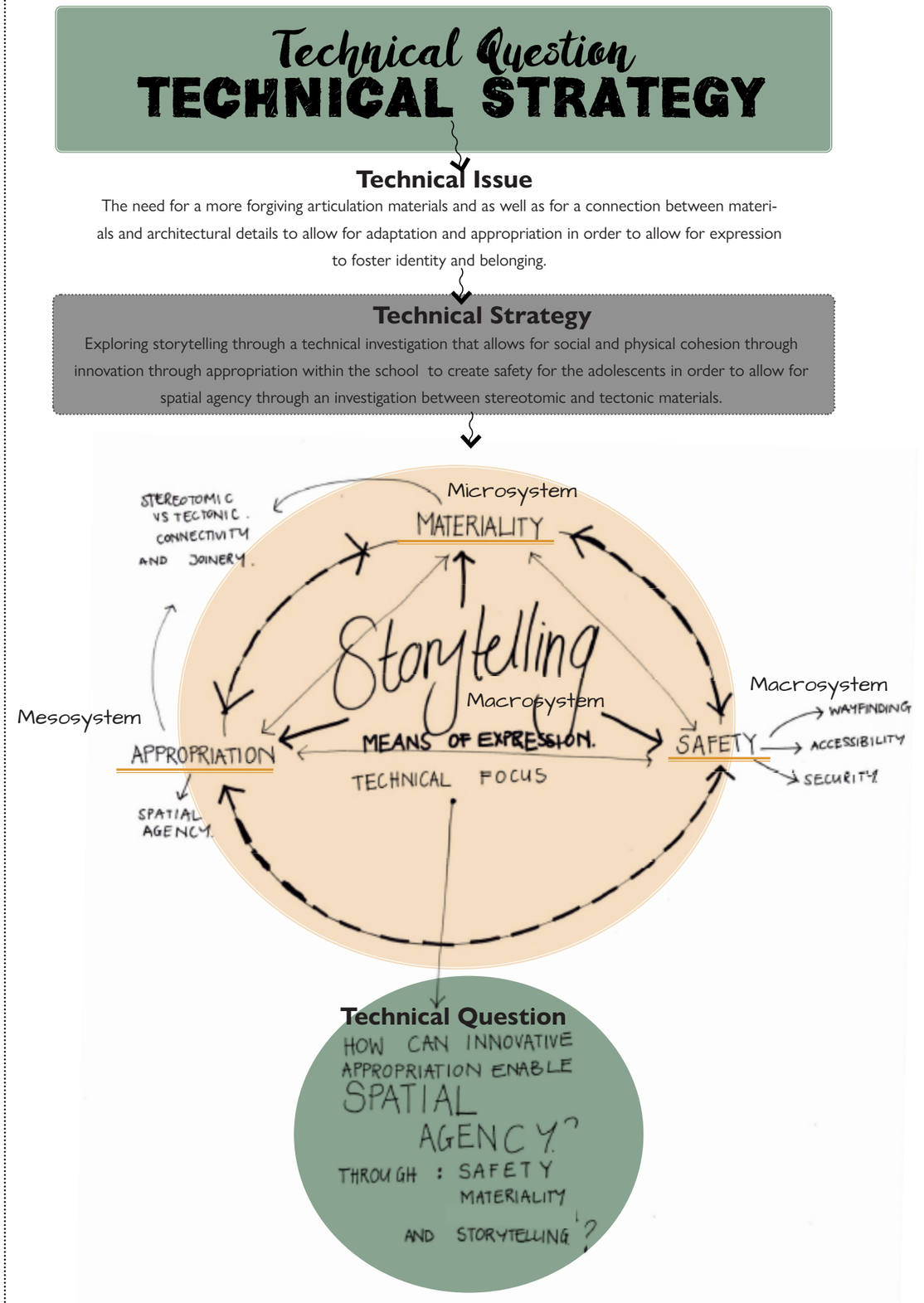


Figure 3.8_Technical Strategy and Technical Question (Author 2021)

3.7 TECHNICAL STRATEGY AND TECHNICAL PRINCIPLES

For the refinement of the design and the technical investigation and detailing technical principles were established. Through considering figure 3.9 we can see that the technical principles were derived from the design principles.

The technical principles are *storytelling, safety, appropriation, and materiality.* These principles are placed in the order in relation to Bronfenbrenner's systems diagram in which *storytelling* and *safety* would be falling within the macro scale, *appropriation* would fall under the mesoscale and materiality with a focus on the connection would for the purpose of this study fall under the microscale. The materiality is further unpacked through a strong focus on the relation of stereotomic and tectonic materials. For the technical investigation of this study, the principles and detail investigation will be unpacked through the lens of these systems. The four technical principles are unpacked by considering Figure 7. The main aim of the technical strategy is to exploring *storytelling* through a technical investigation that allows for social and physical cohesion through innovation through appropriation within the school to create safety for the adolescents in order to allow for spatial agency through an investigation between stereotomic and tectonic materials. The technical resolution of the four nodes will be unpacked through the lens of the four technical principles in relation to Bronfenbrenner's (1997) theory as well as Christopher Alexanders(1977) a pattern language.

3.7.1 TECHNICAL RESOLUTION

A. STORYTELLING - MACROSYSTEM

KEYWORDS: Safety, Appropriation, Materiality, Stereotomic vs Tectonic, Old vs New

As a central focus of the investigation storytelling is viewed as the focal point addressing the need and the means of expression of the adolescents at Tsako Thabo Secondary School and providing safety by creating a new typology by widening the corridors and creating more agency within the space to provide for appropriation and create a sense of ownership.

It can be said that the existing typology and configuration of the school provides a toll and a burden on the learners from a macro scale the existing typology provides dead ends and narrow corridors causing adolescents to feel like they cannot raise their voices and the linear typology causes the adolescent to feel trapped and to have no freedom of speech. Furthermore, there are quite emotionally heavy spaces which are also represented and created through the way stereotomic materials such as brick, steel, and concrete paving are configured creating inhuman spaces Therefore the design aims to provide tectonic materials which are more lightweight, and which provide agency for the adolescents and provide versatile ways in which the space can be configured to facilitate the learning through storytelling. Therefore, the school as a creative incubator provides spaces that allow for appropriation through the relation and connecting of the existing stereotomic elements as well as the new tectonic materials also providing for appropriation and so creating and providing for different scenarios (Figure 3.8 and 3.9).

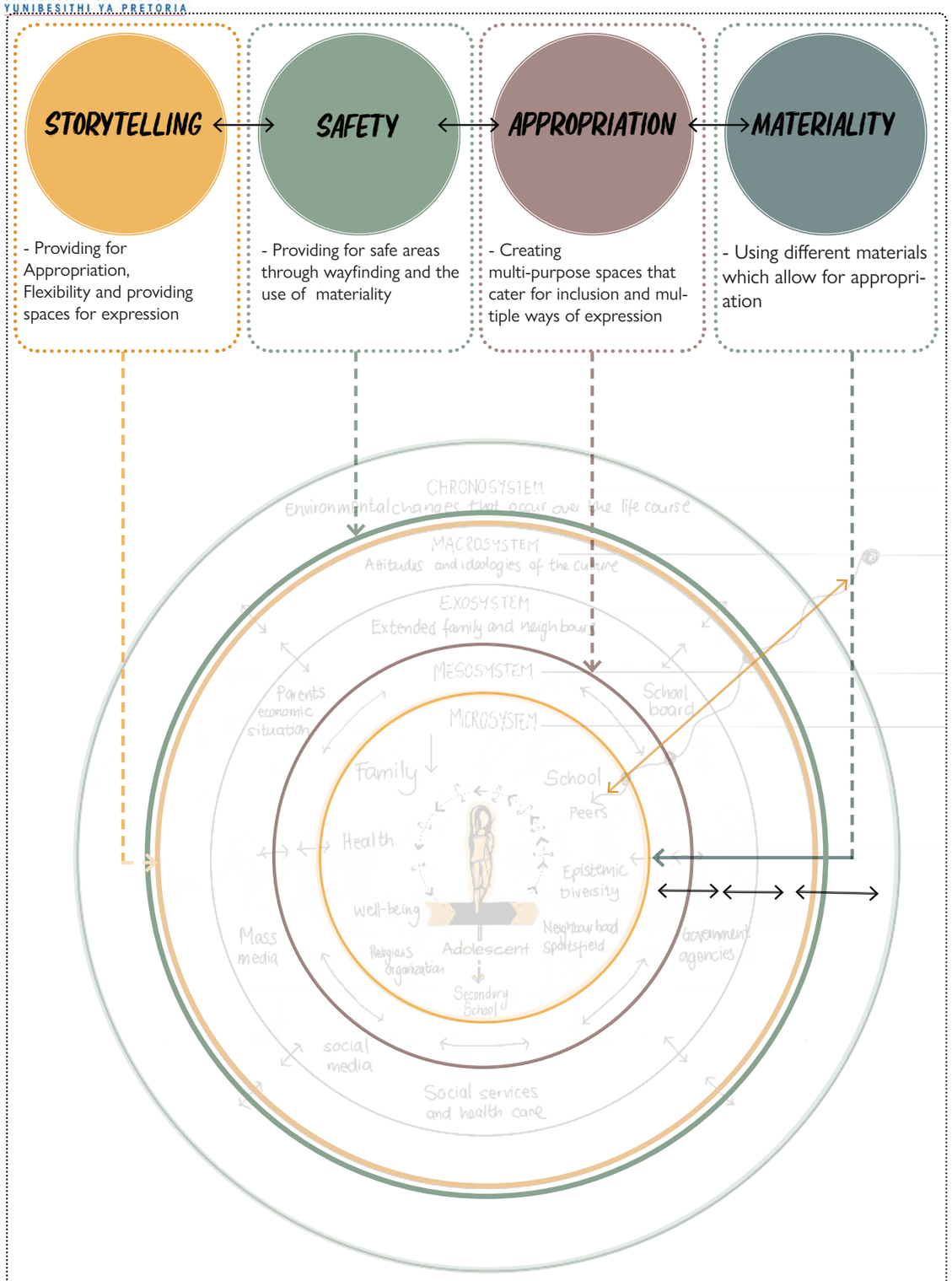


Figure 3.9_Diagram showing the positioning of the technical principles according to Bronfenbrenner's systems diagram (Author 2021)

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B. SAFETY - MACROSYSTEM

KEYWORDS: Way-finding, Configuration, Accessibility, Security, Lighting, Sustainability

The macrosystem is also explored as a principle that is within the overall strategy of the broader framework and typology of the school as a creative incubator. This principle is explored over the overall broader design. Safety is mainly explored through the configuration of the school buildings. Furthermore, principles such as visual axis which are mainly along the routes of the circulation routes in order to create hierarchy and order within the configuration of the school. Furthermore, the school buildings are designed in such a way as to activate the boundaries and also to create a safer configuration to avoid creating dead ends and instead to create a permeable nodes and a typology that allows for visual accessibility. Through the new configuration of the reinterpreted typology the main aim is also to create more security within the school.

The main aim of this principle is to emphasize the new narrative of the school. This is firstly explored through systems and materiality within the floor finish in order to contribute to the way-finding. The main aim of the design is to use different floor finishes for main routes and for courtyard spaces. Furthermore, the floor finishes are meant to hint at different activities such as: circulation, courtyard or break spaces as well as the classrooms or learning spaces.

The circulation route as can be seen in Figures 3.10 and 3.11 on the floor plan leading from the main entrance into their various nodes is slender red brick pavers in a herringbone pattern leading the adolescents to the various nodes. The Herringbone pattern is meant to point within the direction of the main circulation which as seen on the floor plan is from southeast to northwest.

Furthermore, accessibility, well-being and sustainability are also explored through the technical investigation where the natural ventilation of the nodes is explored especially within the classroom, library and the exhibition space this can be seen in Figures 3.13 in the sections.

Sustainability is investigated through the sustainable building assessment tool (SBAT). Through this it is ensured that most of the material that is used to reconstruct the school is reused and reconfigured in such a way to create a safer environment as seen in Figure 9. If Figure 9 is considered it can be seen that social cohesion and inclusion aswelll as materiality, in relation to storytelling plays an important role in the study.

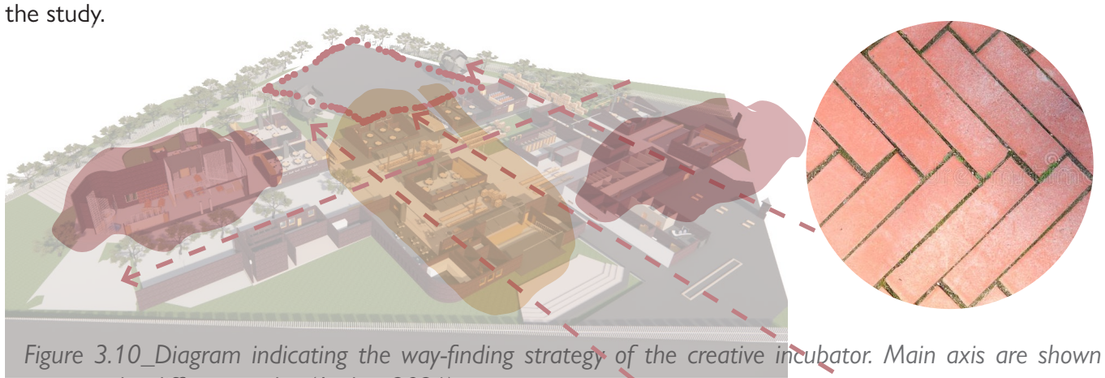


Figure 3.10_Diagram indicating the way-finding strategy of the creative incubator. Main axis are shown to connect the different nodes (Author 2021)

SUSTAINABLE BUILDING ASSESSMENT TOOL RESIDENTIAL
1,04

		Target	Achieved
BI	**Building Information**	**5,0**	**4,3**

BI 1	Building Targets	Target	Achieved
EN	Energy	5,0	3,9
WA	Water	5,0	3,6
WE	Waste	5,0	5,0
MA	Materials	5,0	5,0
BI	Biocapacity	5,0	3,1
TR	Transport	5,0	5,0
LE	Local Economy	5,0	5,0
MN	Management	5,0	3,3
RE	Resources	5,0	5,0
SP	Services and Products	5,0	4,2
AC	Access	5,0	4,2
HE	Health	5,0	4,1
ED	Education	5,0	3,3
IN	Inclusion	5,0	5,0
SC	Social Cohesion	5,0	5,0

BI 2	Priority Key (Not Performance Key)	
VH	Very High	5,0
HI	High	4,0
ME	Medium	3,0
LO	Low	2,0
VL	Very Low	1,0
NA	None / Not Applicable	0,0

BI 3 **Project Name**
Tsako Thabo Secondary School - School as a Creative Incubator

BI 4 **Address**
13415, Tsomo Street, Mamelodi 608, Pretoria, City of Tshwane, 0122

		Achieved
SB	**SBAT REPORT**	**4,3**

SB1 Project
Tsako Thabo Secondary School - School as a Creative Incubator

SB2 Address
13415, Tsomo Street, Mamelodi 608, Pretoria, City of Tshwane, 0122

SB3 SBAT Graph

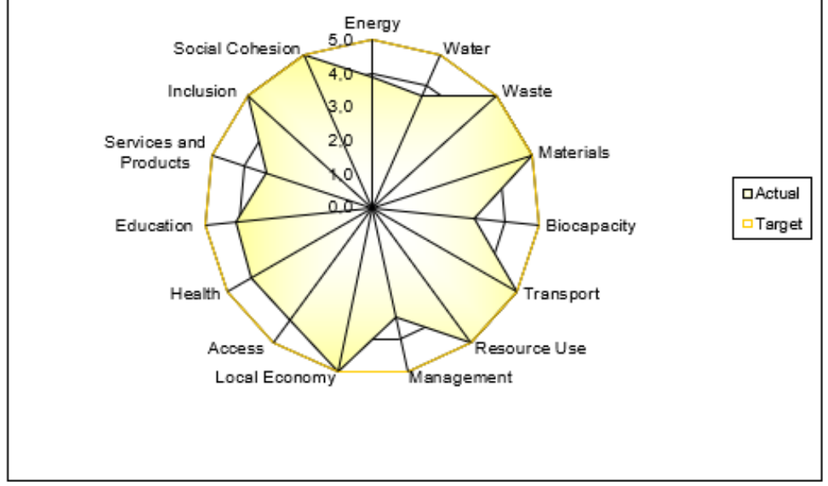


Figure 3.11_SBAT Report Results (Author 2021)



Figure 3.12_Overall Floor Plan (Author 2022)

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ORIENTATION PLAN



SECTION B-B

SECTION A-A

Figure 3.13_Overall Sections (Author 2022)

C. APPROPRIATION - MESOSYSTEM

KEYWORDS: Spatial Agency, Stereotomic vs Tectonic, sense of ownership, Connectivity

The mesosystem zooms into the activity and program, the design, and the technical of how the spaces and nodes are appropriated within the space. The nodes are designed in such a way that each node can be appropriated and used for different activities in relation to how storytelling takes place. All three nodes are configured upon a modular system being 300 mm x 300mm in size in order to allow for appropriation to allow for expression and storytelling. This measurement is carried through into the exhibition unit, the classroom, and the library.

THE EXHIBITION - MODULAR SYSTEM

The exhibition unit of the creative incubator becomes a connecting agent forming part of the main route of the circulation in between the buildings. Furthermore, the exhibition unit contains a modular grid system which allows for flexibility through being able to form part of the classroom. Furthermore, the unit or framework also provides space where students from art class can display their work and tell their story. Furthermore, the grid also forms part of the courtyard gardens which form part of the break space. The modular system consists of a permanent aluminum frame as well as a kit of parts that can be added to the frame. The permanent part of the grid provides a pivoting roof as well as seating. More seating and display units or boxes can be fixed onto the permanent system providing agency to the adolescents. This can be seen in Figures 3.14 to 3.18.

THE CLASSROOM

Within the classroom node of the creative incubator, appropriation is apparent through different scenarios and activities that can be done within the classroom. The aim of the classroom node as can be seen in Figures 3.19 to 3.30 is to provide for two types of curricular activities. Two types of classrooms are provided. Where type a is a passive classroom as can be seen in Figures 3.19 to 3.30. Within this classroom subjects which do not require to have specialized equipment such as Mathematics , English, Afrikaans and Life Orientation are taught. This type of classroom also provides versatility as it allows for the expansion of the classrooms to the outside and to the sides of the classrooms. Type b of the classrooms is more equipment based therefore these classrooms consist of shopfitting items to the northeastern and southwestern sides of each module of the classrooms which acts as a permanent feature that contains a mobile teachers desk which allows for flexibility for the way of teaching and learning. Furthermore, all classrooms consist of classroom modules of 7 by 9 m creating a bigger model of four classrooms as can be seen in Figures 3.19 to 3.30. The details of the classroom that form part of the design and technical investigation that explores the connections between the stereotomic and new tectonic materials are

The permanent shopfitting item consists of 5 stations in relation to the modular system:

1. Teacher's storage station
2. Teacher's mobile station.
3. Multi-purpose board
4. Learner's station containing lockers and a workstation
5. Service unit

The folding staking door in between two classroom modules also contains a shelving system. Furthermore, the classroom is expanded to the outside of the classroom which together with the exhibition unit extends the classroom to the outside. These details show how appropriation is achieved through

THE LIBRARY

The library, as can be seen in Figures 3.31 and 3.38, is arranged from an individual more private setting to a more collective private setting. The individual zones allow the adolescents and the staff to work and read privately. Furthermore, within ,this zone the books are stored. To the northern facade of the building a multi-functional staircase that leads to a mezzanine level as can be seen in Figures 3.31 and 3.38 provides for more collaborative and collective workspaces. The design intention is to lead away from a conventional library typology but to also reinterpret the typology of the library to make it contextually relevant.
This is done by providing for spaces for oral storytelling as well as for providing for individual and collective spaces. Therefore, the collaborative staircase of the library is meant to provide a space in which the library can provide for appropriation in the sense that it provides flexibility in the number of bookcases that can be provided. If there are less books then there are shelves provided the shelves can be staked together and the library is just left with timber slates.

Within the collaborative setting on the second floor, a pulley partition system symbolizing the way the reeds are picked out of the ground provides for appropriation as to either work as a small collective group or use the partitions pulled down to pin up on. The partitions are also designed according to the modular system. The partition system can also provide for an individual work setting. If the partitions are pushed up and then provide for a big collaboration. In this way the library provides for collective learning and verbal knowledge transferal. Through this, the spaces in the library can also provide for visitors to teach or transfer knowledge. By providing innovative spaces that can be appropriated and that create spatial agency, the adolescent's neurodevelopment including the identity and belonging is enhanced (Awan et al 2011; Louw &Louw 2013). A few computers are also provided for reading e-books.

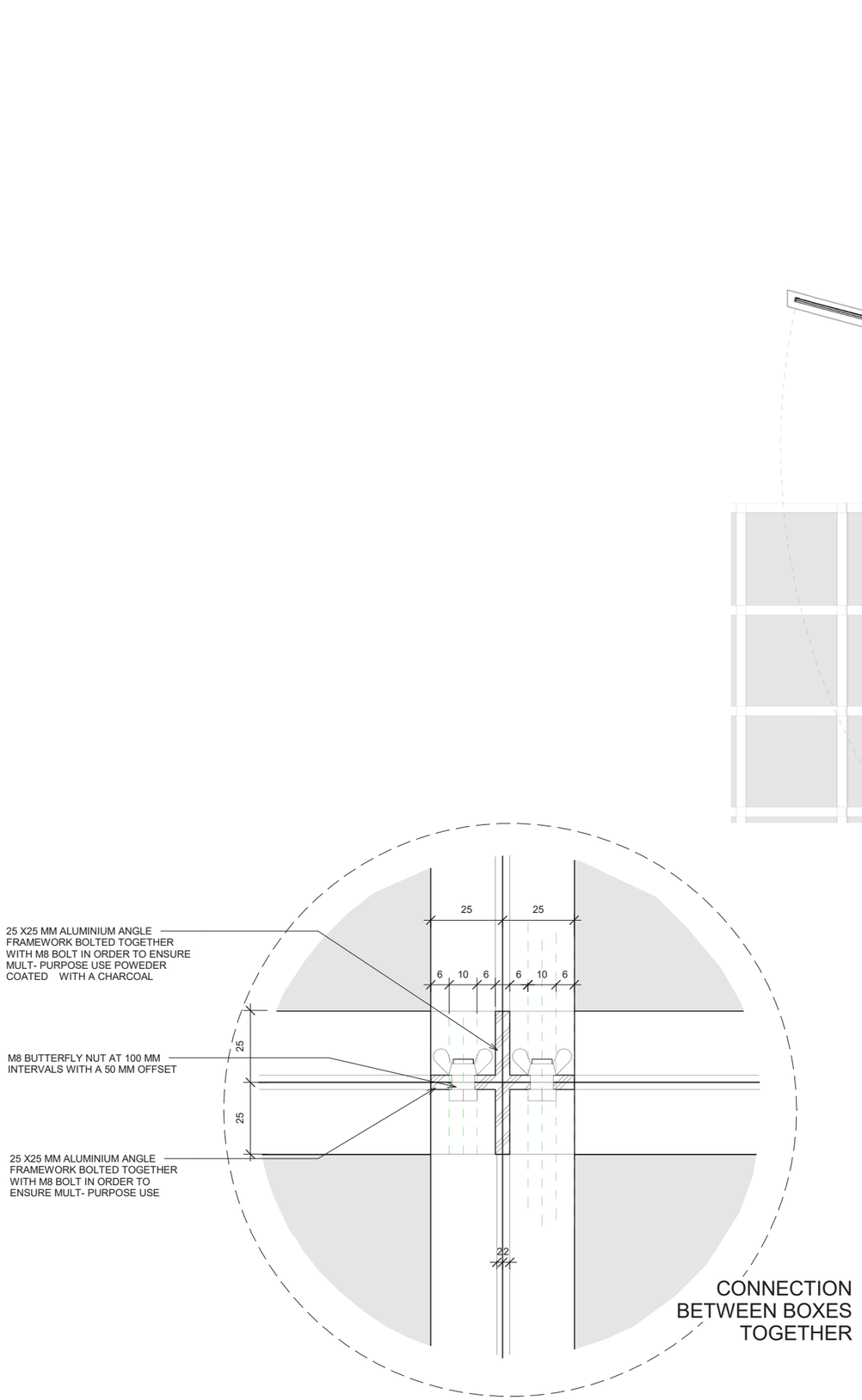
Furthermore, a roof garden is also provided which allows for versatility in reading and engaging in sharing knowledge through conversation.

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THE MODULAR SYSTEM

THE EXHIBITION & SITTING UNIT

Figure 3.14_Modular system - exhibition and seating unit interior perspective (Author 2022)



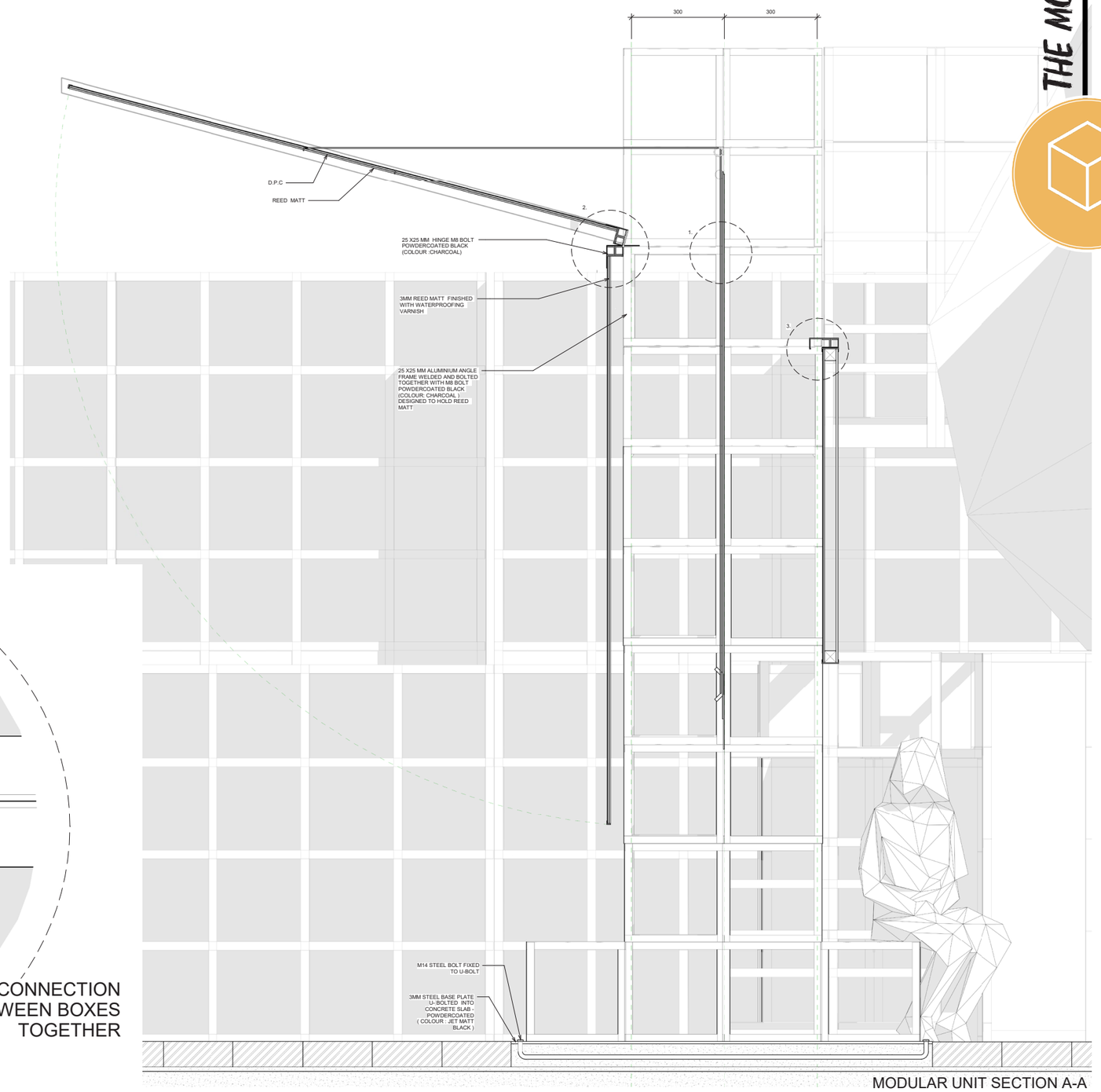
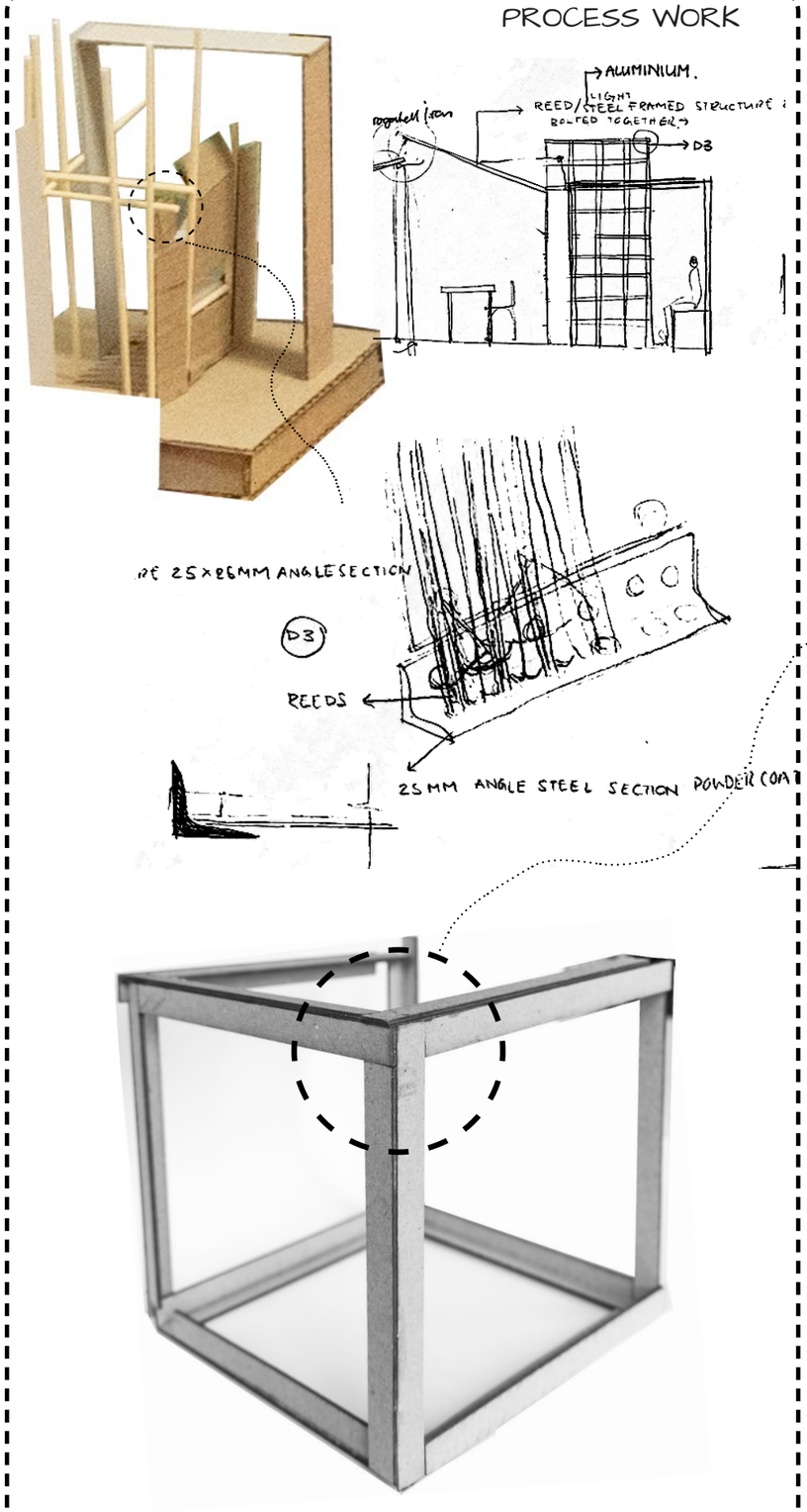


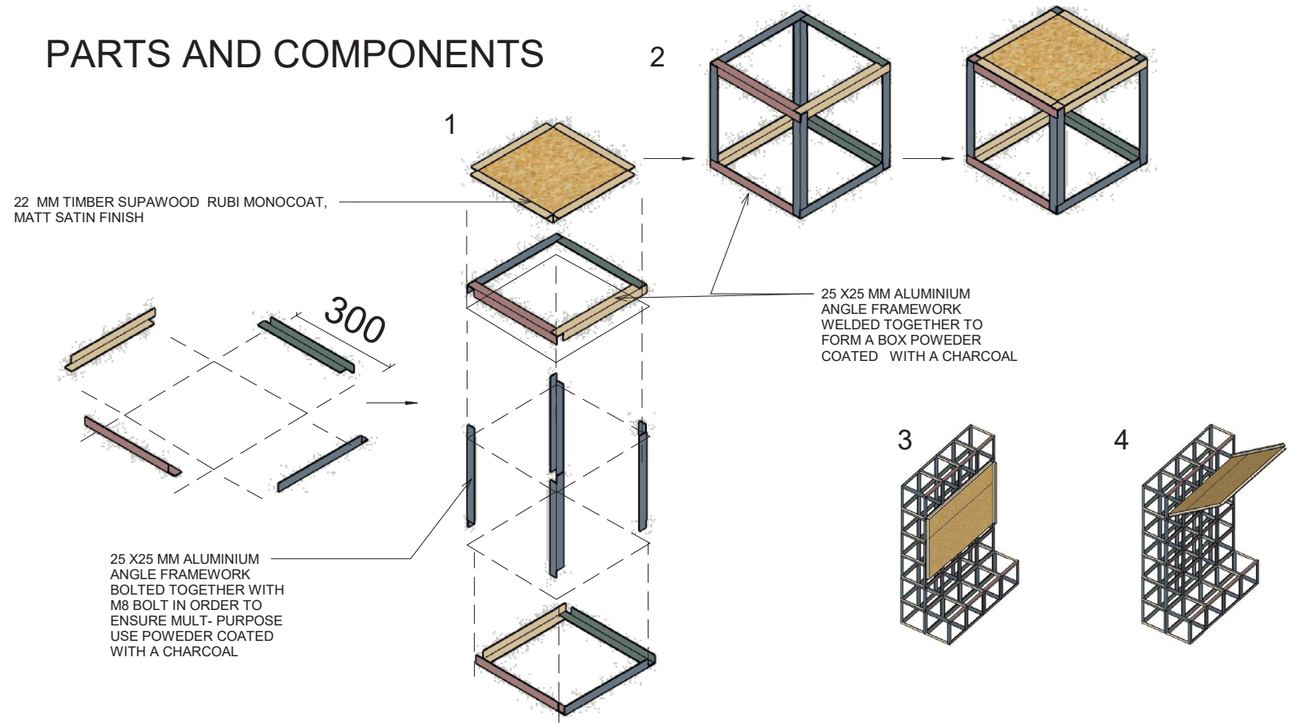
Figure 3.15_Modular System - Exhibition and seating unit section (Author 2022)

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PROCESS WORK



PARTS AND COMPONENTS



SCENARIO 1 - HORIZONTAL PANEL FOR SEATING/ DISPLAY

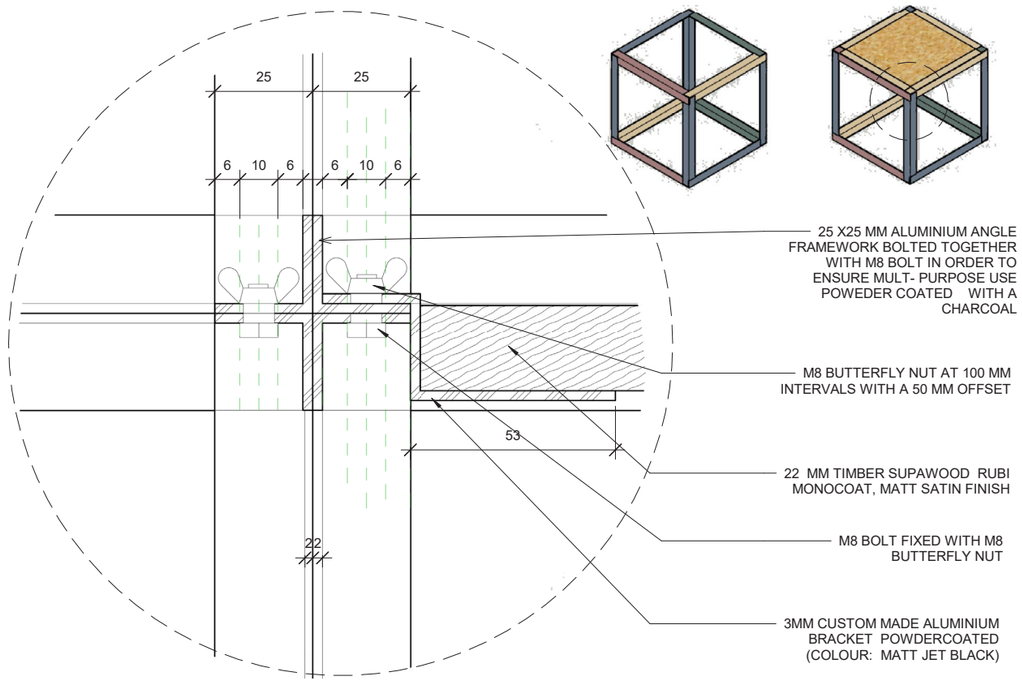
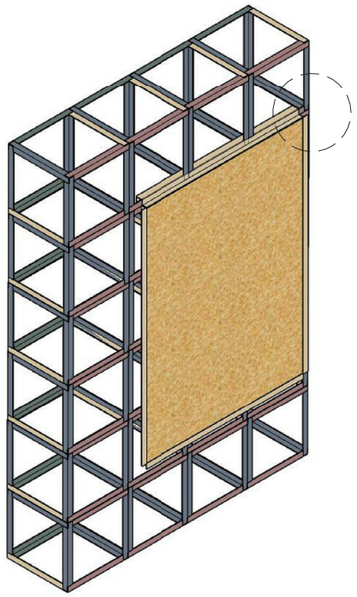
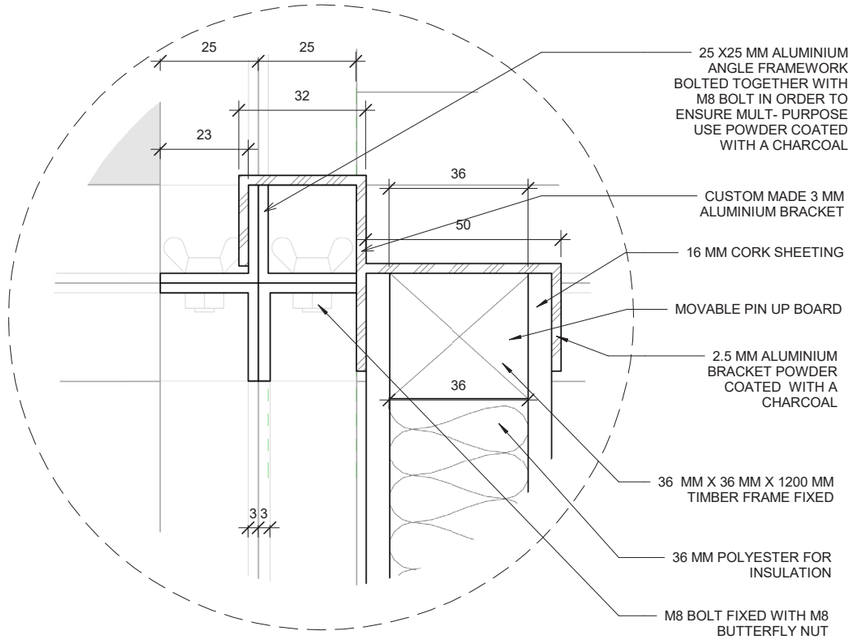


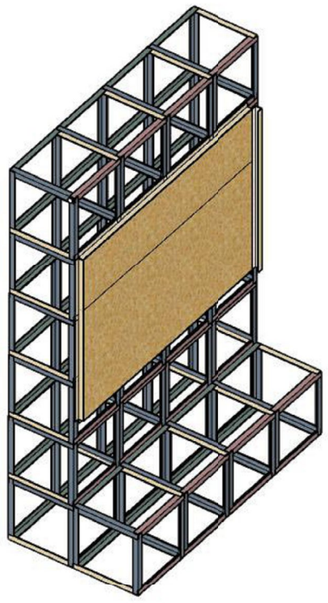
Figure 3.16_Modular System - Exhibition and seating unit Detail and process work (Author 2022)

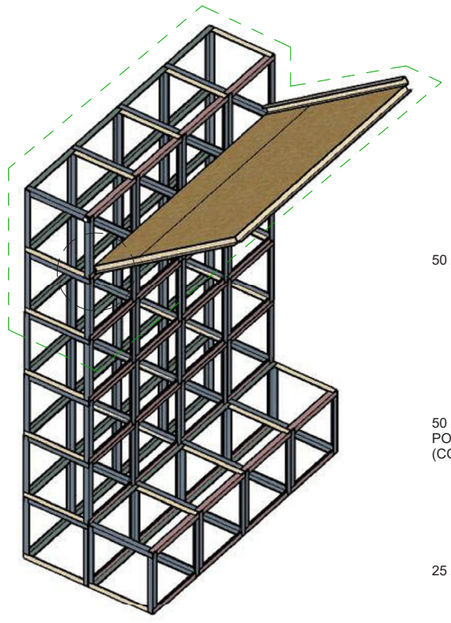
SCENARIO 2 - VERTICAL PANEL FOR PIN UP OR PAINTING





SCENARIO 3 - DIAGONAL PANELS EXTENDED CLASSROOM





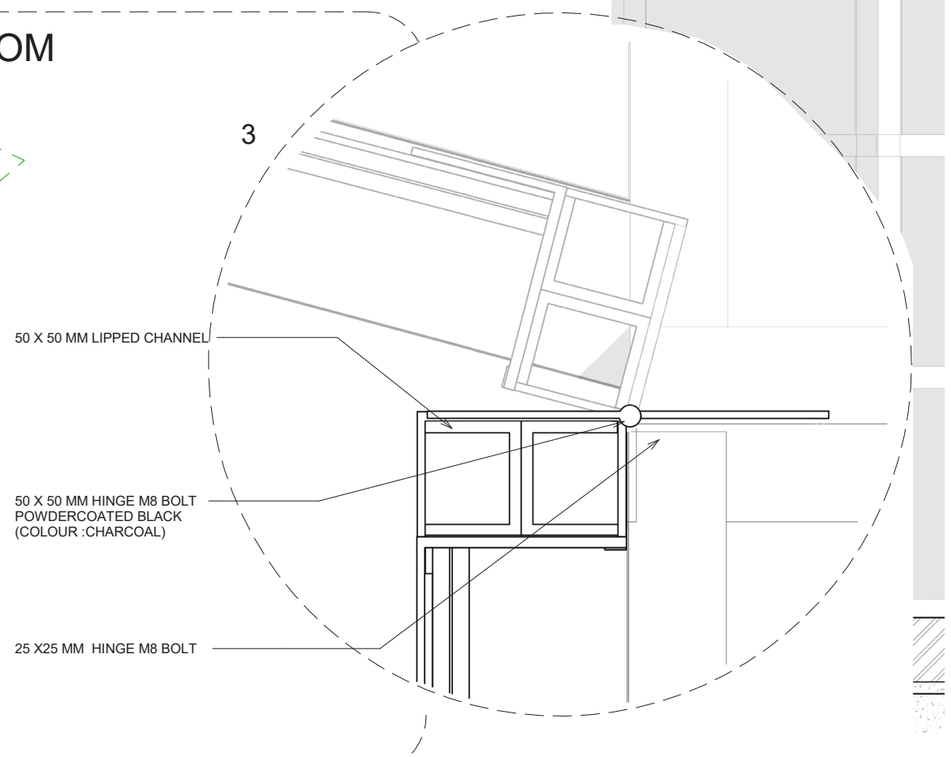


Figure 3.17_Modular System - exhibition and seating unit details (Author 2021)

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PROCESS WORK

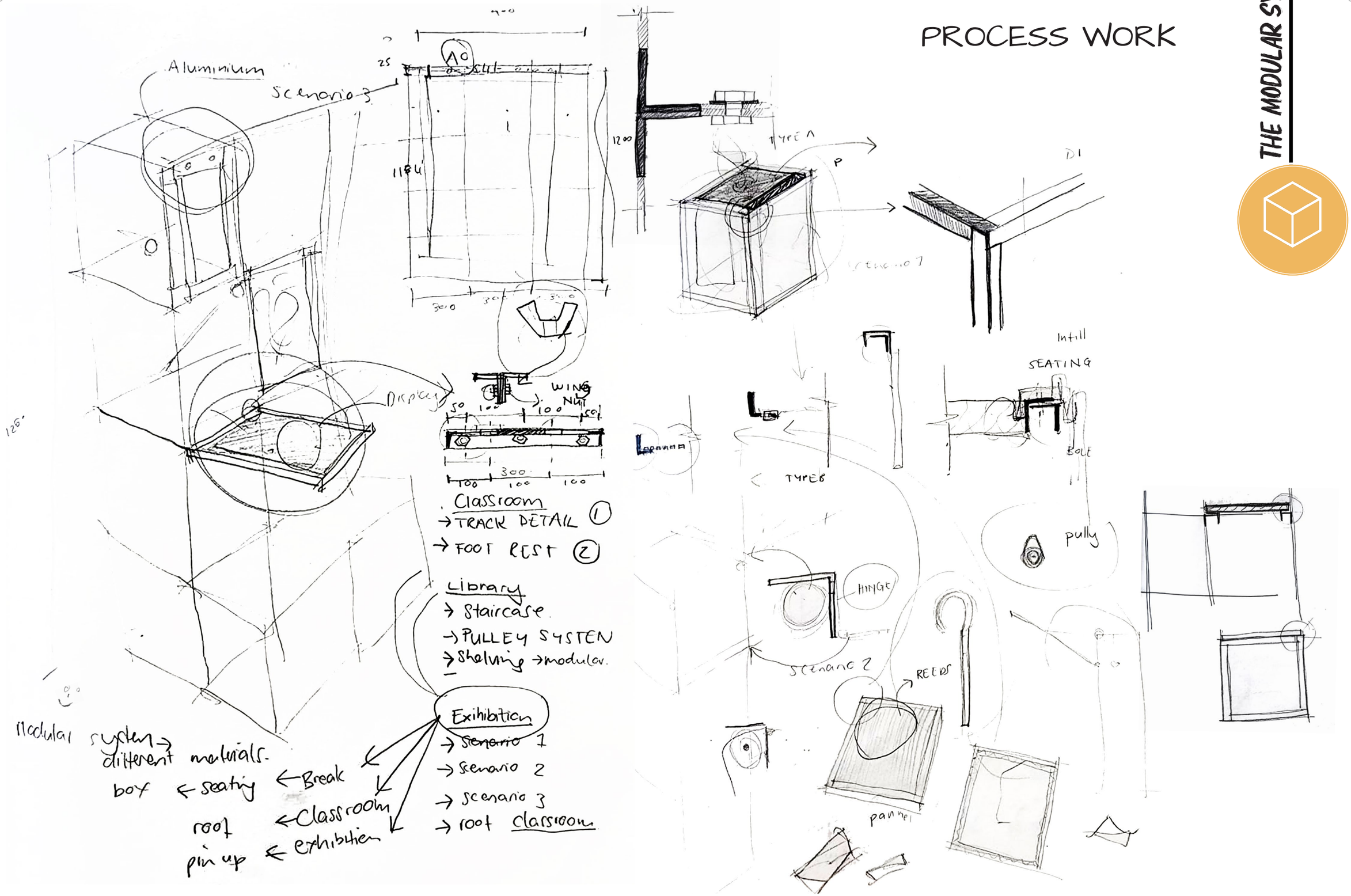


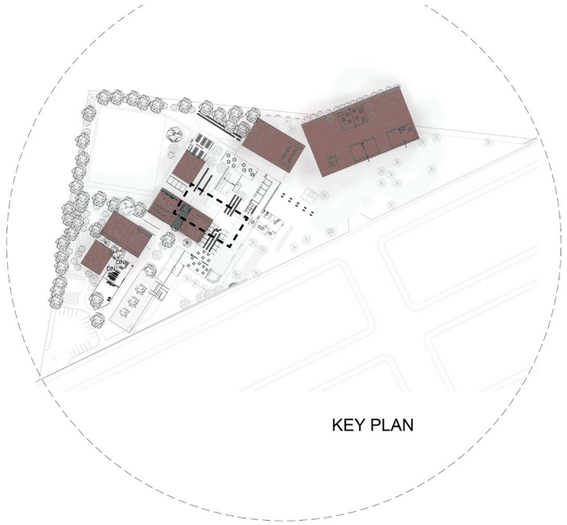
Figure 3.18_Modular System - exhibition and seating unit Process Work (Author 2022)

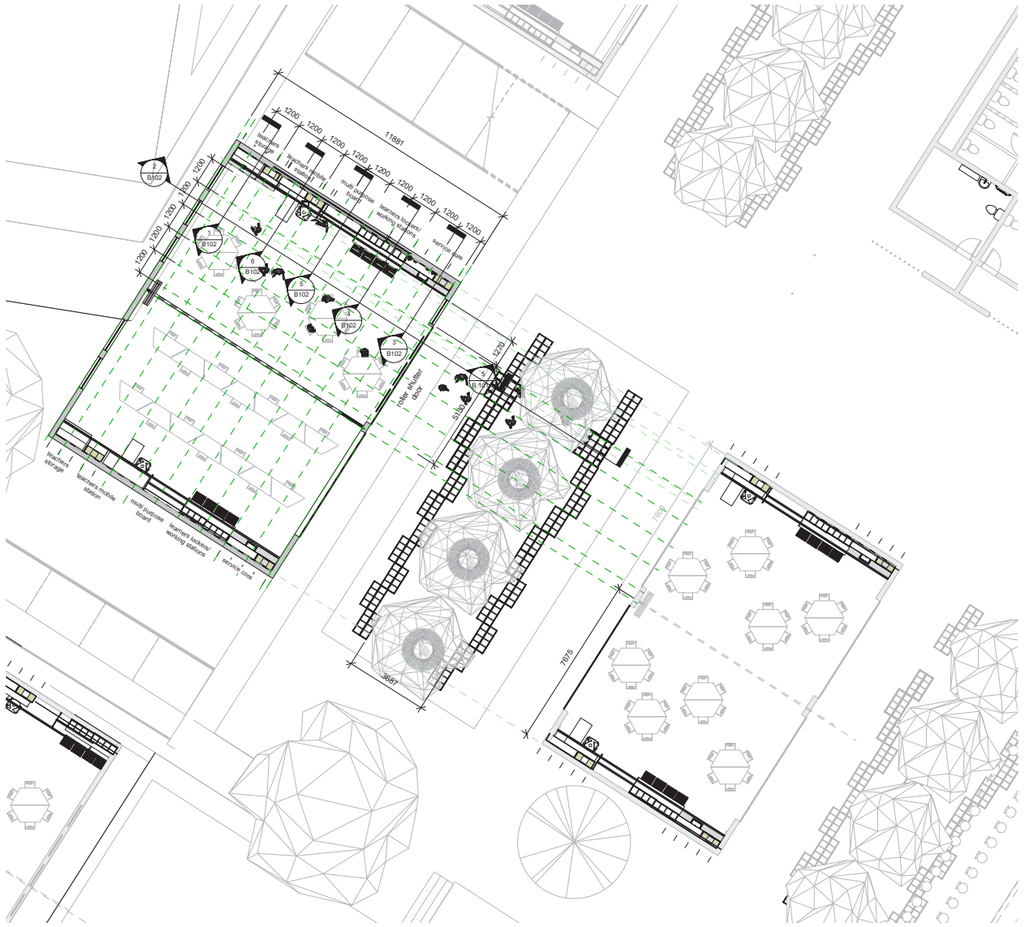
THE CLASSROOM

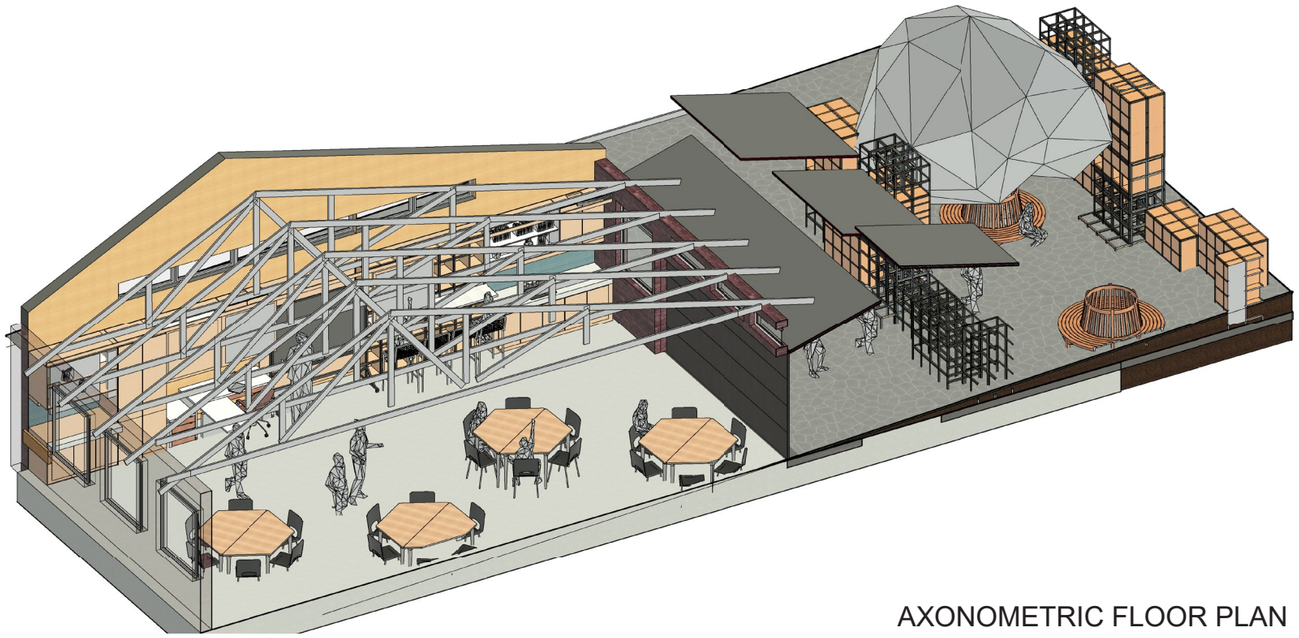


Figure 3.19_Classroom Interior Perspective (Author 2022)

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KEY PLAN


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AXONOMETRIC FLOOR PLAN

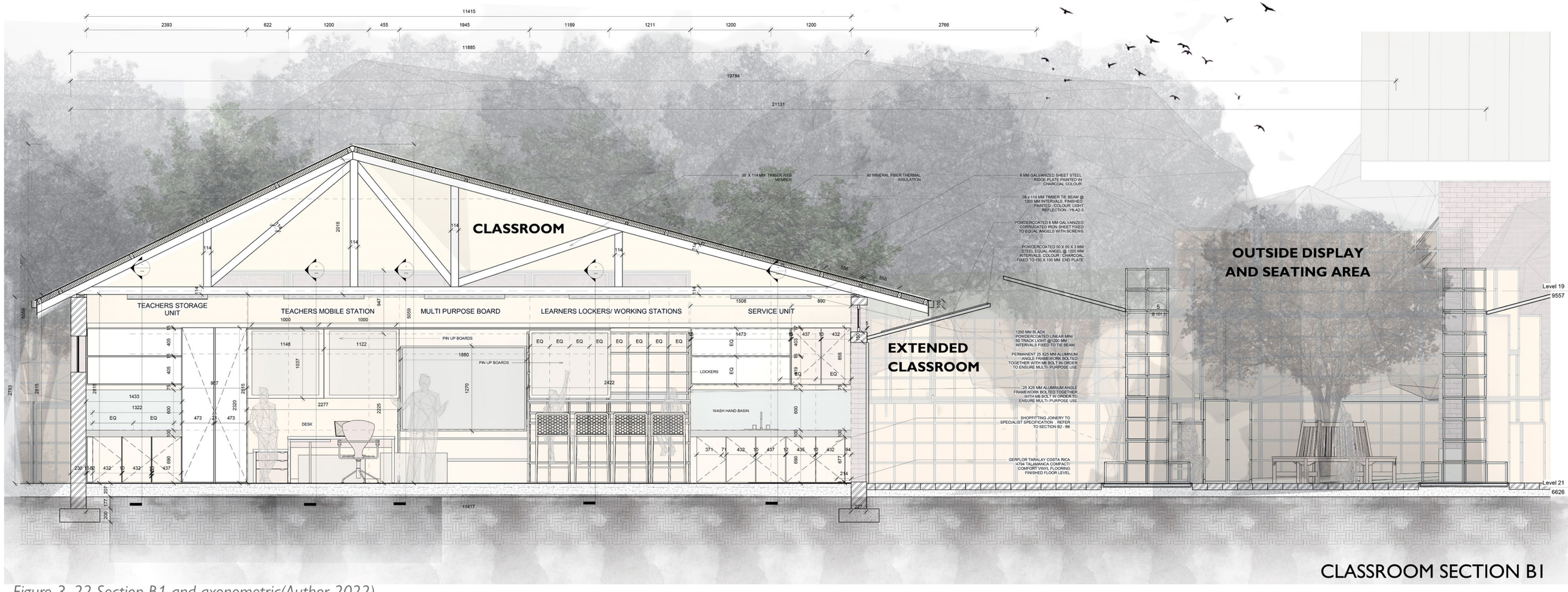
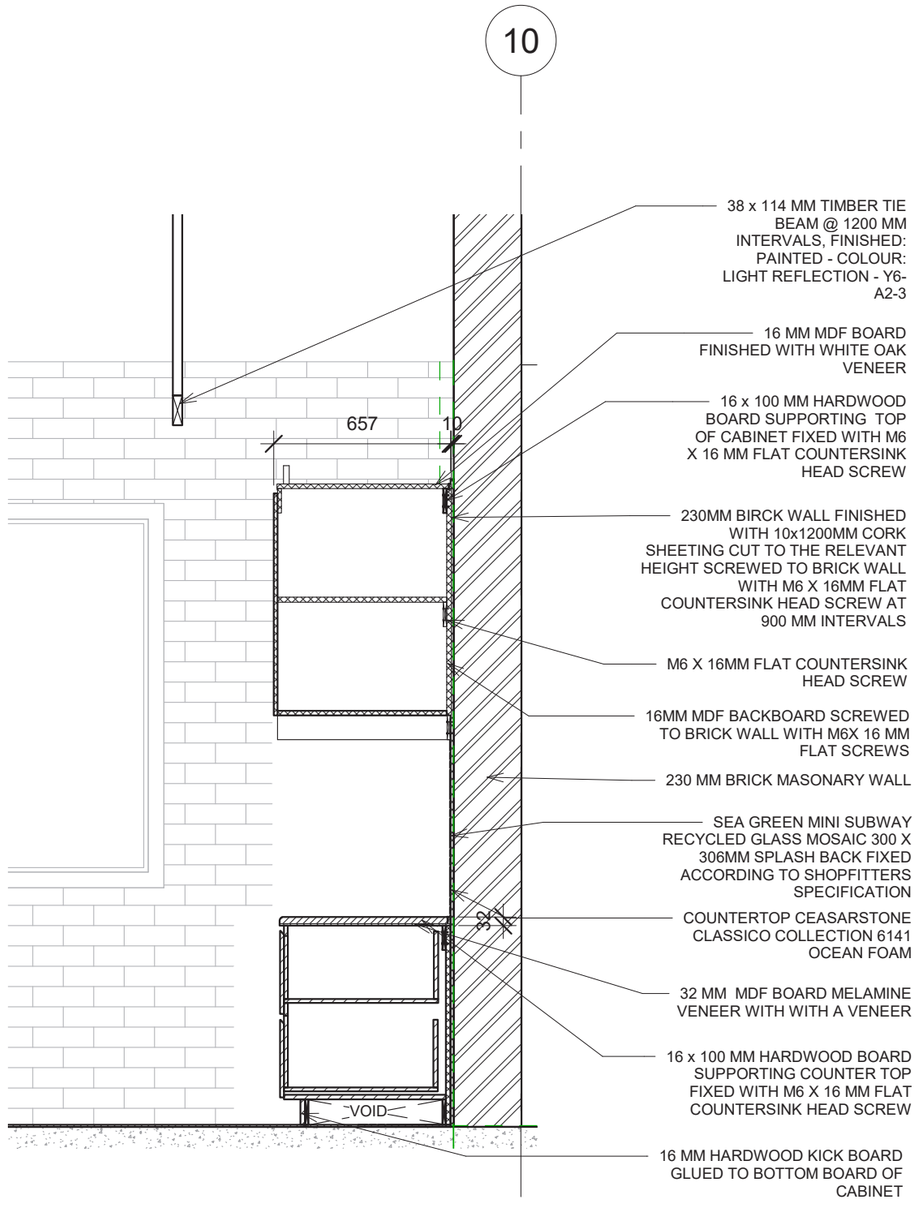


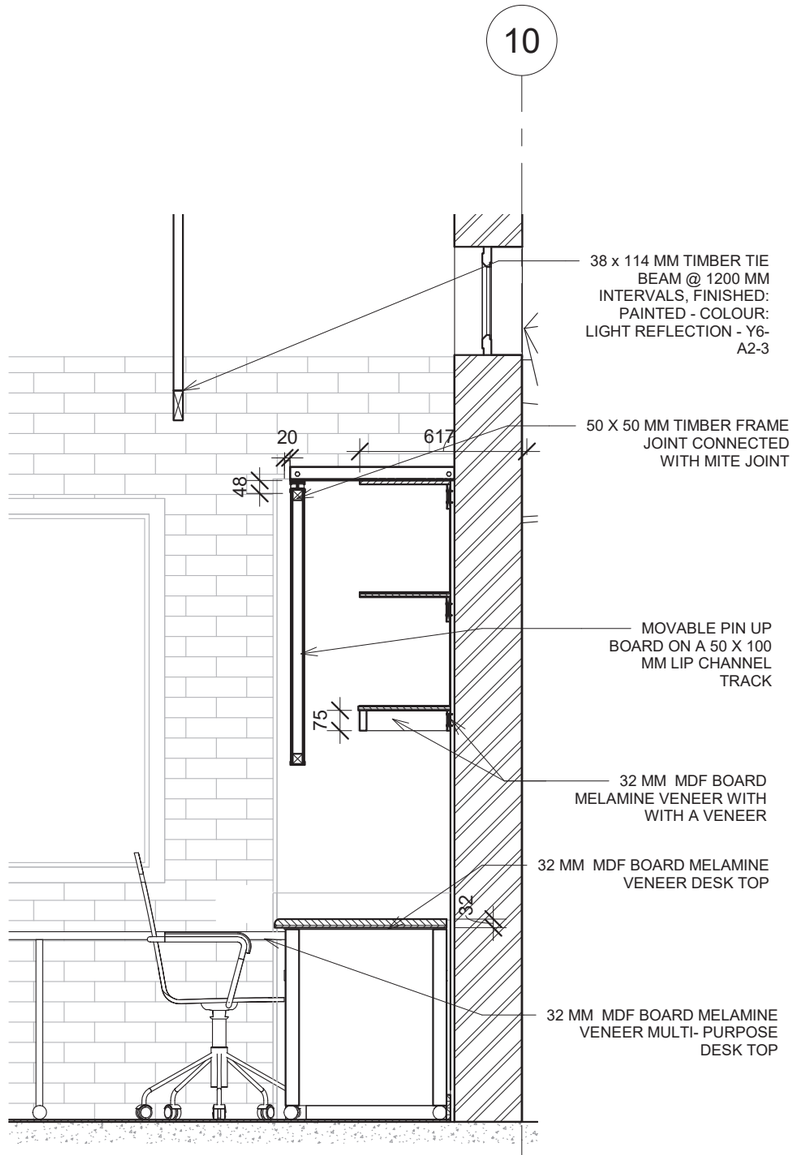
Figure 3. 22 Section B1 and axonometric(Author 2022)

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SECTION B2_TEACHERS STORAGE UNIT

Figure 3. 23 Section B2(Author 2022)



SECTION B3_TEACHERS MOBILE DESK

Figure 3. 24 Section B3(Author 2022)

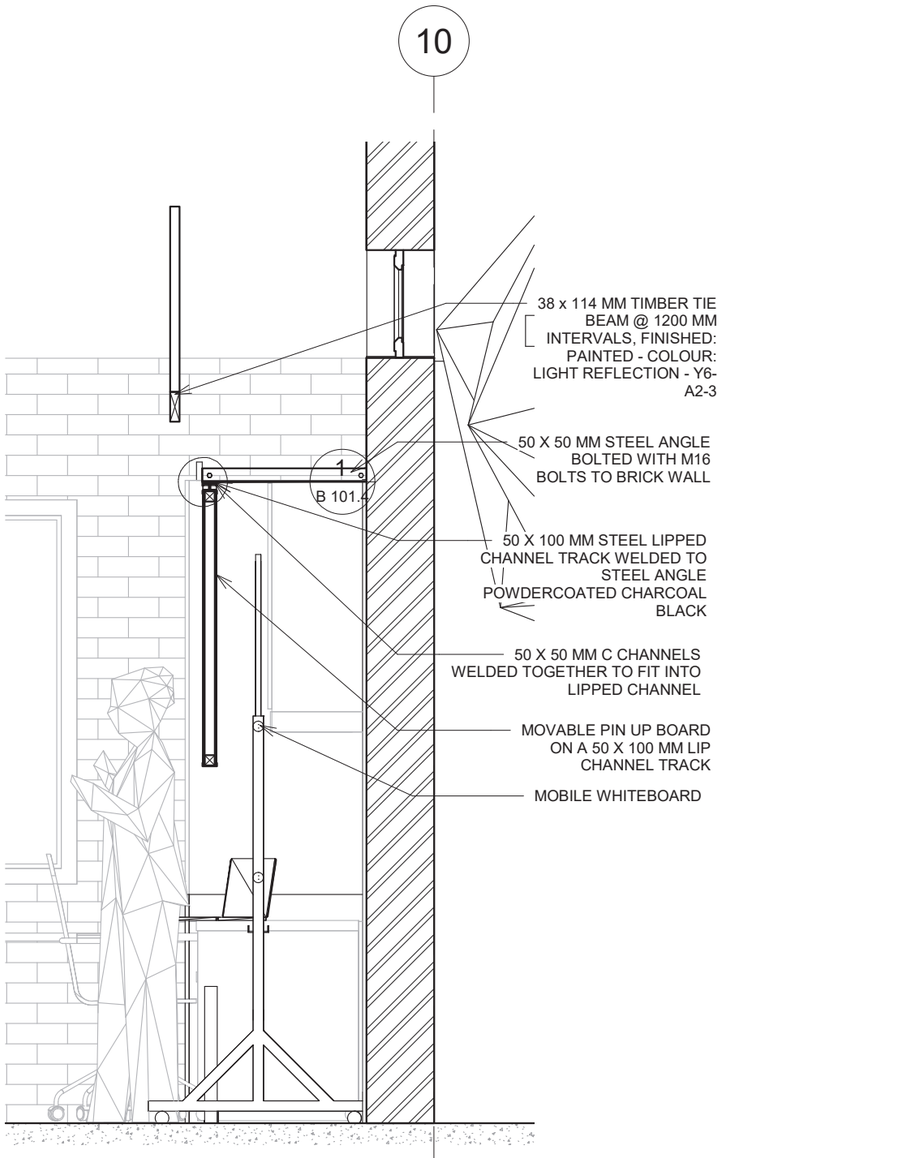
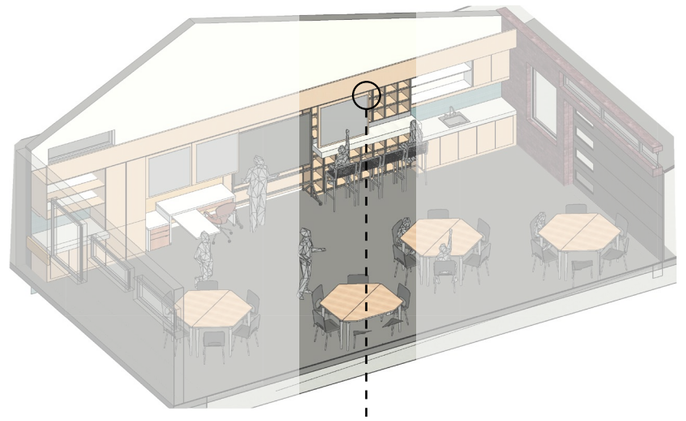


Figure 3. 25_Section B4(Author 2022)



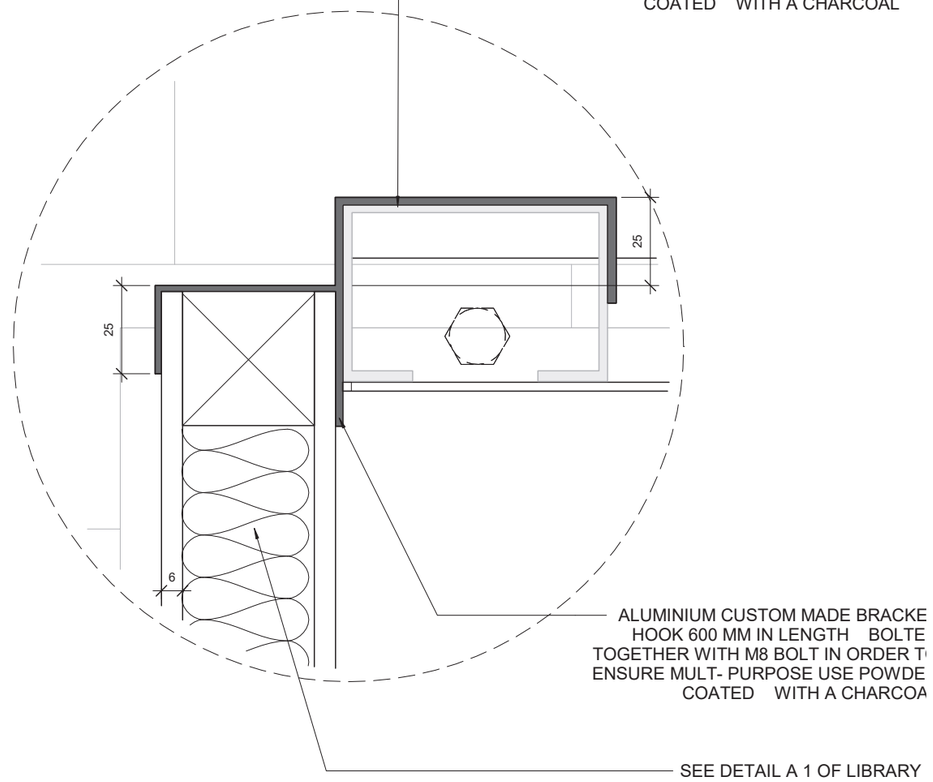
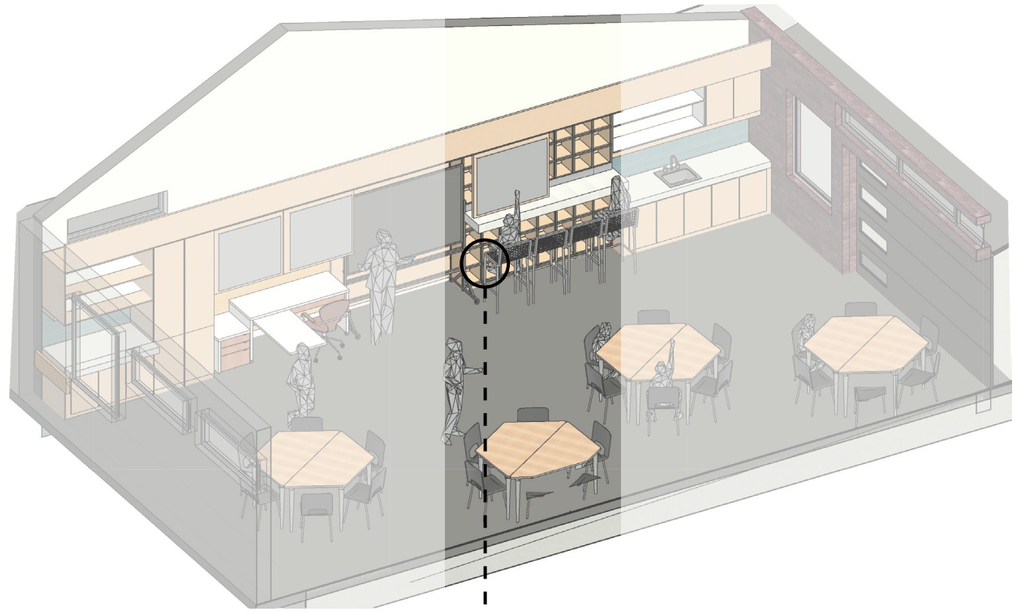
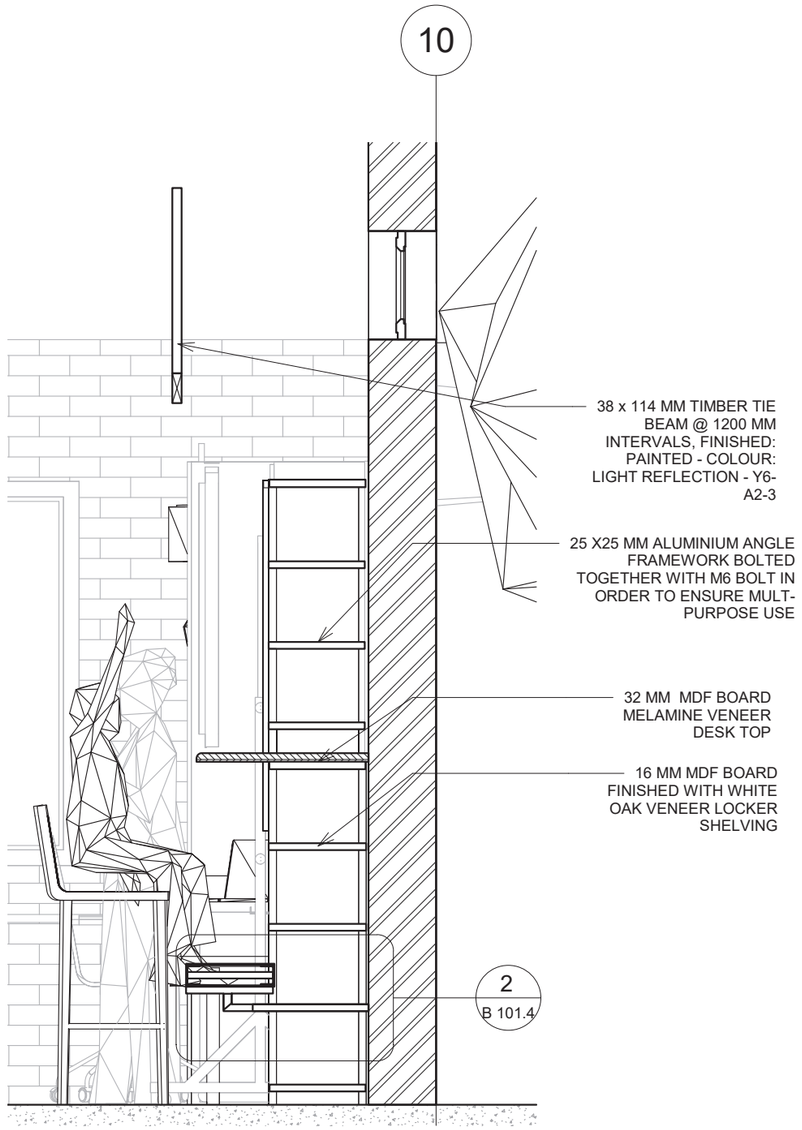


Figure 3. 26 Section B4 A Detail (Author 2022)

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SECTION_LEARNERS LOCKERS AND TABLE

Figure 3. 27 Section B5 (Author 2022)

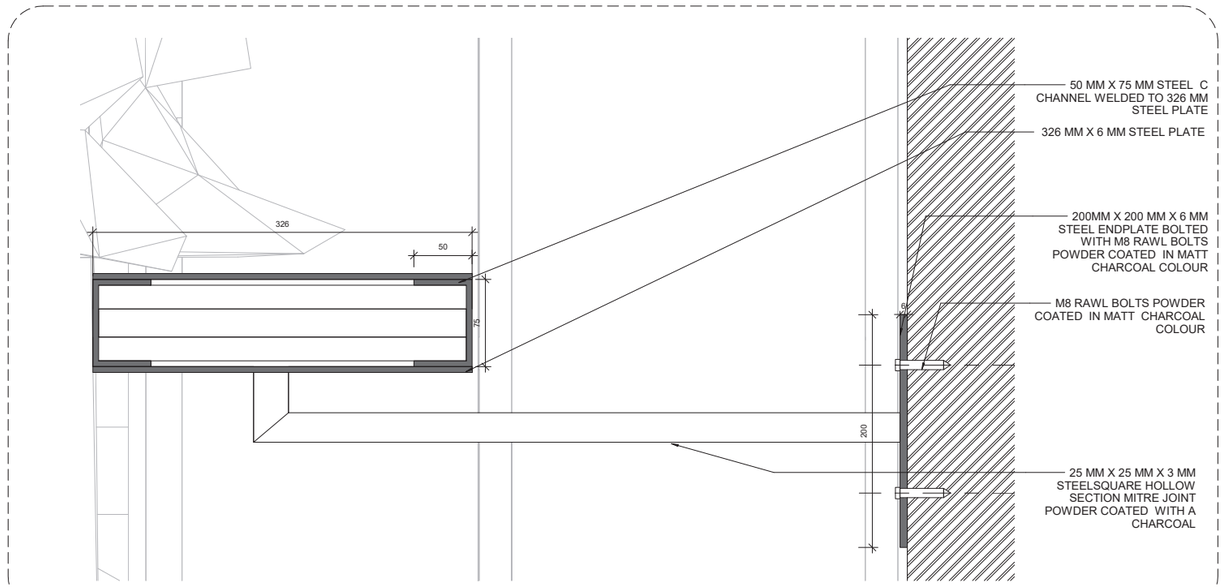
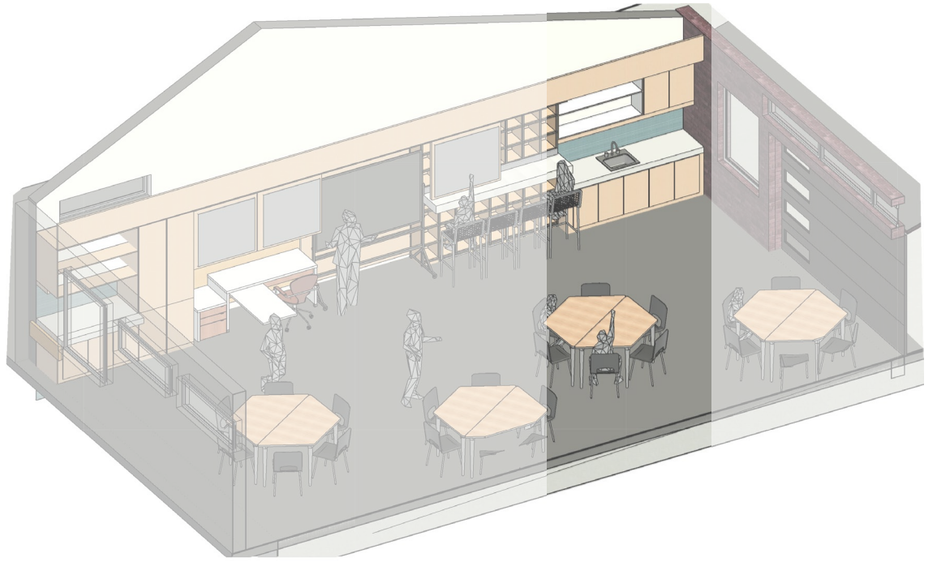
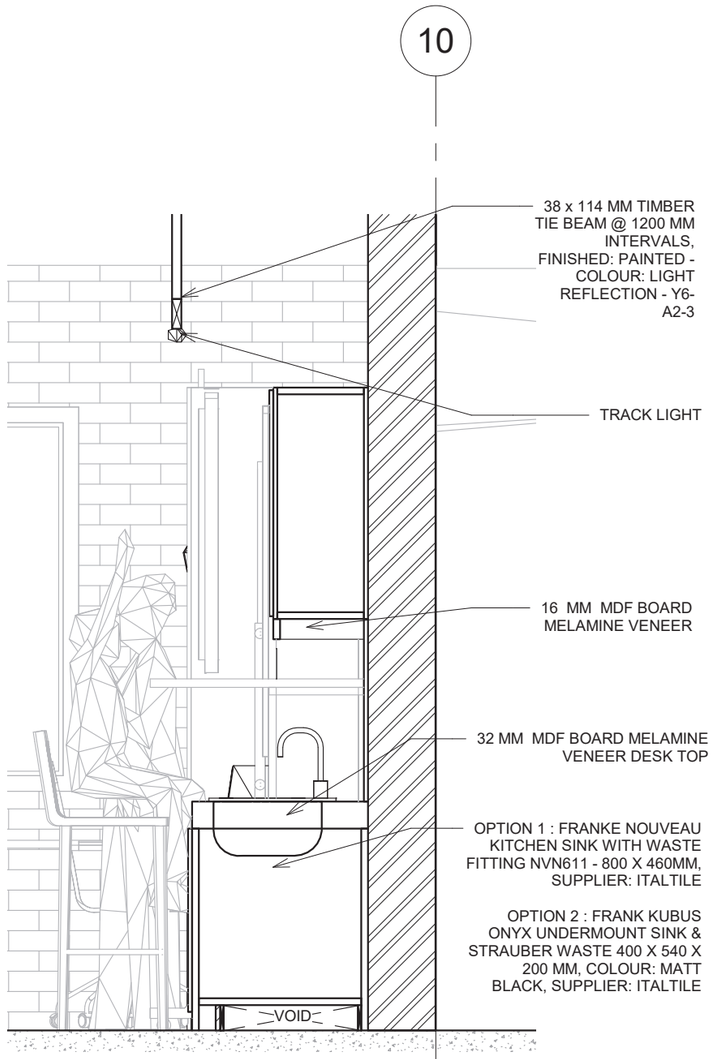


Figure 3. 28 Section B5 - Detail B(Author 2022)

SECTION OF DETAIL B IN CLASSROOM
SCALE 1:2





SECTION_SERVICE STATION

Figure 3. 29 Section B6 (Author 2022)

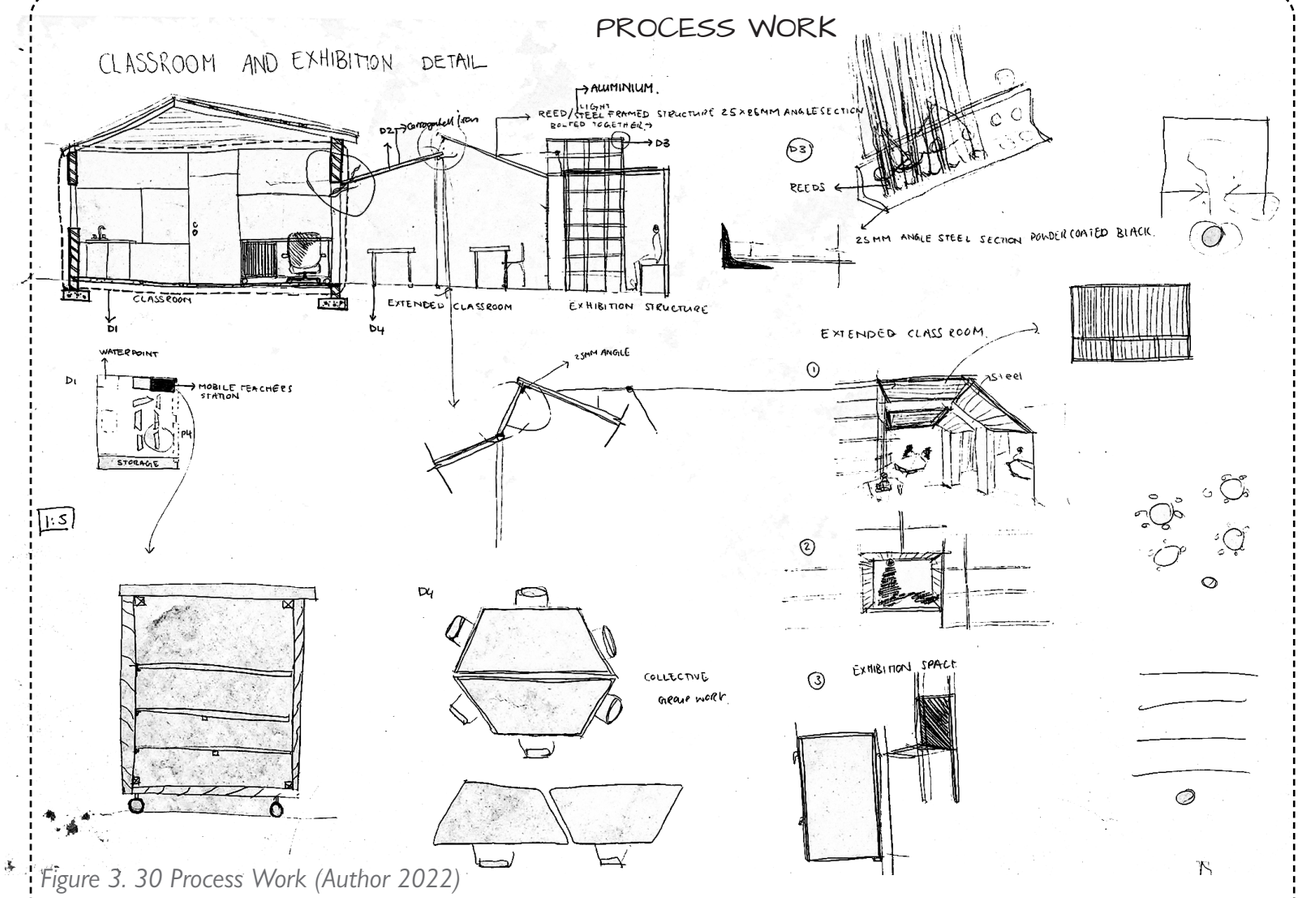


Figure 3. 30 Process Work (Author 2022)

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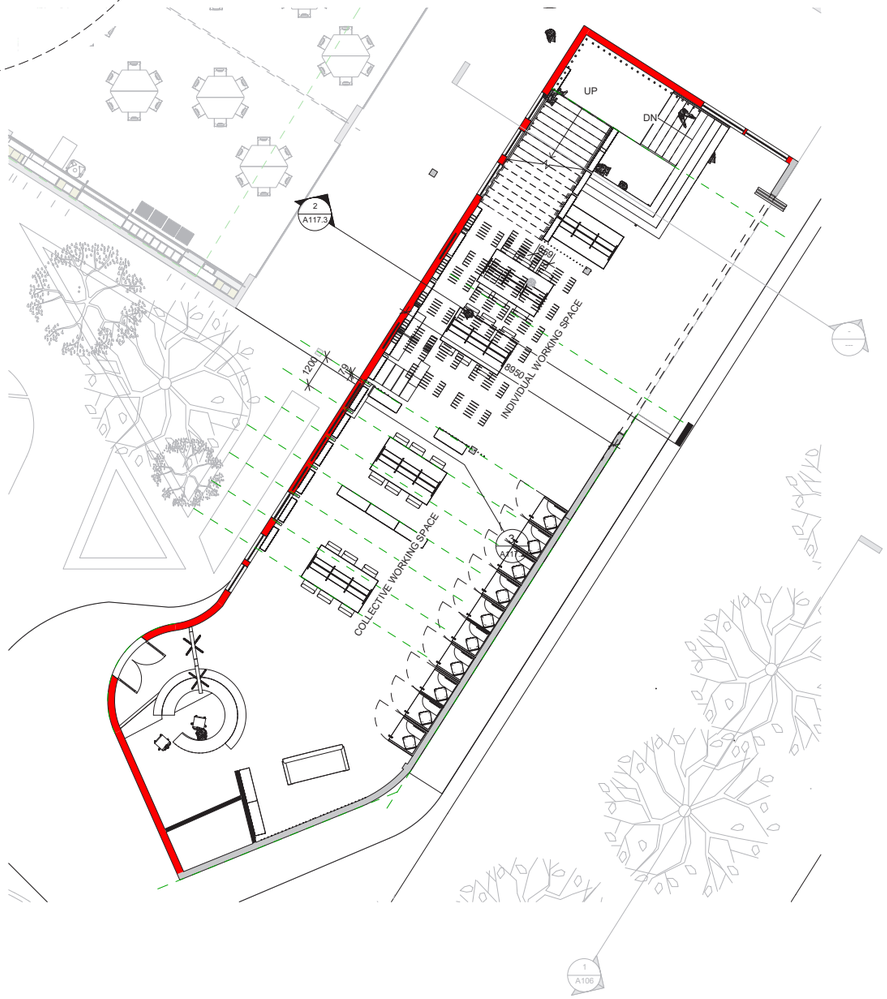
THE LIBRARY



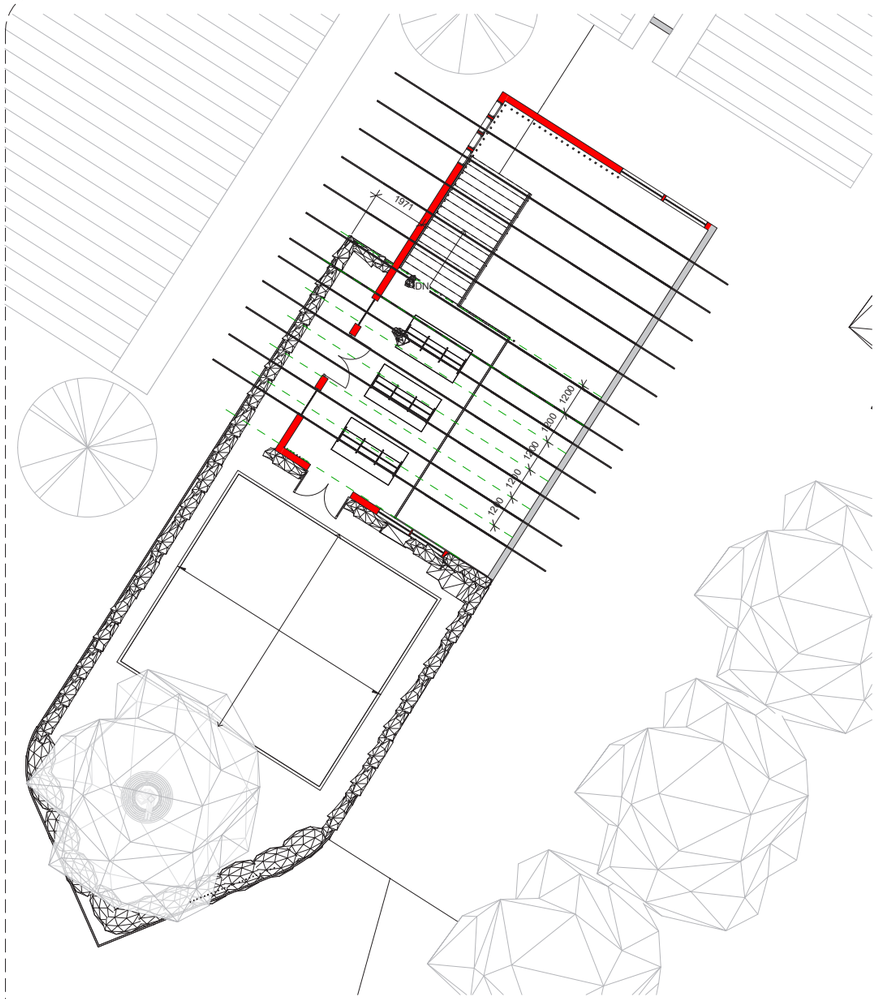
Figure 3. 31_Library interior perspective (Author 2022)

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LIBRARY GROUND FLOOR PLAN



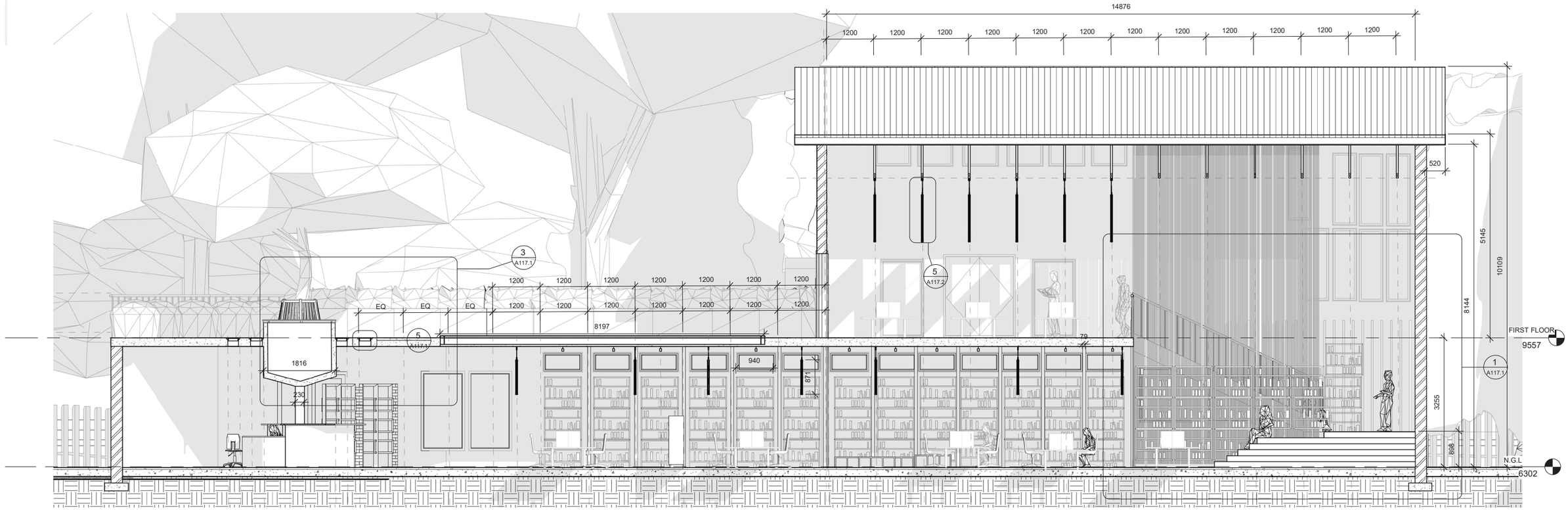
LIBRARY FIRST FLOOR PLAN

Figure 3. 32_Library Floor Plans (Author 2022)

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KEY PLAN

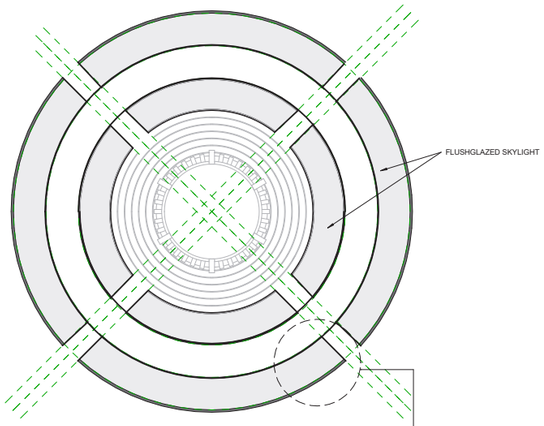


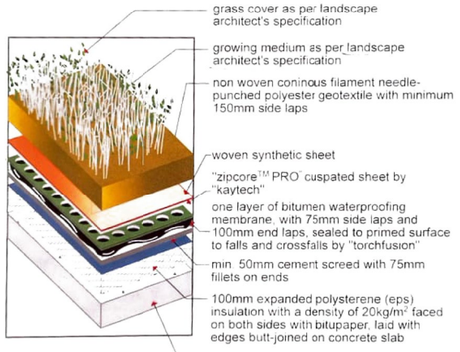
LIBRARY SECTION C1

Figure 3. 33_Library Section C-1 (Author 2022)

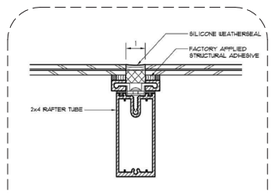
GREEN ROOF

ACCORDING TO LANDSCAPES AND ARCHITECTS SPECIFICATION

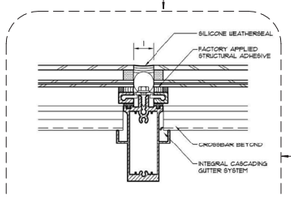




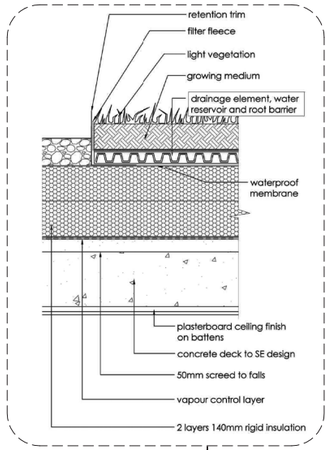
(ARCHITECTIVE, 2017)



CANOPY RAFTER - STRUCTURAL FLUSH GLAZING



SKYLIGHT RAFTER - STRUCTURAL FLUSH GLAZING



(ARCHITECTIVE, 2017)

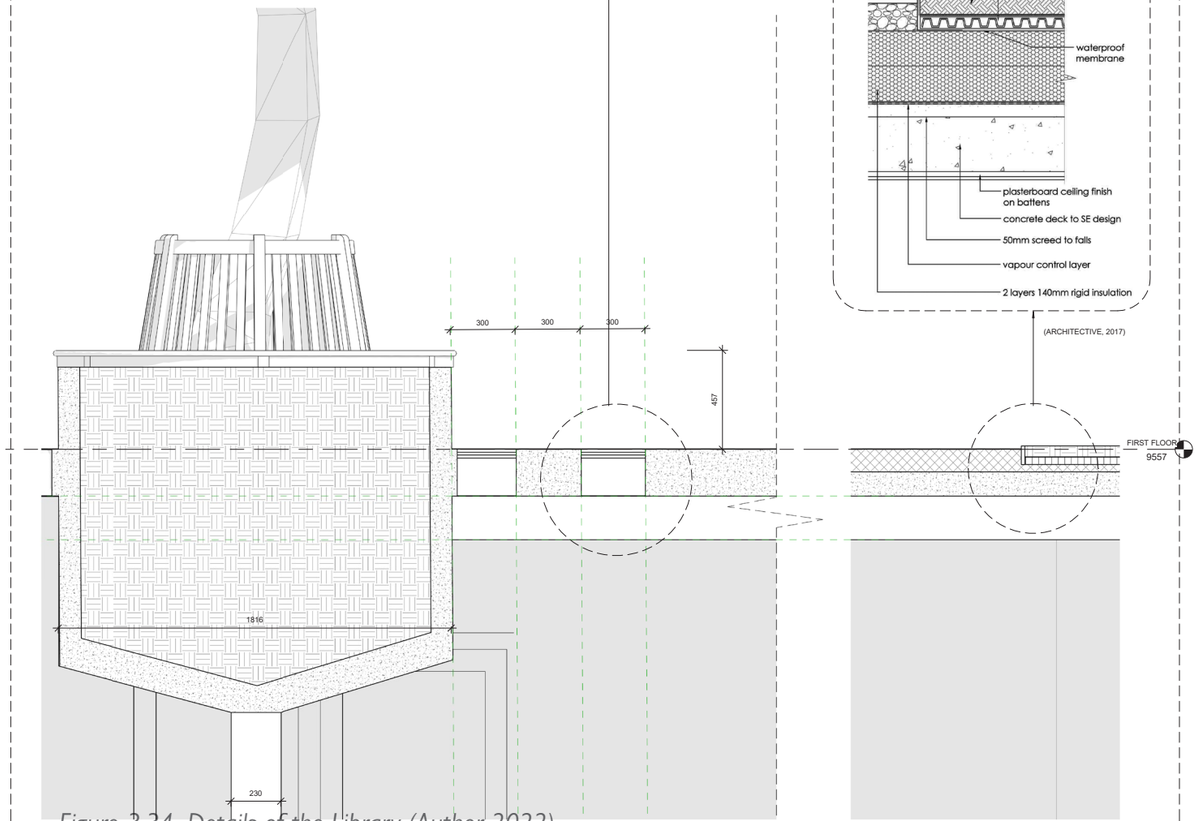
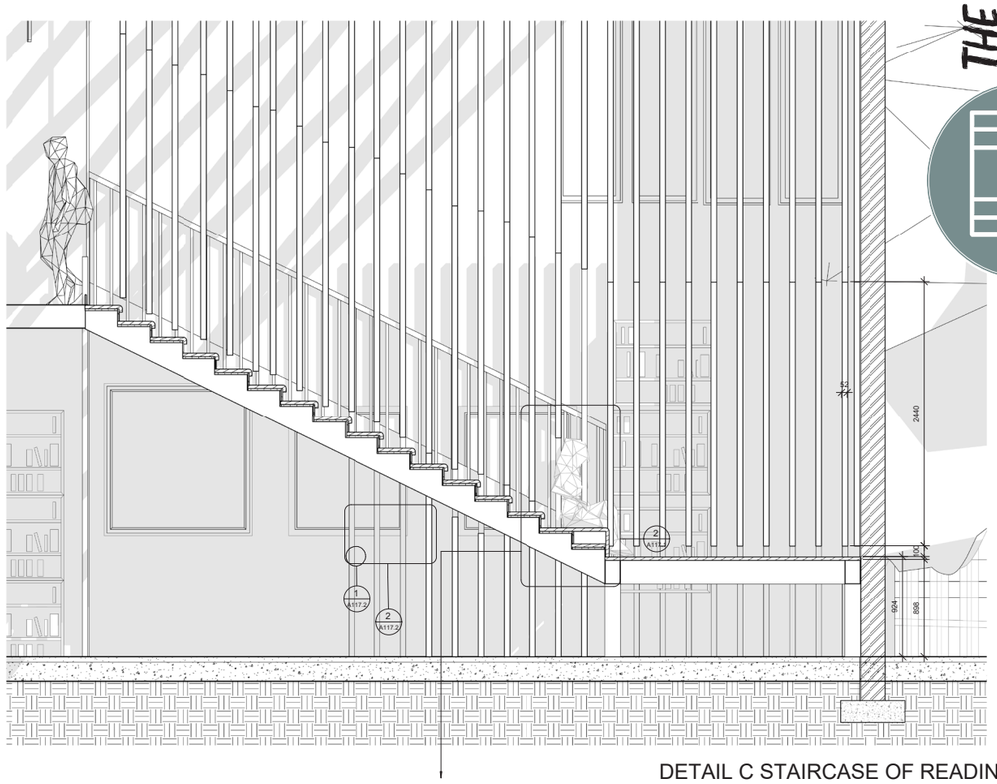


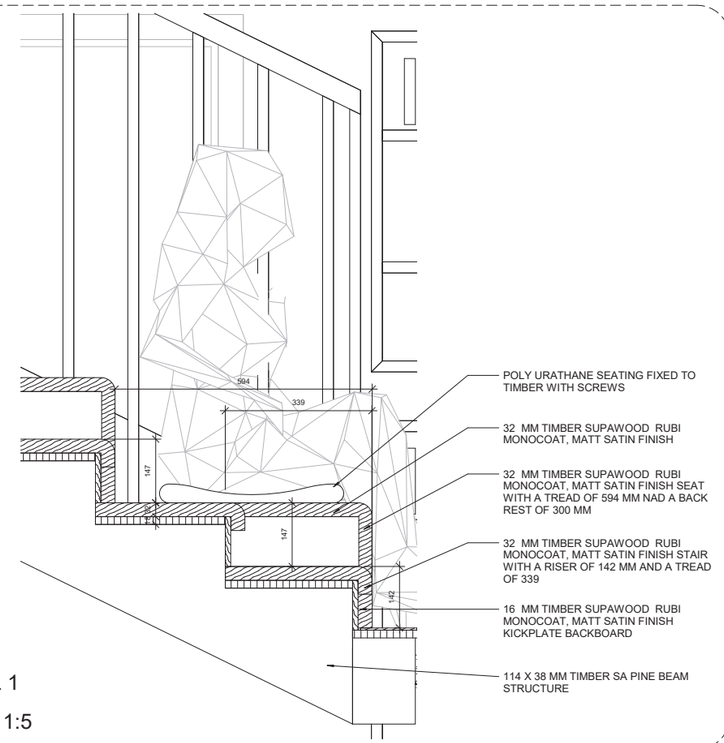
Figure 3.34_Details of the Library (Author 2022)

DETAIL C STAIRCASE OF READING



DETAIL C STAIRCASE OF READING

SCALE 1:20



DETAIL 1

SCALE 1:5

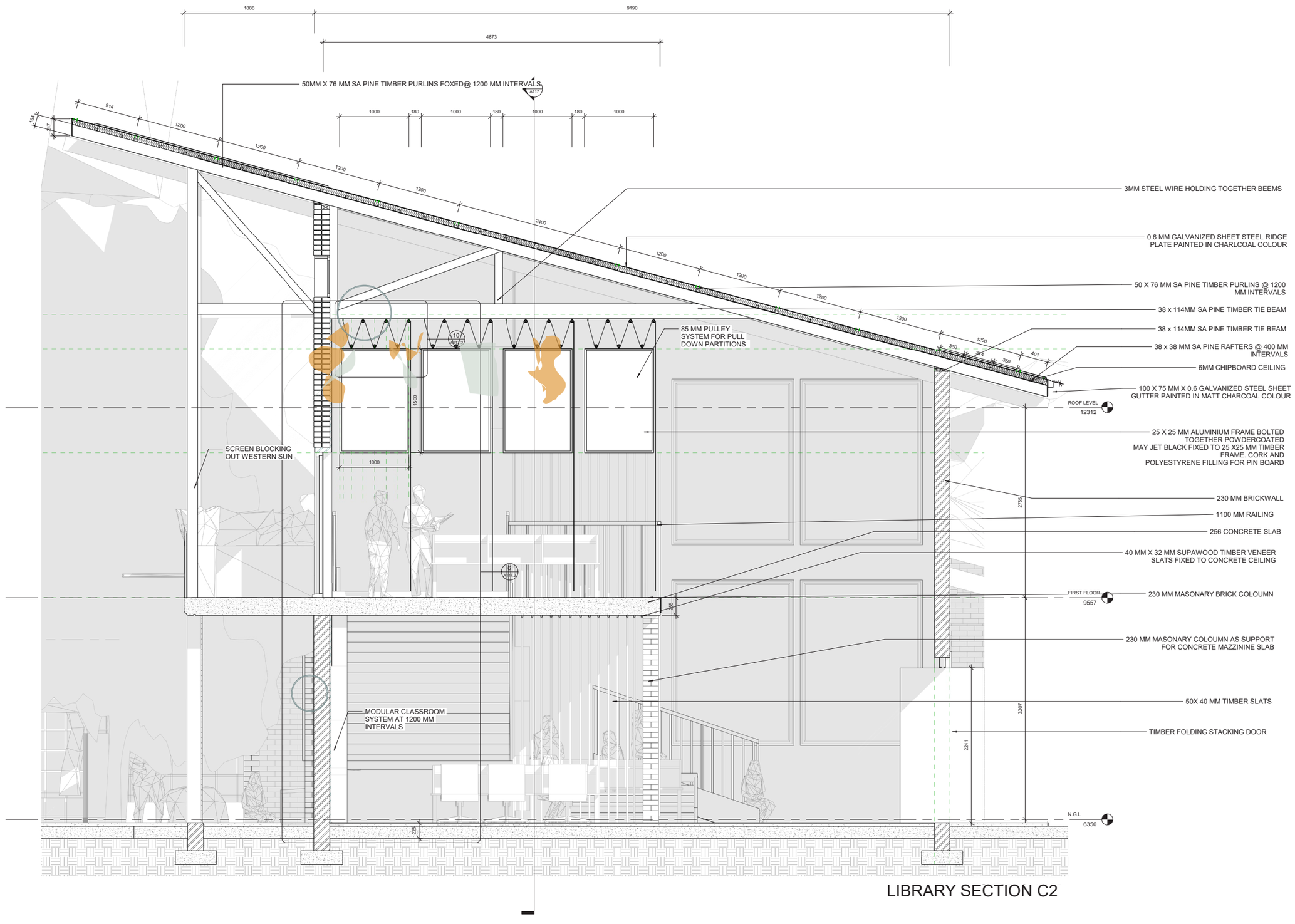
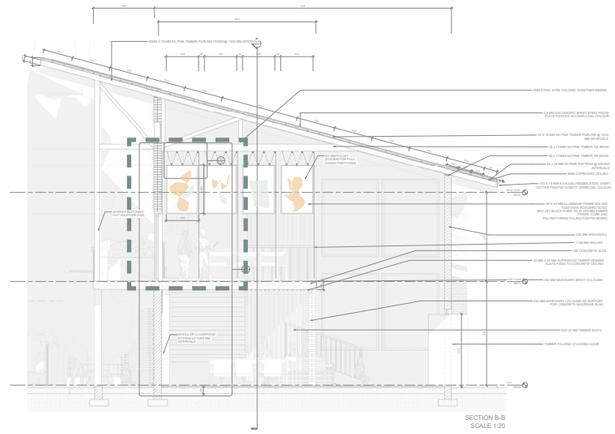
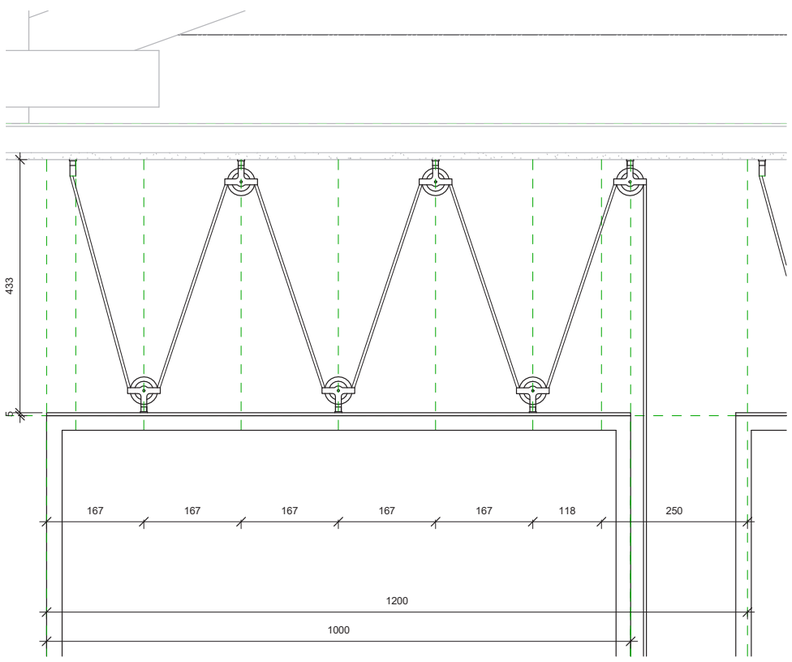


Figure 3.35_Library Section C2 (Author 2022)

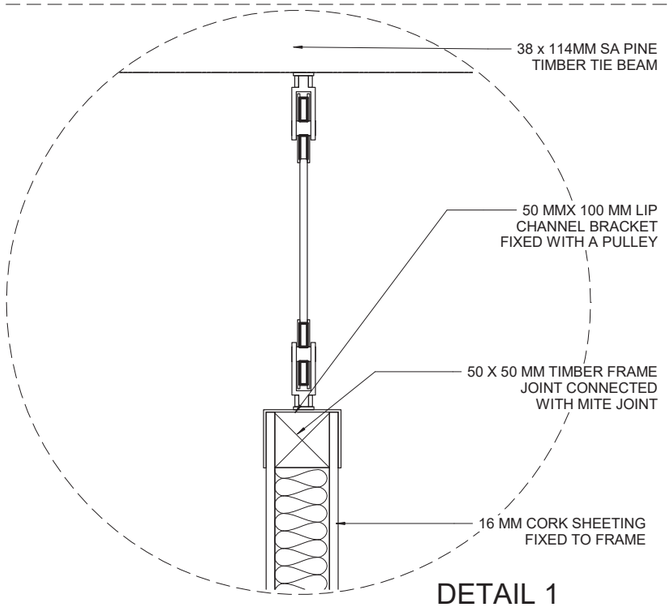


LIBRARY PULLEY DETAIL C2.1 AND C2.2

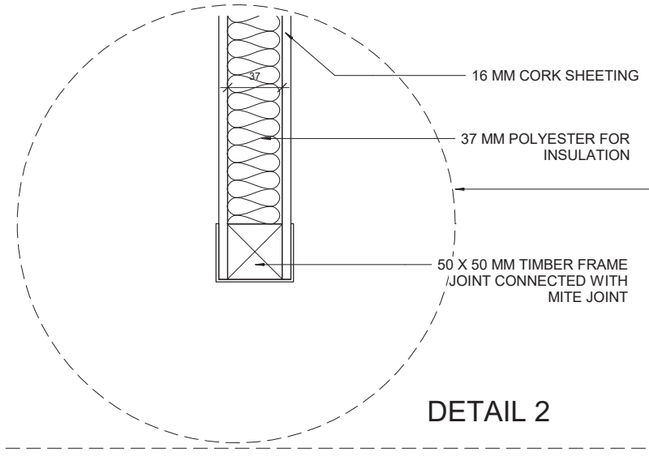


CALLOUT ELEVATION OF SHELVING

SCALE 1:50

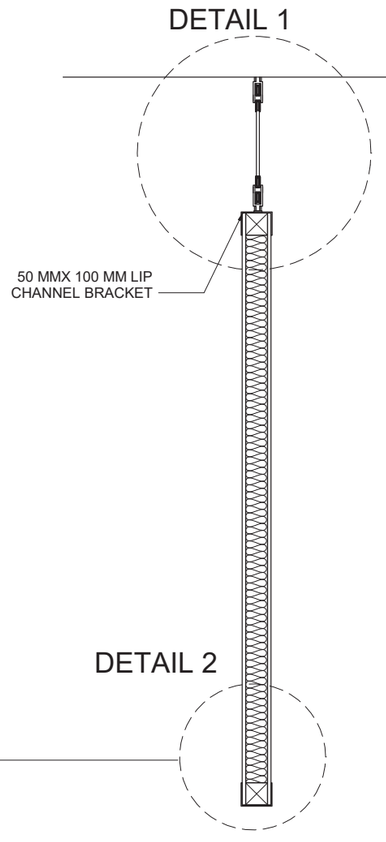


DETAIL 1



DETAIL 2

DETAIL 1



DETAIL 2

SCALE 1:5

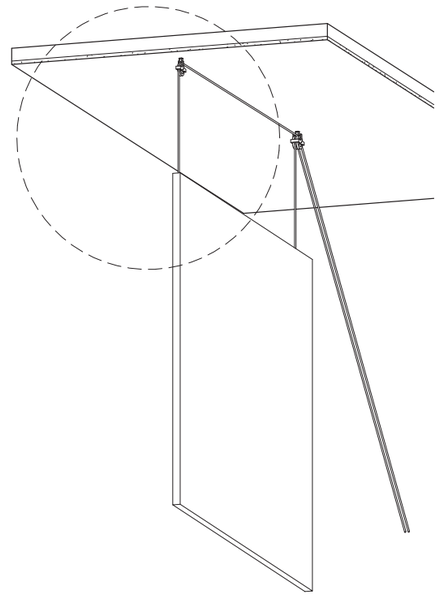
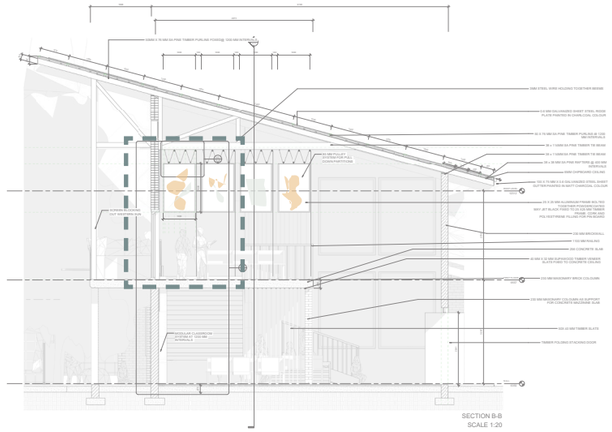
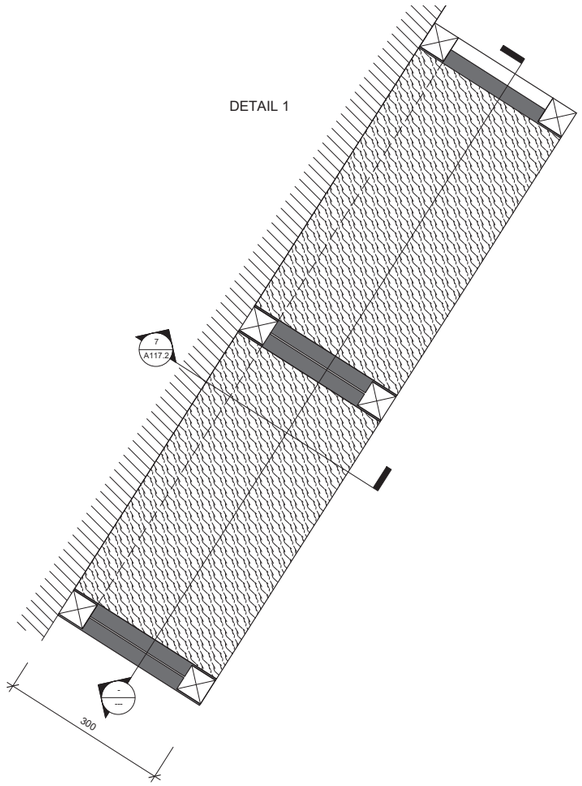


Figure 3.36_Library Section C2 - Detail C2.1 and C2.2 (Author 2022)

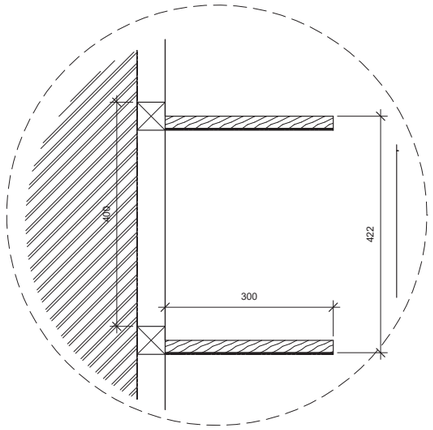
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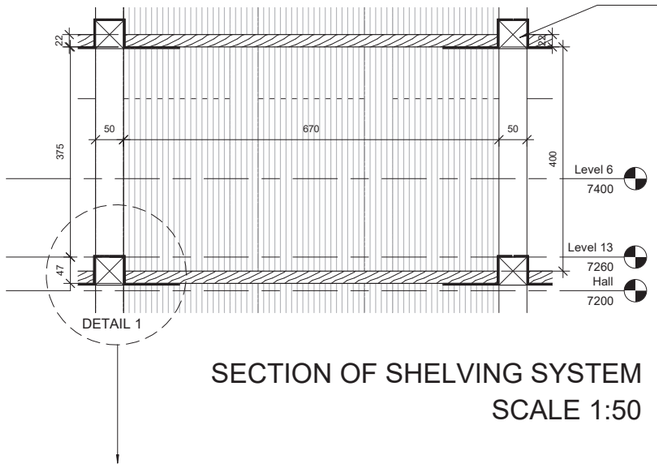


LIBRARY SHELVING DETAIL



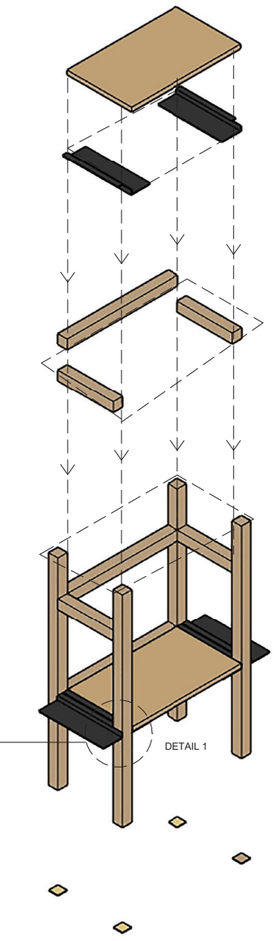
CALLOUT PLAN
OF SHELVING

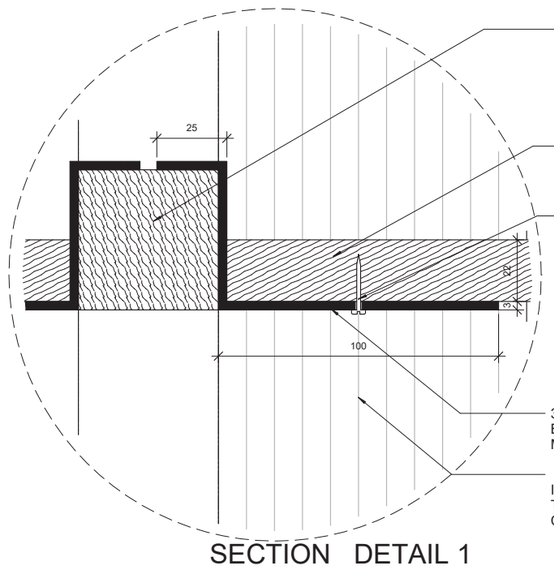




SECTION OF SHELVING SYSTEM
SCALE 1:50

50 X 50 MM SUPAWOOD WITH VENEER IN RUBI MONOCOAT, MATT SATIN FINISH TIMBER MEMBER FIXED WITH CROSS-DOWL JOINT FINISHED IN MATT JETT- BLACK





50 X 50 MM SUPAWOOD WITH VENEER IN RUBI MONOCOAT, MATT SATIN FINISH TIMBER MEMBER
FIXED WITH CROSS-DOWL JOINT FINISHED IN MATT JETT- BLACK

22 MM TIMBER SUPAWOOD RUBI MONOCOAT, MATT SATIN FINISH

5 MM PAN HEAD COUNTERSUNK SCREW

3MM CUSTOM MADE ALUMINIUM BRACKET POWDERCOATED (COLOUR: MATT JET BLACK)

10 X 12 MM SUPAWOOD SLATS WITH VENEER IN RUBI MONOCOAT MATT SATIN FIXED TO TIMBER AND CORK BAKING WITH A COUNTERSUNK SCREW @ 700 MM INTERVALS

SECTION DETAIL 1

Figure 3.37_Library Section C2 - Detail C2.3 and C2.4 (Author 2022)

PROCESS WORK

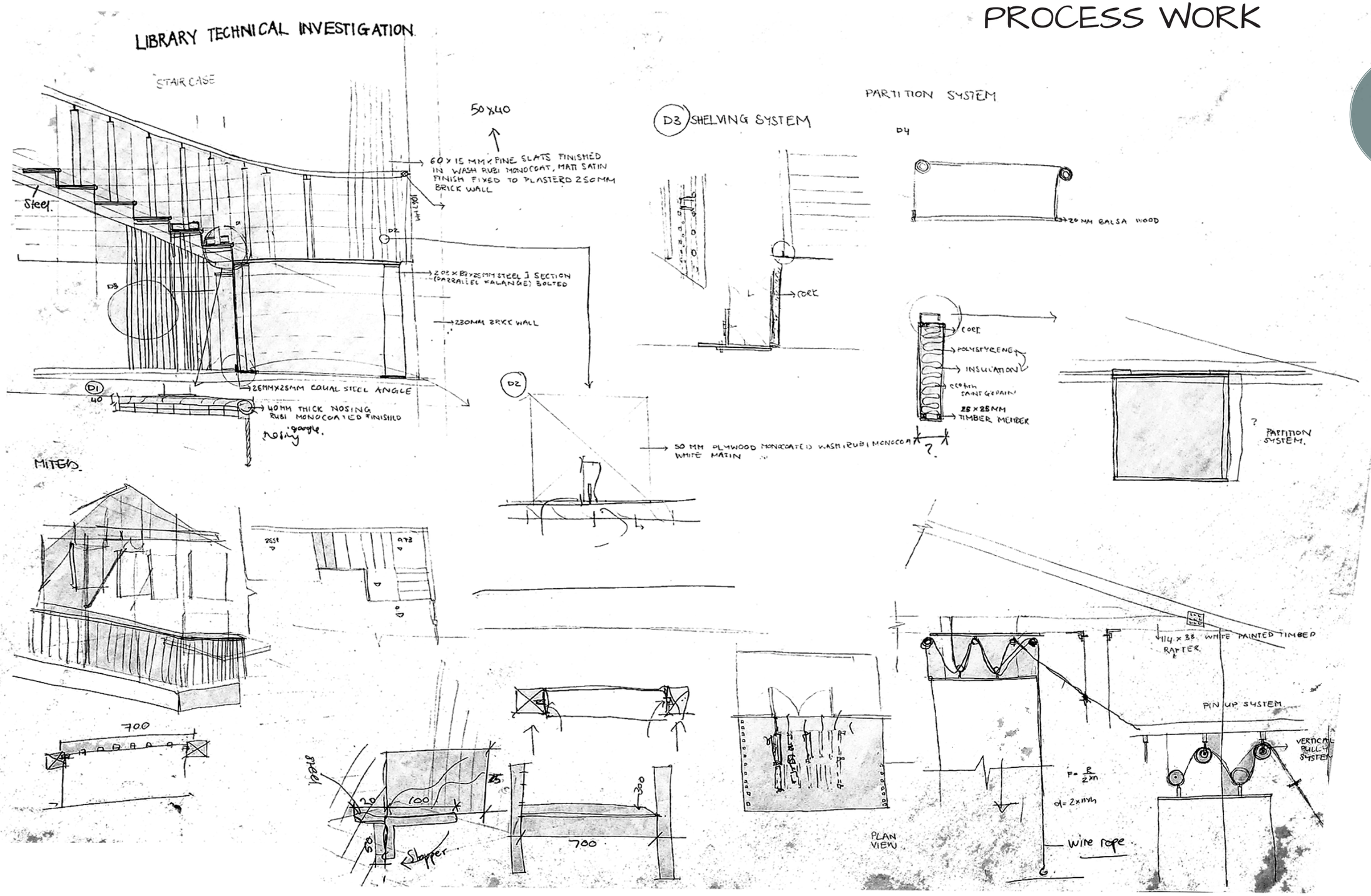


Figure 3.38_Library process work (Author 2022)

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D. MATERIALITY - MICROSYSTEM

KEYWORDS: Connections, joints, Stereotomic vs Tectonic, Properties

The overall approach to materiality is drawn from the conceptual approach. Through research conducted within the UUC (BHons 2020) a participant re-minded us about the quote "Motho ke motho ka batho "stating that a person is a person because of people. This was explained by comparing it to the strength of a bunch of sticks to the strength of a single stick. The conceptual approach and design strategy can also be viewed in relation to this by stating that in connection with each other can share knowledge making us stronger in the end. This can also be translated into the relation of the nation of stereotomic materials vs tectonic materials. The material choice goes hand in hand with how the materials can be appropriated. Therefore, lightweight materials providing for agency are chosen.

MATERIAL MATRIX

A material matrix was set up in order to select the appropriate stereotomic and tectonic material that will provide and allow for agency for the adolescents within the school as can be seen in table 2. Through the material matrix, the main materials are investigated which play an important role in the purpose of appro-priation. Through the use of lightweight materials, the users are able to assemble and configure materials themselves. Through providing permanent and temporal features the adolescents can create their own space.

Furthermore, through the matrix all potential materials are compared to each other in order to choose the appropriate material. The materials matrix does thus not include all the materials that are used within the design. However, all materials can be seen in the sample board seen in Figures 3.39 and 3.40.



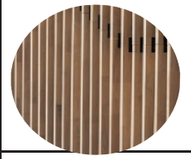
Figure 3. 39_Sample board indicating all materials that will be used within the new intervention (Author 2022)

3.6.5 TECHNICAL CONCLUSION

Through the lens of the four principles of the technical strategy of: storytelling, safety, appropriation, and materiality in relation to the technical principles it was found that through considering the principles the nodes of the library, the classrooms, the exhibition unit and the performance space could create a safe environment through providing a space in which spatial agency can occur. The materials should provide for agency so that a means of expression can take place. A means of expression and storytelling can take place through pinning up work, through conversation by sitting in the gardens and through teaching in the classroom and library.

MATERIAL MATRIX

Table 3.1_Material Matrix (Author 2022)

TECHNE	Material name	Material Image	Functional/Structural Properties	Area of Application/Possible application	Innovation properties/workability/ cutsomization	Supplier	Specifications	Acoustic properties
Stereotomic- Existing	Brick			Used within the **existing and new** building, Classroom, Library, Performance Space,	Very heavy therefore does not allow for appropriation	Corobrick	FINISH, SIZE, MATERIAL, INTERVAL, FIXING	
	Concrete			Used within the **existing** building, Classroom, Library, Performance Space, Courtyard	Very heavy therefore does not allow for appropriation	Existing	N/A	
Tectonic- New - Appropriation	Wood/Timber- MDF			Reinterpreted new: Indoor: Library, Classroom, Performance space	Medium weight however if slim members are used does allow for innovation	OWA	Melamine, Ideawoods	On its own poor acoustic properties. However when used with a backing such as cork then acoustic properies imporve.
	Wood/Timber- Plywood (Leroy Merlin , 2022)		Interior application. High in strenght	Reinterpreted new: Indoor: Library, Classroom, Performance space	Medium weight however if slim members are used does allow for innovation	Leroy Merlin	Pine Shutterply Board C+/C Grade T18mm x W1220mm x L2440mm	Poor
	Reeds		Low strenght, needs to be treated for outdoor purposes	Reinterpreted new: Outdoor: Exhibition space	Very lightweight material which allows for movability	Contextual from pienaarsriver adjacent to the site		Good
	Aluminium		Medium in strength, can not be used as a structual support	Reinterpreted new:Outdoor: Exhibition space, Indoor: Library, Classroom	Very lightweight material which allows for movability	Aluminium Trading		Poor
	Steel		Can be high in strength depending on what member size is used	Outdoor: Exhibition space, Indoor: Library, Classroom	Medium weight however if slim members are used does allow for innovation			Poor
	Cork		Low strenght, needs to be treated for outdoor purposes	Reinterpreted new: Indoor Areas				Good

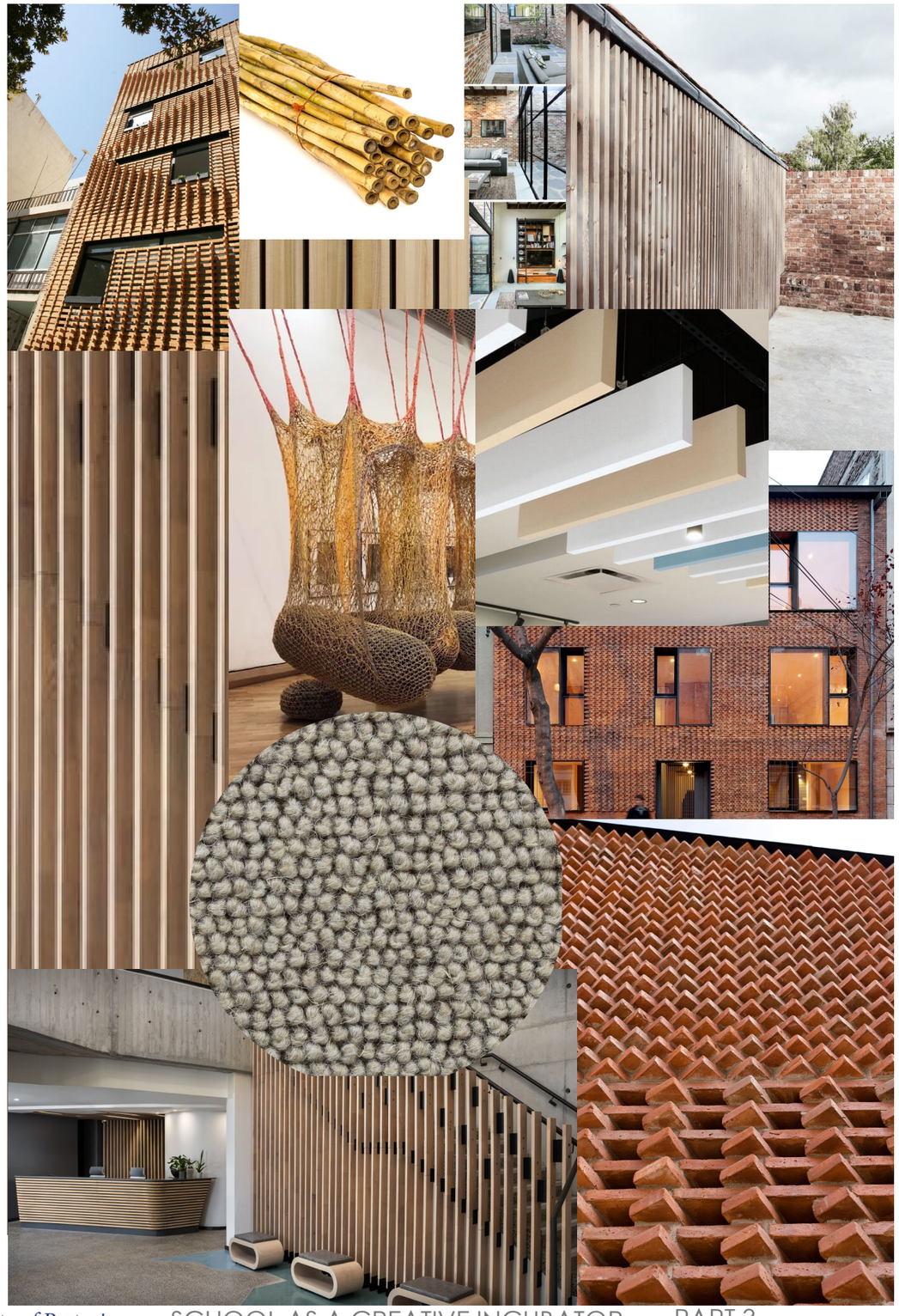
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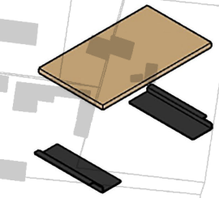
EXISTING MATERIALITY

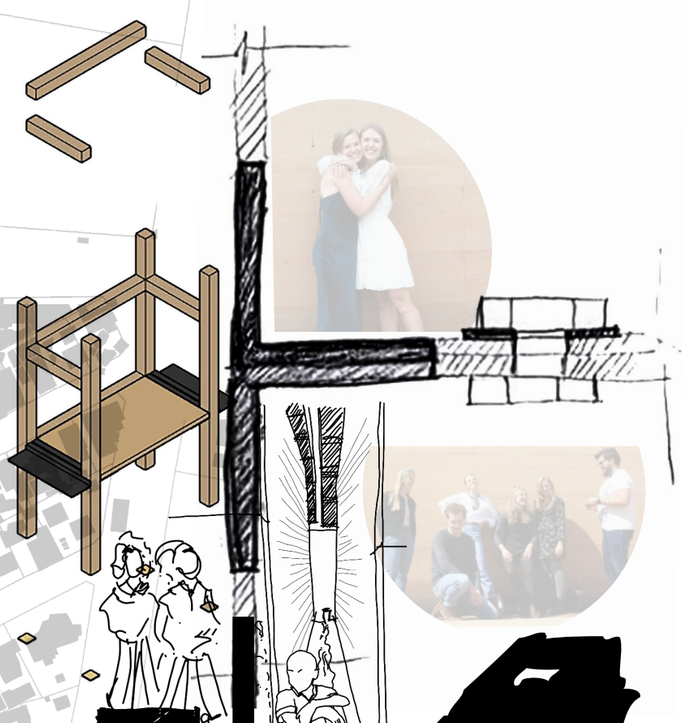


Figure 3.40_Exitising to New Materials (Author 2022)

NEW MATERIALITY







PART 4

Critical Reflection

CRITICAL Reflection

4.1_INTRODUCTION

Part four of this book acts as a reflection of the process that was conducted within the course of the master's dissertation between 2021 and 2022. Furthermore, this chapter reflects on the effect the process had on the author as a future professional and what contribution the study made to the discourse by creating a new narrative for the adolescents at Tsako Thabo Secondary School.

The goal of the project was to address the effects an unsafe learning environment has on the development of an adolescent and the effect this has on the future of the adolescent. Furthermore, to create a revised typology as a safer space for adolescents, to foster identity and belonging through creating a school as a creative incubator. Through the participatory action research methodology, it was found that unsafe areas are created through the existing school typology, a need expression for adolescents is identified. Using methods of storytelling in an expanded typology for a school as creative incubator, programmes such as a library, a classroom, and a display areas were considered.

This chapter will thus be reflecting on the process of collecting the data for the dissertation within 2021 as well as how the project was consolidated, and a design was created during 2022.

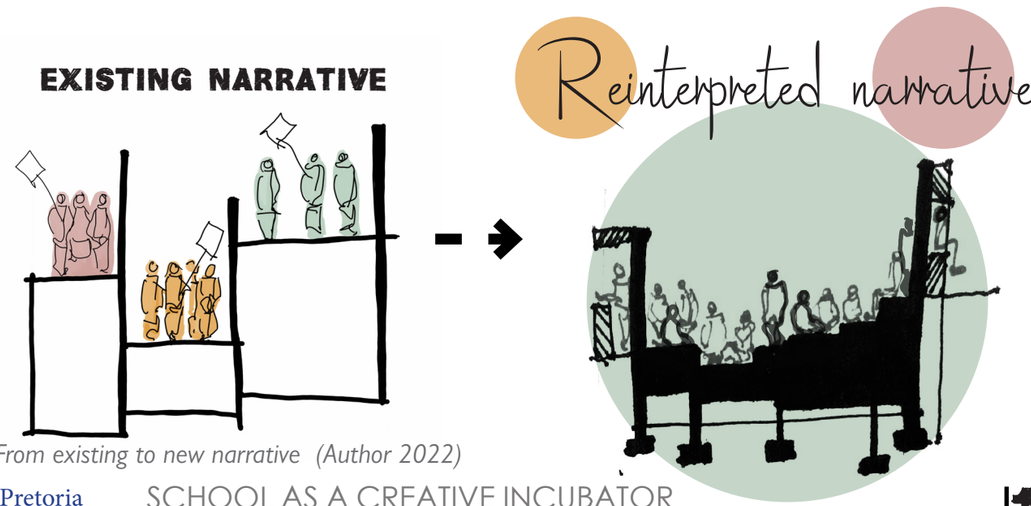
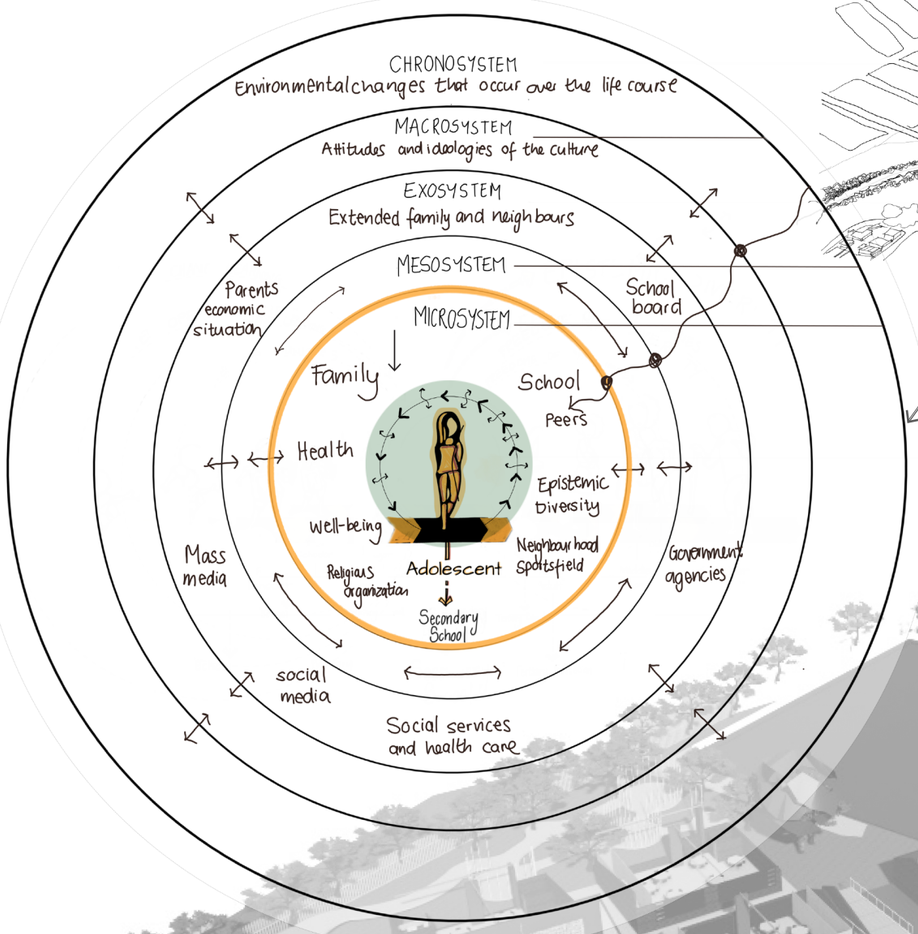
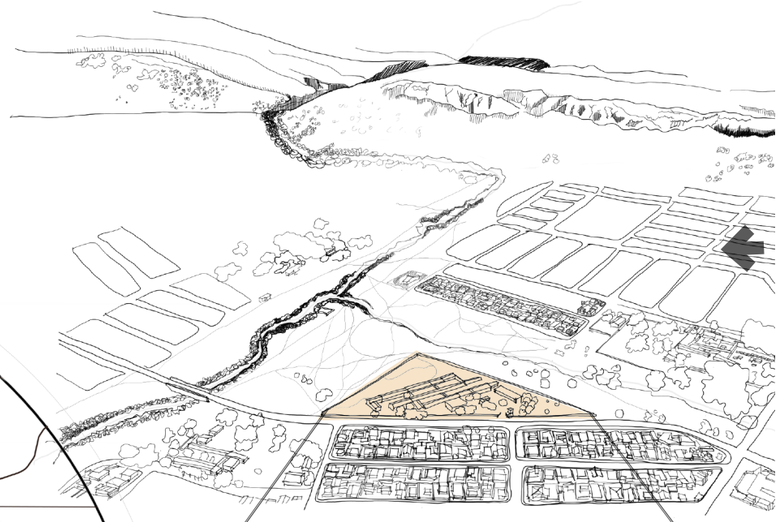


Figure 4.1_From existing to new narrative (Author 2022)

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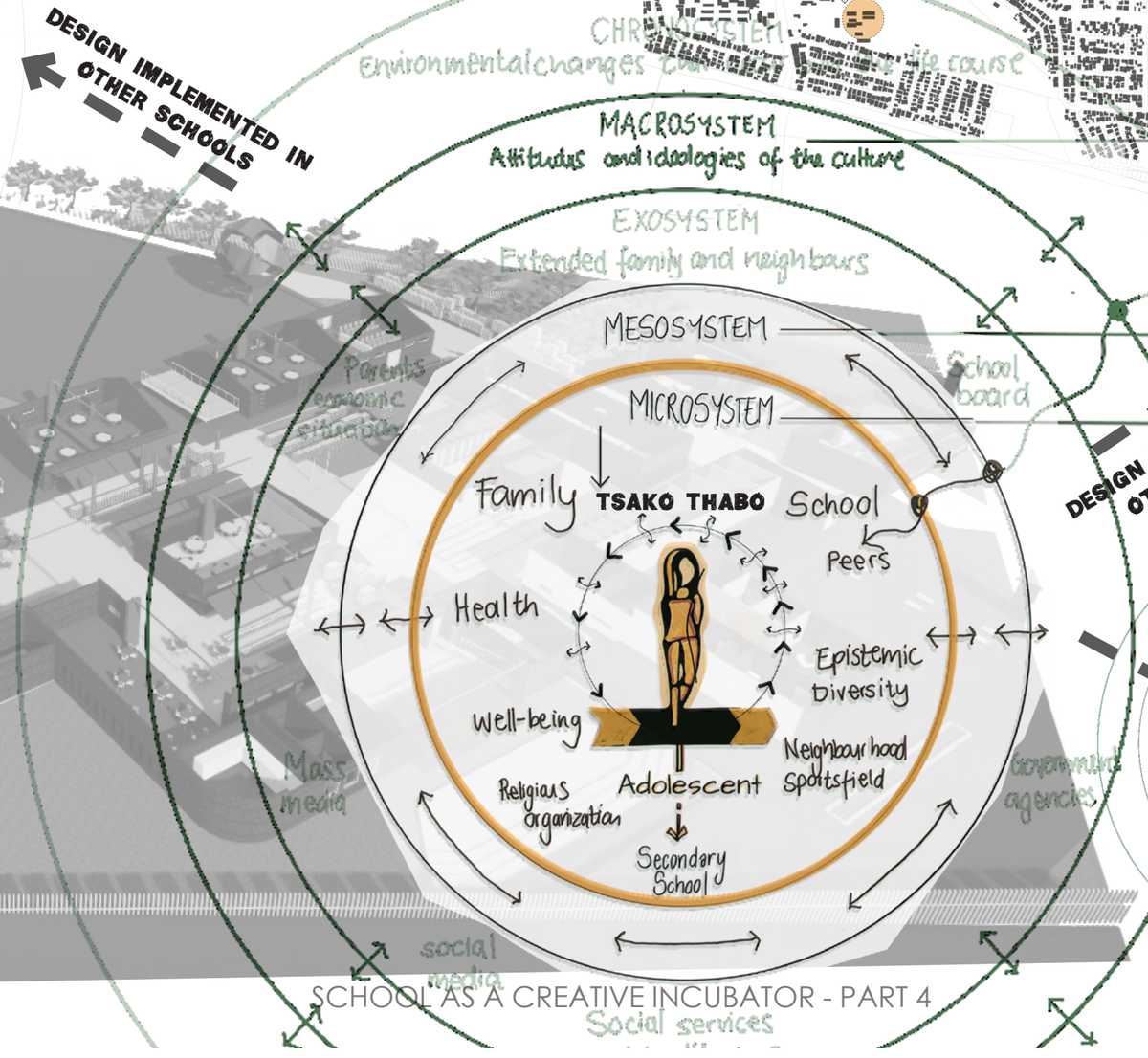


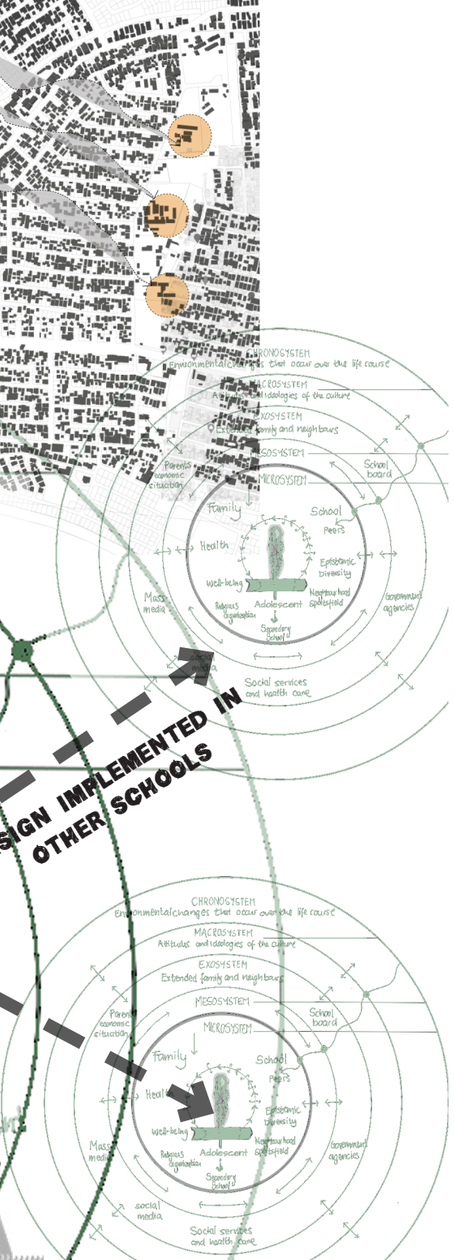




DESIGN IMPLEMENTED IN OTHER SCHOOLS

DESIGN IMPLEMENTED IN OTHER SCHOOLS





DESIGN IMPLEMENTED IN OTHER SCHOOLS

Figure 4.2_Diagram indicating the potential of the future of the project being implemented within other schools (Author 2022)

4.2 REFLECTION

How can a reinterpreted secondary school architectural typology facilitate storytelling for a safer typology for adolescents to foster identity and belonging in order to create well-being at Tsako Thabo Secondary School?

4.2.1_METHODOLOGY

The research question was explored through an inductive study using the PAR methodology, followed by a co-design and a meta-design. Through conducting a series of workshops with the adolescents of Tsako Thabo Secondary School in 2021, it was found that the adolescents feel unsafe, that there is a need for expression, and for an expanded school typology that provides a safer environment.

PARTICIPATORY ACTION RESEARCH SESSIONS

The research was gathered in Honours and Masters in 2020 and 2021, during this time, it was a challenge to identify the core problem. It became clear that safety was the main concern in Mamelodi and Khalambazo spatially.

Bronfenbrenner's (1997) systems theory provided a good lens through which the project was viewed, to structure the chapters of the mini dissertation. In chapter 1, the systems ranging from a macro system, a mesosystem, to a microsystem provided critical lenses through which the site analysis and the three issues could be unpacked. In part 2 the theory provided a good grounding to establish design principles, these were derived from the site analysis and the theoretical framework, which was identified and established within essay 2. Furthermore, the theory also provided a foundation to create theoretical principles. Considering Bronfenbrenner's systems theory, it was found that the project itself started at a macro scale to determine the project issues and the research question. In essay 2 the mesosystem becomes the connector between the intangible issue of storytelling and the tangible. The tangible was considered through the microsystem which was dealing with making the school a safer environment within the micro-scale.

Furthermore, it was found that the mesosystem acts as a connector from TsakoThabo Secondary School beyond the school boundaries. Through the course of the two years, it was found that there lies the opportunity for a creative incubator and a revised typology to be considered in other secondary schools in the context of Khalambazo.

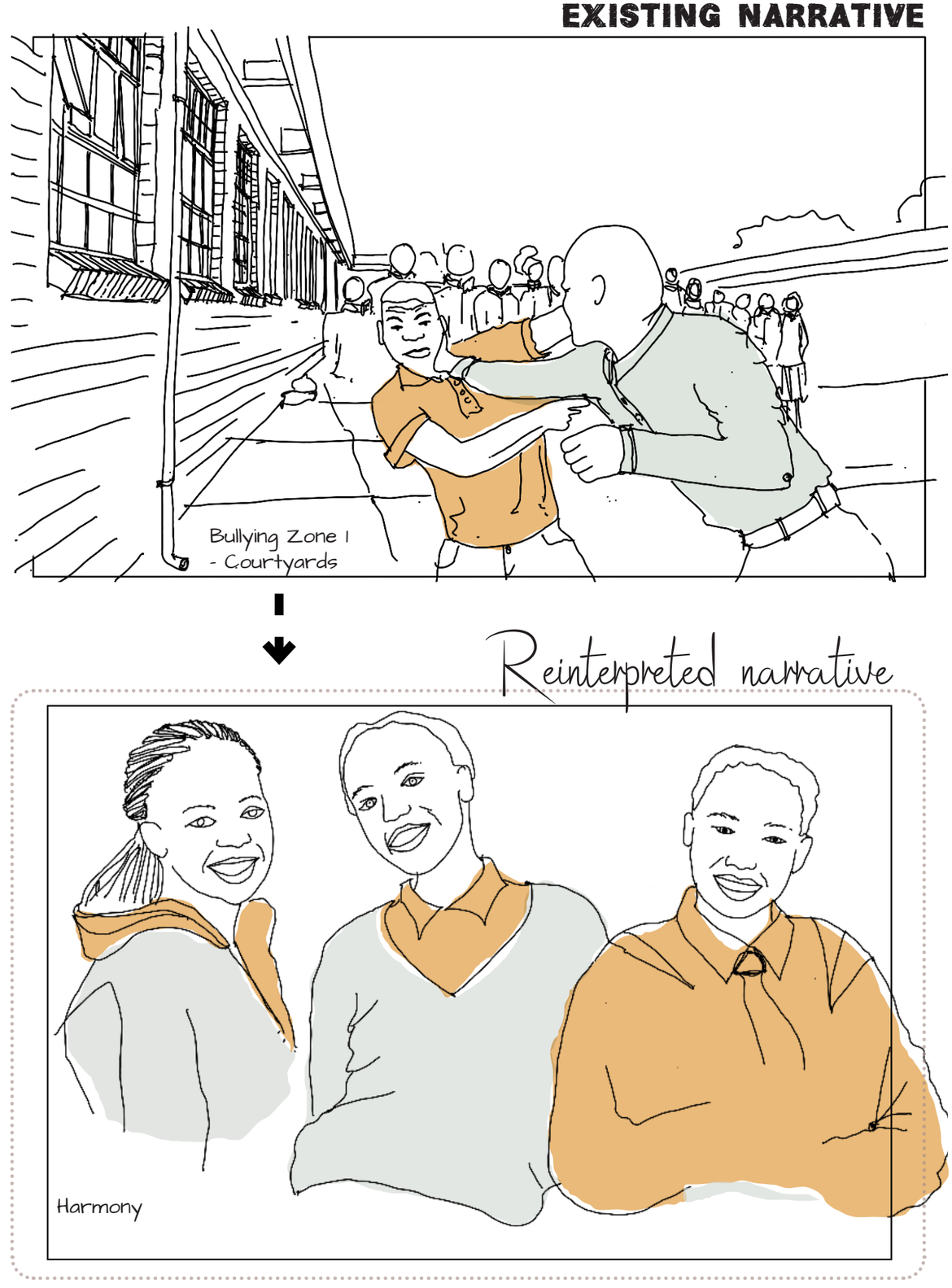


Figure 4.3_Reinterpreted Narrative for Bullying Zone 1 (Author 2022)

This can be supported by referring to the existing narrative as areas that were identified as bullying zones (essays 1 and 2) and comparing them to the new narrative as a safer learning environment (microsystem) for the learners at the school.

The corridors, as a first bullying zone, have opened to become more active and wider. The second zone, the classroom, integrated the adolescents through expression and appropriation to change the space. Furthermore, this can be interpreted to foster identity and belonging, and therefore enhance the development of the adolescent.

4.2.2_FINDINGS AND THEORETICAL FRAMEWORK

STORYTELLING

Through the exploration of Bronfenbrenner's (1997) systems theory, the development of the adolescent was explored. Through considering Wilcock's(2006) theory of doing, being, becoming, and belonging the effect of the environment on the adolescent's development of identity and belonging could be explored. Through Wilcock's theory, it became clear that storytelling is embedded within the identity of adolescents and can thus be used as a tool to foster identity and belonging.

The consideration of health science theories of Wilcock's (2006) theory and Bronfenbrenner's systems theory created a good foundation for spatial development. Christopher Alexanders (1977) Theory provided a good foundation to translate intangible theories into space in relation to interiority (McCarthy 2005).

SPATIAL STORYTELLING

The modular unit of the creative incubator becomes a connecting agent forming part of the main route of the circulation between the buildings. Furthermore, the exhibition unit contains a grid system that allows for flexibility and adaptability to form part of the classrooms. Furthermore, the unit or framework provides space where students from art class can display their work to tell their stories. The grid also forms part of the courtyard gardens as part of the break space.

4.2.3 DESIGN PROCESS

CONTRIBUTION TO THE DISCOURSE

Through undergoing a study in which the focus of the author shifted from a PAR methodology to a meta-design methodology, the study shows the value of the shift through a critical reflection. Through the design phase, the author acted as both a facilitator and designer moving from giving half of the authorship to the adolescent to leaving the authorship to the designer. This process enabled a shift in authorship between the author (designer) and participants.

Through the fieldwork, in Honours and Masters, a contribution was made to the context and to the school by gathering research which was distributed to the students of the following years within the Urban Citizen Studio, the OT Department, and the JCP community of the University of Pretoria. The research that was gathered from 2019/ 2021/ 2022 is explained in part 1. This research can be used to formulate further research dissertations within a similar context as can be seen in Figure 4.2.



Figure 4.4_Reinterpreted Narrative for Bullying Zone 2 (Author 2022)

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4.2.4 FROM EXISTING TO REINTERPRETED

It has become evident that the way a space is configured or designed has a direct influence on the psychological impact of a person such as well-being and development, in this case, the adolescents. The study reveals that storytelling can be used as a spatial device to make expressions tangible in various areas: Display and seating unit, classroom, and library.

The main aim of the project was to create a safe typology for the school by expanding it and allowing for a means of expression for the adolescent by providing a space that allows for appropriation (Figure 4.5). Throughout the beginning of the project, the challenge was to create a tangible spatial design from intangible conditions and issues.

Furthermore, another challenge was to identify the tangible spatial qualities and elements that also cause the lack of safety. However, through PAR workshops and through investing spatial theory by Christopher Alexander (1977) relating to safety and relating that to Bronfenbrenner systems theory a response was developed to integrate storytelling in strategic ways.

By identifying storytelling as a method to foster identity and belonging, the challenge was to make storytelling spatial. However, programmes such as the library, the classroom, and the display and seating unit being connected with a modular system running through all spaces creates a framework for expression.

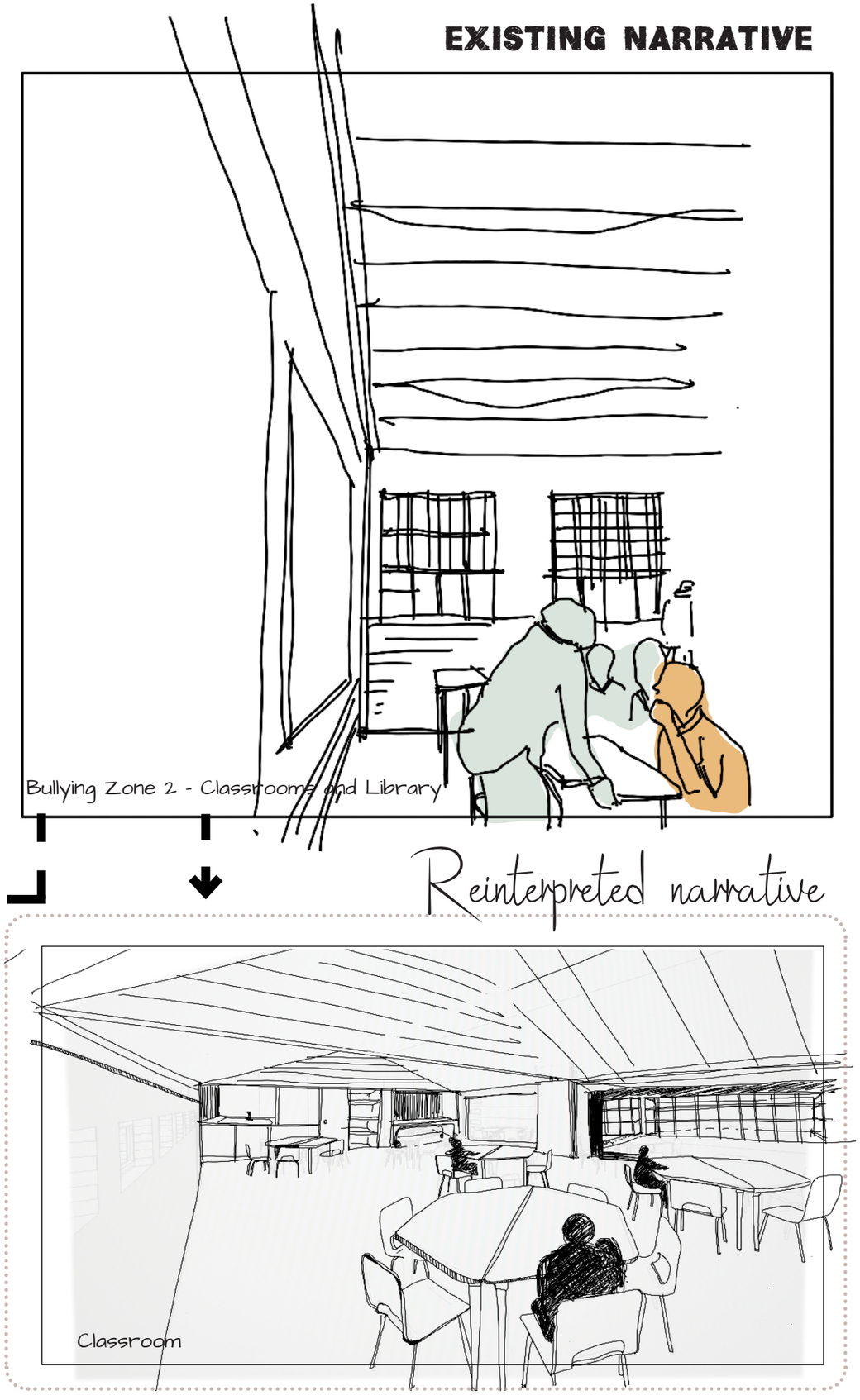


Figure 4.5_Reinterpreted Narrative for Bullying Zone 3 (Author 2022)

4.3 CONCLUSION

This study reveals the need for the safety of adolescents, at Tsako Thabo Secondary School and in the surrounding context of Khalambazo, Mamelodi. This translates into the need for an enhancement of learning and therefore a need to foster identity and belonging, to insure a prosperous future for adolescents. Through the research conducted within the UUC, it was identified that surrounding schools within the context deal with similar challenges. Therefore, there is an opportunity for the study and the design intervention to be developed in other secondary schools within the context.

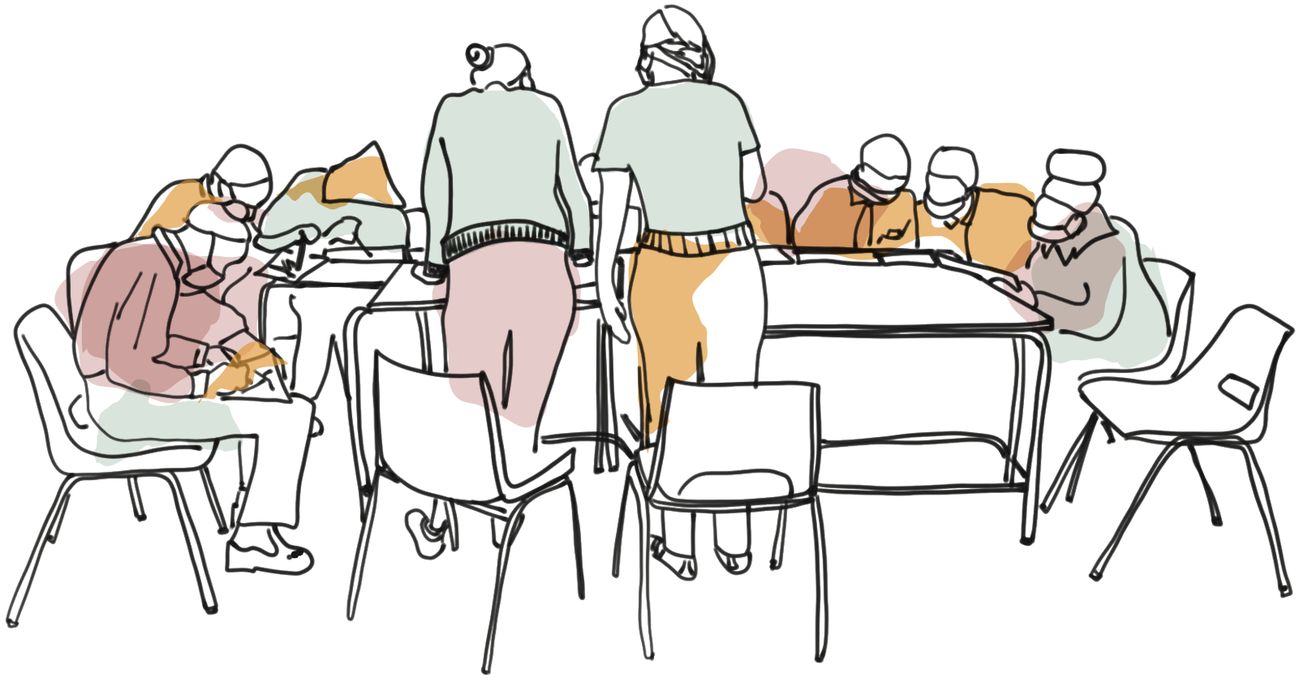


Figure 4.6_The Creative Incubator (Author 2022)

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Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Reference number: EBIT/259/2020

Dr C Combrinck
Department: Architecture
University of Pretoria
Pretoria
0083

Dear Dr C Combrinck

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Urban Citizen Studios: Public Interest Design" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval
Conditional approval on the understanding that:
- Applications from each student (including application forms and all necessary supporting documents such as questionnaire/interview questions, permission letters, informed consent form, researcher declaration etc) will need to be checked internally by the supervisor. A checklist will need to be signed off after the checking.
- All of the above will need to be archived in the department and at the end of the course a flash disc / CD clearly marked with the course code and the protocol number of this application will be required to be provided to EBIT REC administrator.
- Any personal and demographic data (eg gender, income, education) have provided the motivation that is acceptable based on the supervisor's evaluation.
- Students using organizations data not publicly available or collecting data from employees have the permissions in place.
- No data to be collected without first obtaining permission letters. The permission letter from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.
- Images and observation of people will require consent. Images and observation of minors are prohibited.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

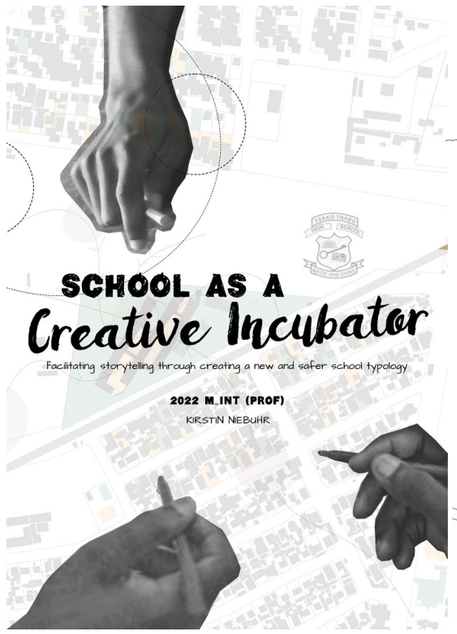
According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

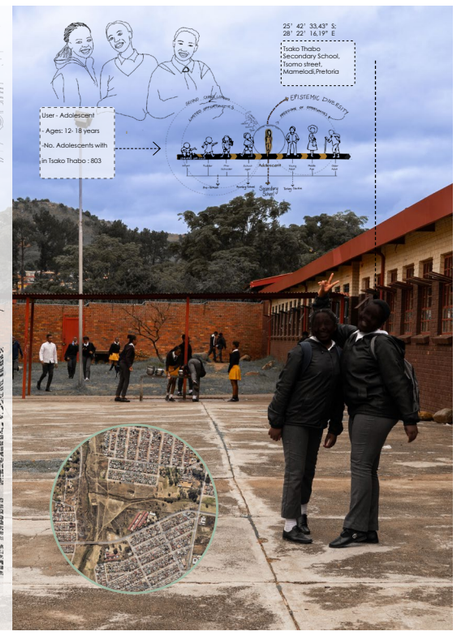
Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

PRESENTATION



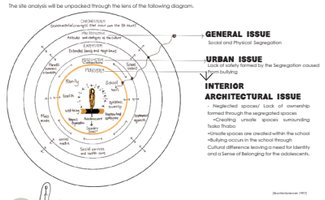


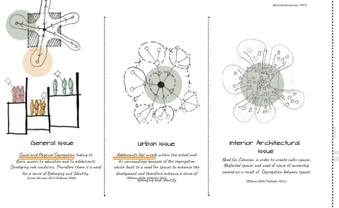




APPROACH | Problem Outline

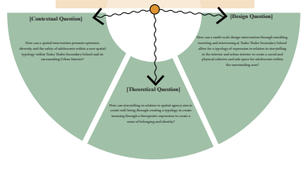
The site analysis will be unpacked through the lens of the following diagram.





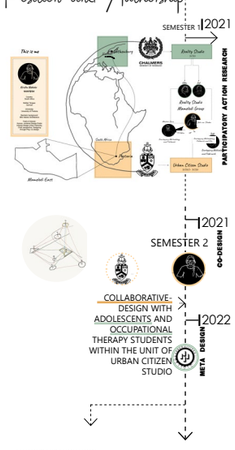
RESEARCH QUESTION | Sub-questions

How can a creative spatial interior intervention in relation to storytelling act as a catalyst and new typology for a secondary school as a creative incubator to enhance the safety, identity , belonging and well-being of an adolescent within Khalanibon ?





APPROACH | Position and Authorship



METHODOLOGY | How? - Methodology and Timeline

CONTEXTUAL MAPPING AND USER INTER-ACTION THROUGH PARTICIPATORY DESIGN WORKSHOPS

A combination of the Cosu and Ukudoba Method
(Eskilsson 2020; Godjo et al. 2015)

PHASE ONE: UNDERSTANDING THE CONTEXT - EMPATHETIC MAPPING

PART 1 : WALK, REFLECTION AND PHOTOGRAPHY - SITE VISIT 1 AND 2

Understanding the condition of identity and belonging of the context

Month: March/ April

PART 2 : MAPPING

Collaboratively understanding the condition of identity

the context

Month: April

PHASE TWO: UNDERSTANDING THE CONTEXT-SCAPE - SCENARIO WORKSHOP 2

Collaboratively Identifying the Problems and design re

requirements

Month: March/ April

PHASE THREE: CREATING A TOOLBOX -

PHASE FIVE: UNDERSTANDING THE CONTEXT - EMPATHETIC MAPPING

The methodology is conducted in relation to Meta Design Process

PART 1 : WALK, REFLECTION AND PHOTOGRA- TRANSECT VISIT 1 AND 2

Collaboratively un-

the condition of

identity and belonging of the context

: ANAYLISING EXISTING DATA- RE-EVALUATING A SITE

Testing the site

through analysis of existing data

Choosing one site

intervention

for storytelling.

EN: CREATE DESIGN MORE DESIGN SE-

Do a study and analysis through the lens of the

data to see which of the design senarious function

best. Create design criteria/ design strategy from

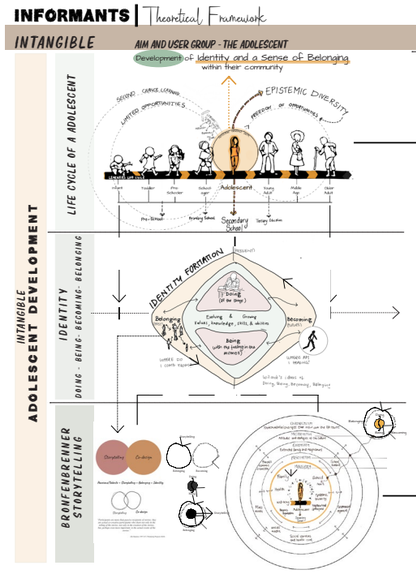
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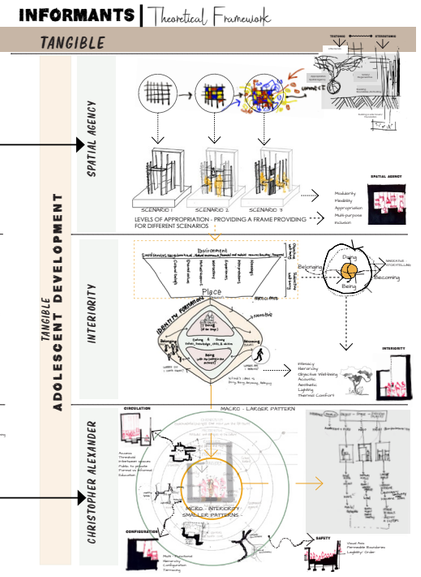
(Eskilsson 2020; Godjo et al. 2015; Author 2021)

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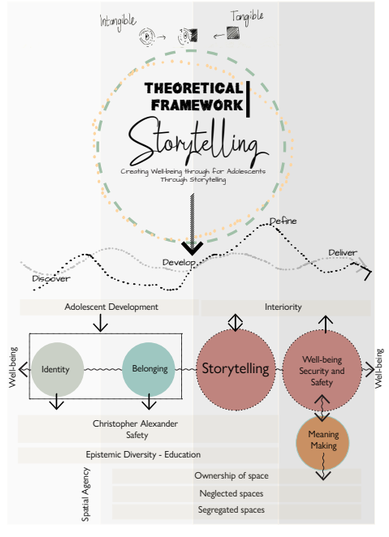
INFORMANTS | Theoretical Framework



INFORMANTS | Theoretical Framework



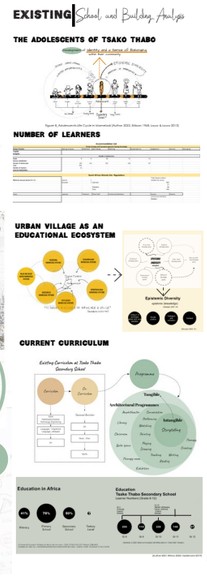
INFORMANTS | Theoretical Framework



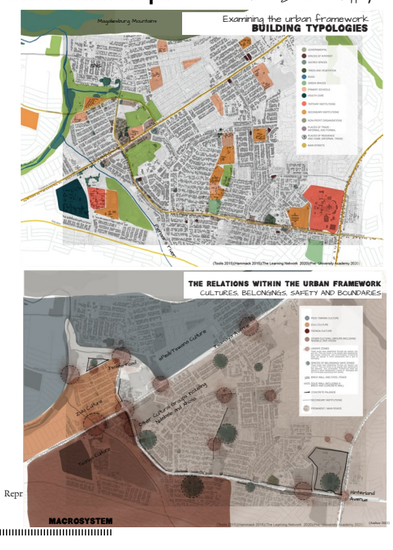
INTRODUCTION | Site Analysis



EXISTING | School and Building Analysis



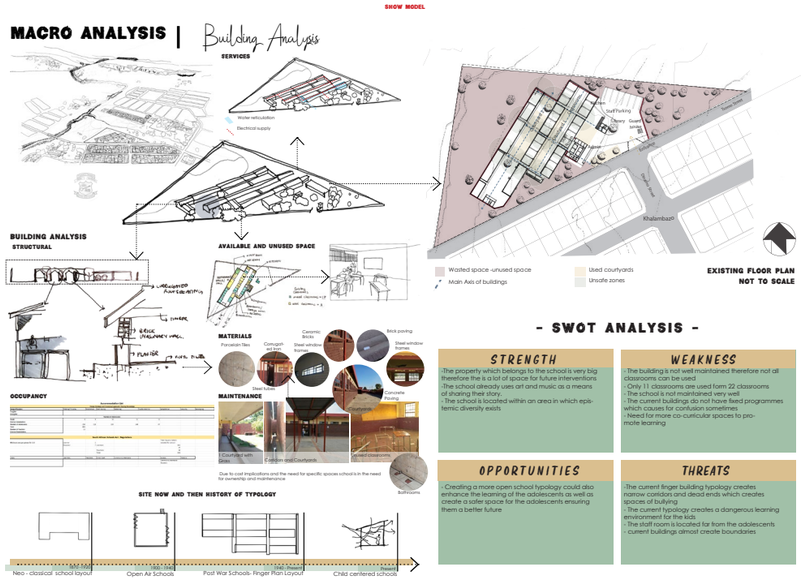
SITE ANALYSIS | General Issue Macro Scale- Mapping



SITE ANALYSIS | General Issue - Mapping



MACRO ANALYSIS | Building Analysis



- SWOT ANALYSIS -

STRENGTH

-The property which belongs to the school is very big therefore the is a lot of space for future interventions
-The school already uses art and music as a means of sharing their story.
- The school is located within an area in which epistemic diversity exists

WEAKNESS

- The building is not well maintained therefore not all classrooms can be used.
- Only 11 classrooms are used form 22 classrooms
- The school is not maintained very well
- The current buildings do not have fixed programmes which causes for confusion sometimes
- Need for more co-curricular spaces to promote learning

OPPORTUNITIES

- Creating a more open school typology could also enhance the learning of the adolescents as well as create a safer space for the adolescents ensuring them a better future

THREATS

-The current finger building typology creates narrow corridors and dead ends which creates spaces of bullying
- The current typology creates a dangerous learning environment for the kids
- The staff room is located far from the adolescents
- current buildings almost create boundaries

AREA OF INTERVENTION

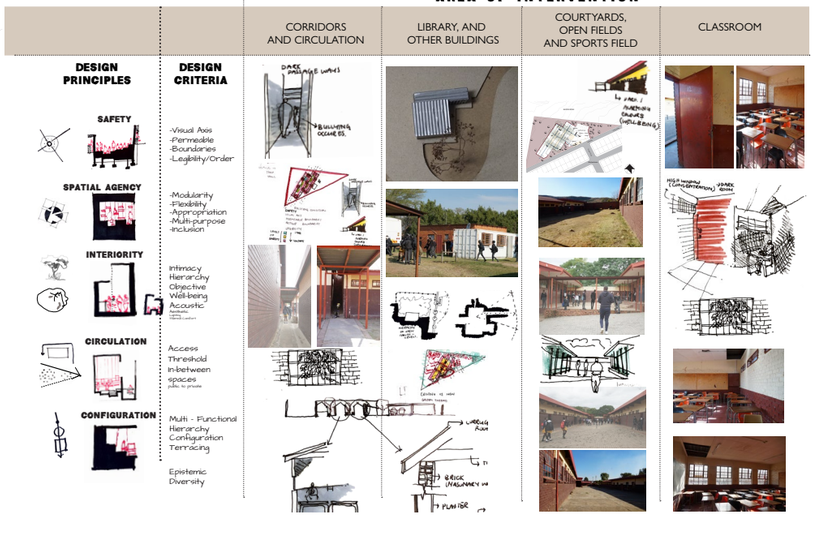
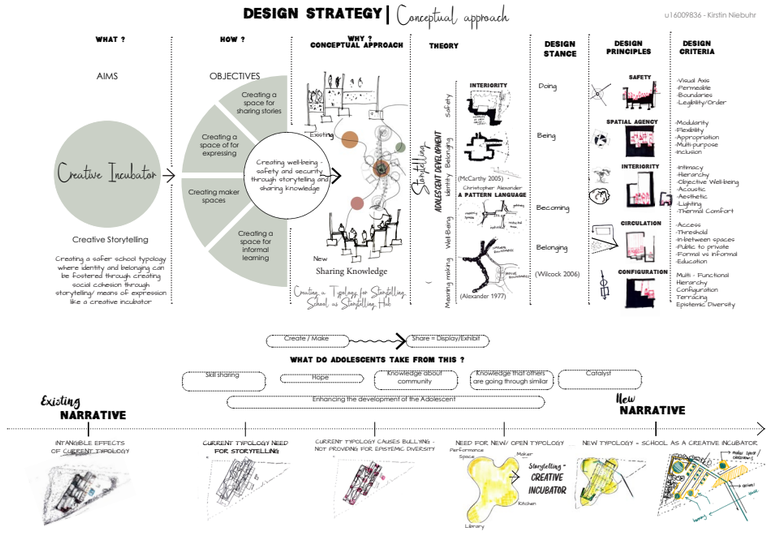


Figure 2.7_ Principles and the area of intervention (Author 2022)

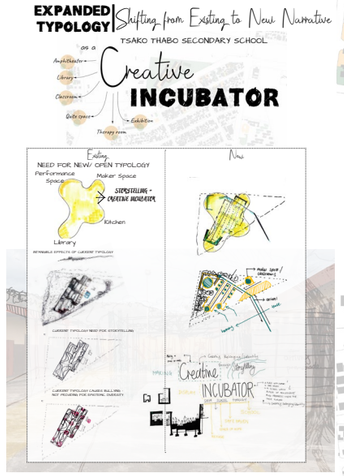
DESIGN STRATEGY | Conceptual approach

u16009836 - Kirstin Niebuhr



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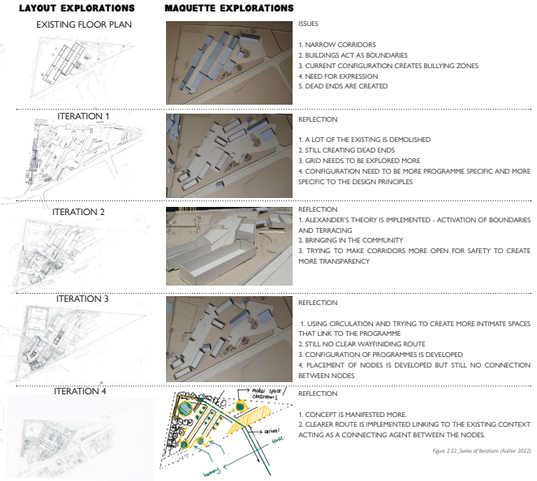


Figure 2.22_Series of Iterations (Author 2022)





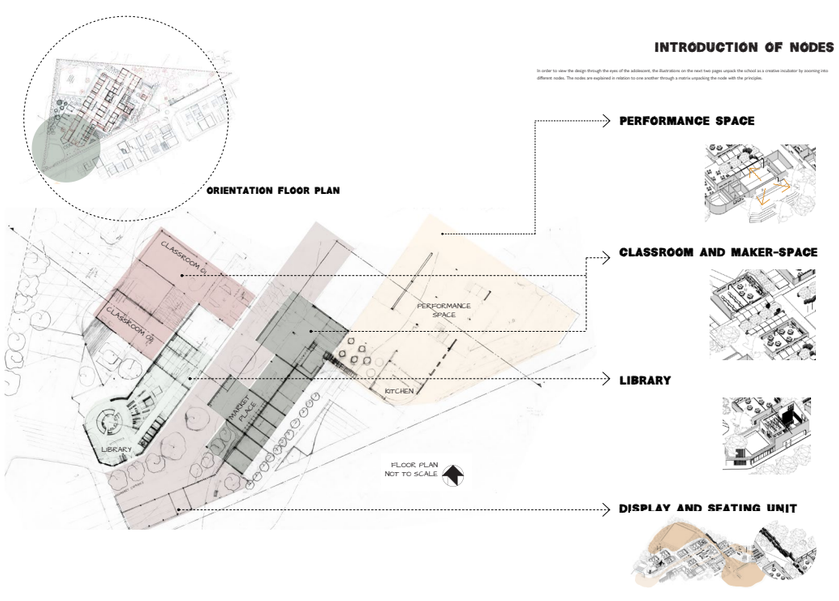


ACCOMMODATION LIST

The Rooms and minimum sizes and requirements were created according to DBE Guidelines 2012 and SANS 10400.
**Please refer to the Addendum file the full accommodation list and the regulations.*

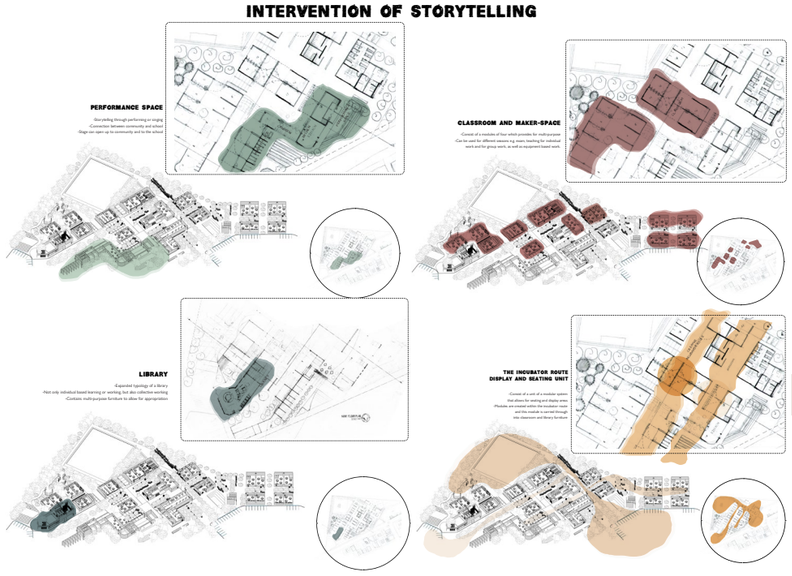
- CREATIVE INCUBATOR ROUTE - 1910 m²
- CLASSROOM - 1809 m²
- PERFORMANCE SPACE - 749.36 m²
- LIBRARY - 179 m²
- ADMINISTRATIVE BLOCK - 497 m²





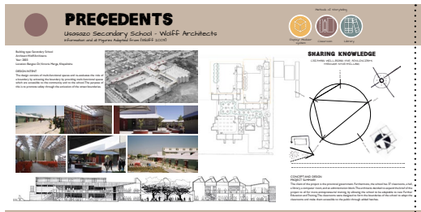
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INTERVENTION OF STORYTELLING

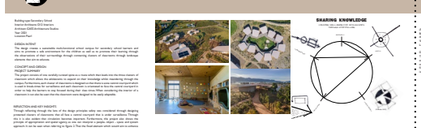


PRECEDENTS

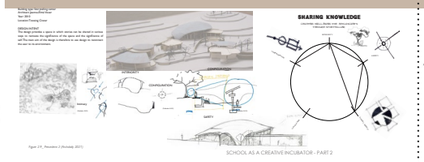
Uluvuzazo Secondary School – Wolff Architects
Information and all Figures Adapted From Dezeen 2016



THE GREEN SCHOOL SOUTH AFRICA
dASS Architecture Studios
Information and all Figures Adapted From dezeen 2016 and Archdaily 2016



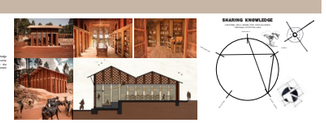
EQUILIBRIUM AND RECONNECTION
A storytelling place at the Thwaing Crater
Gabriela Gomes Vilhena
Information and all Figures Adapted From Dezeen 2017



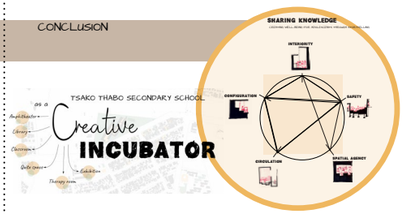
THE SCOTTISH STORYTELLING CENTRE
Malcolm Fraser Architects
Information and all Figures Adapted From Dezeen 2017



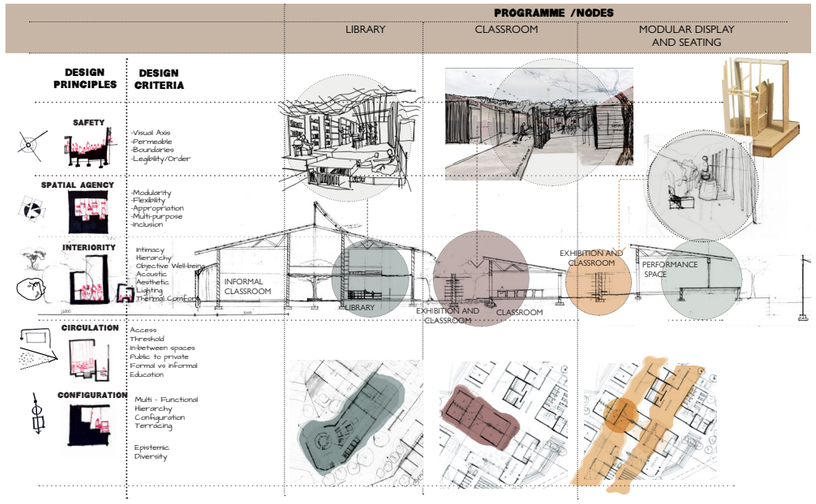
LIBRARY OF MUNNIA
BC Architects
Information and all Figures Adapted From Dezeen 2017



CONCLUSION



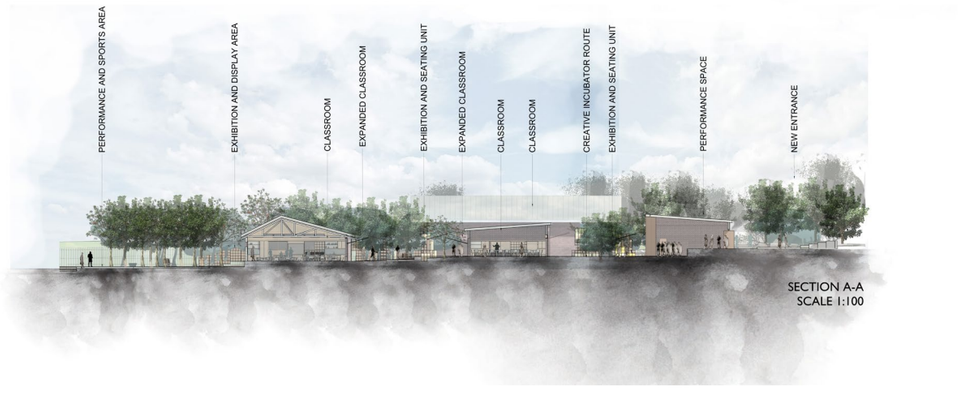
- PRINCIPLES TO CONTEXT MATRIX -











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Reinterpreted Narrative
SPATIAL DEVELOPMENT

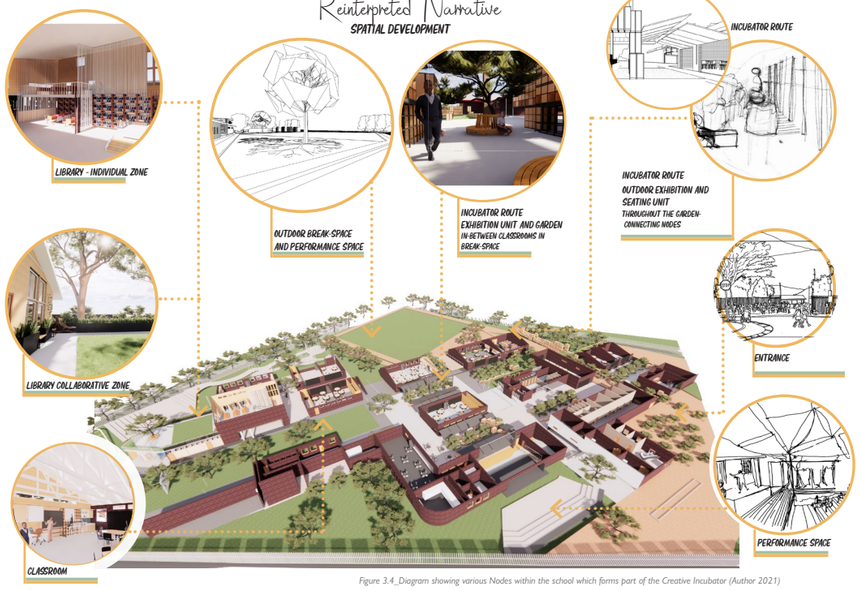
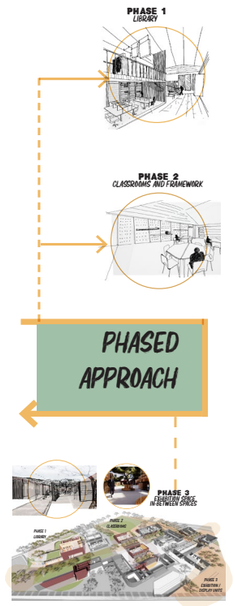
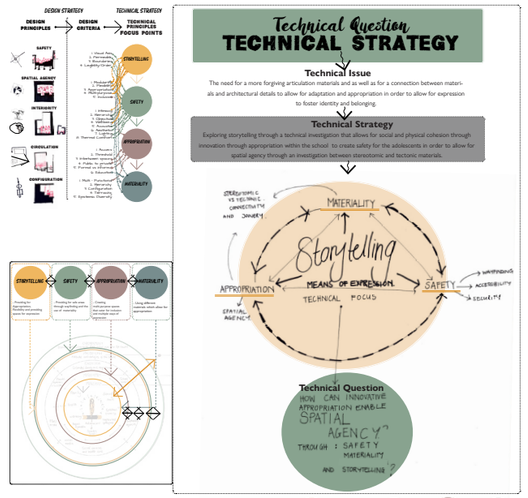


Figure 3.4_Diagram showing various Nodes within the school which forms part of the Creative Incubator (Author 2021)

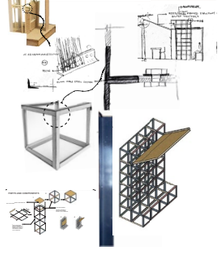


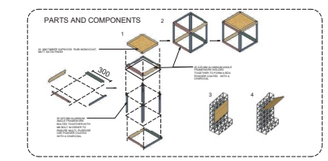


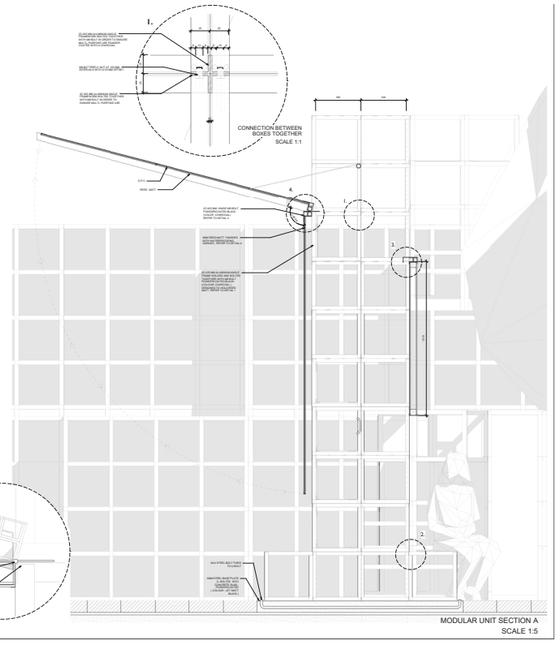
THE MODULAR SYSTEM
THE EXHIBITION & SITTING UNIT





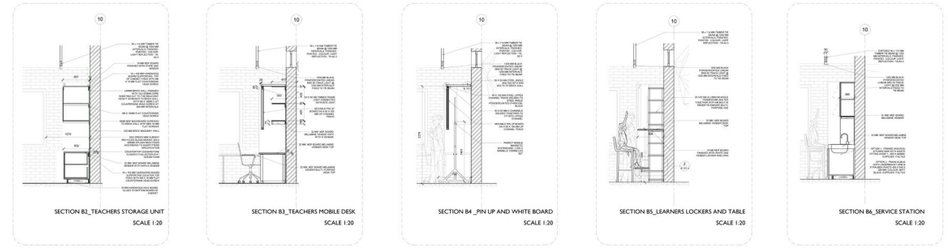






THE CLASSROOM







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THE LIBRARY

TEACHERS STATION



TEACHERS MOBILE STATION



MULTI-PURPOSE BOARD



LEARNERS LOCKER/ WORKING STATION



SERVICE STATION



MICRO ANALYSIS



CLASSROOM TYPE B FLOOR PLAN



KEY PLAN



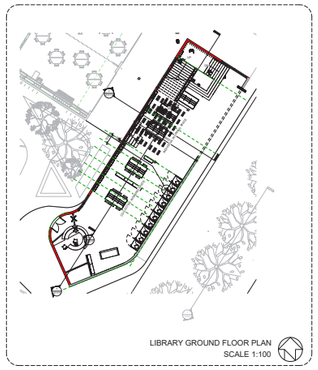
CLASSROOM TYPE B FLOOR PLAN
SCALE 1:100



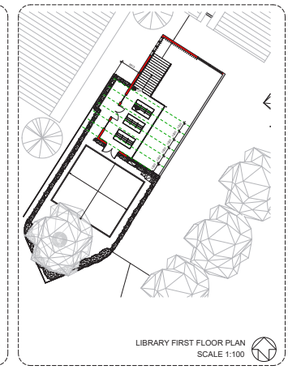




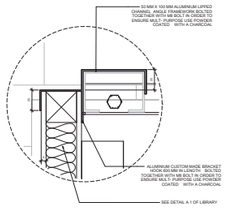
KEY PLAN



LIBRARY GROUND FLOOR PLAN
SCALE 1:100

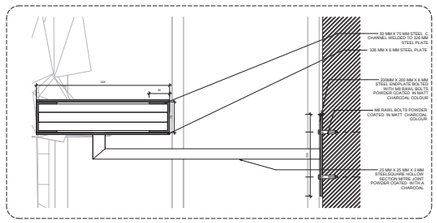


LIBRARY FIRST FLOOR PLAN
SCALE 1:100

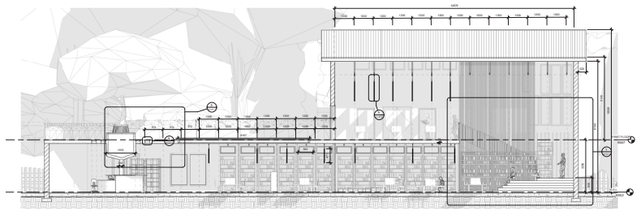


SECTION OF DETAIL B4.1 IN CLASSROOM
SCALE 1:1





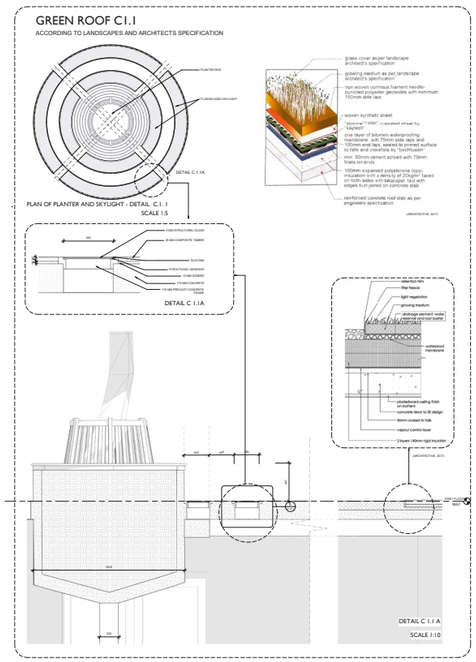
SECTION OF DETAIL B5.1 IN CLASSROOM
SCALE 1:2



LIBRARY SECTION C1
SCALE 1:50

GREEN ROOF C1.1

ACCORDING TO LANDSCAPES AND ARCHITECTS SPECIFICATION

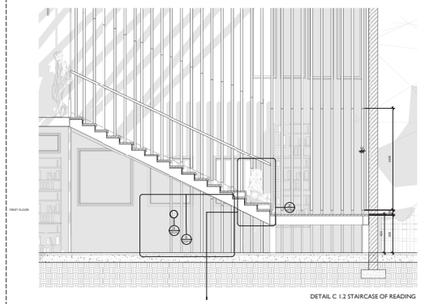


PLAN OF PLANTER AND SKYLIGHT - DETAIL C1.1
SCALE 1:5

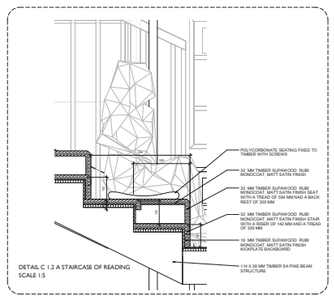
DETAIL C 1.1A

DETAIL C 1.1 A
SCALE 1:10

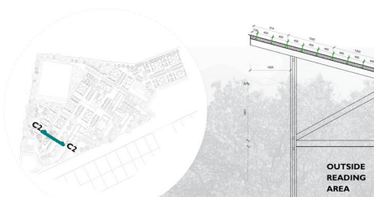
DETAIL C 1.2 STAIRCASE OF READING



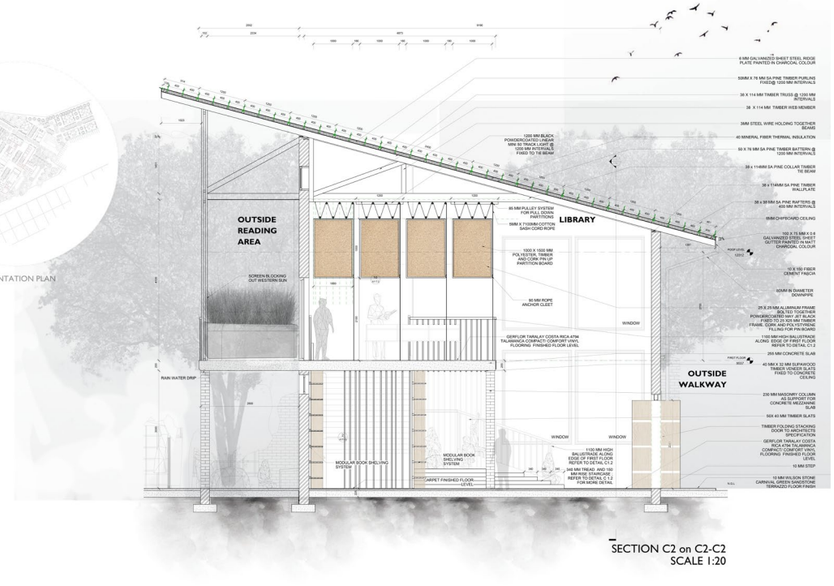
DETAIL C 1.2 STAIRCASE OF READING
SCALE 1:20



DETAIL C 1.2 A STAIRCASE OF READING
SCALE 1:5



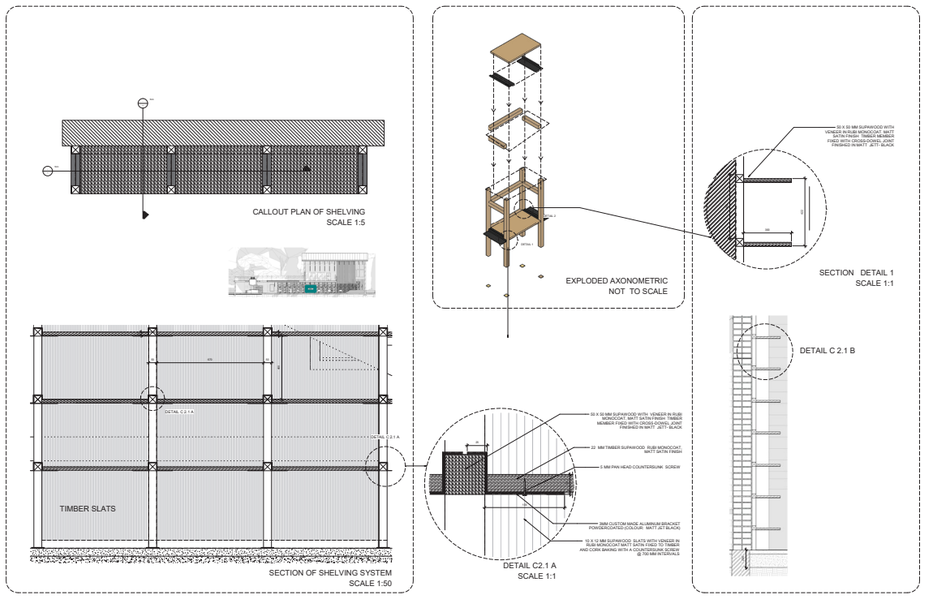
ORIENTATION PLAN



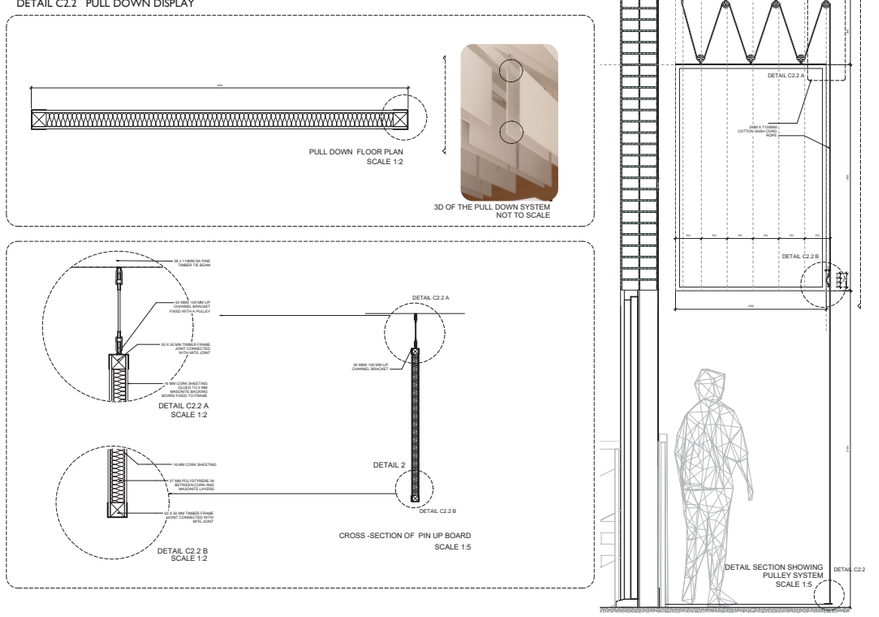
SECTION C2 on C2-C2
SCALE 1:20

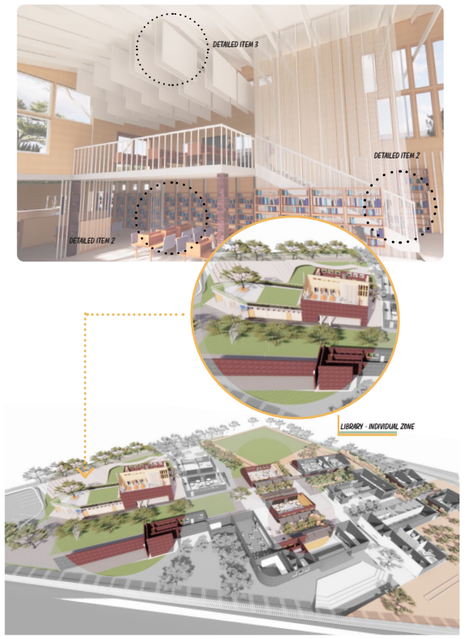
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DETAIL C2.1 SHELVING SYSTEM



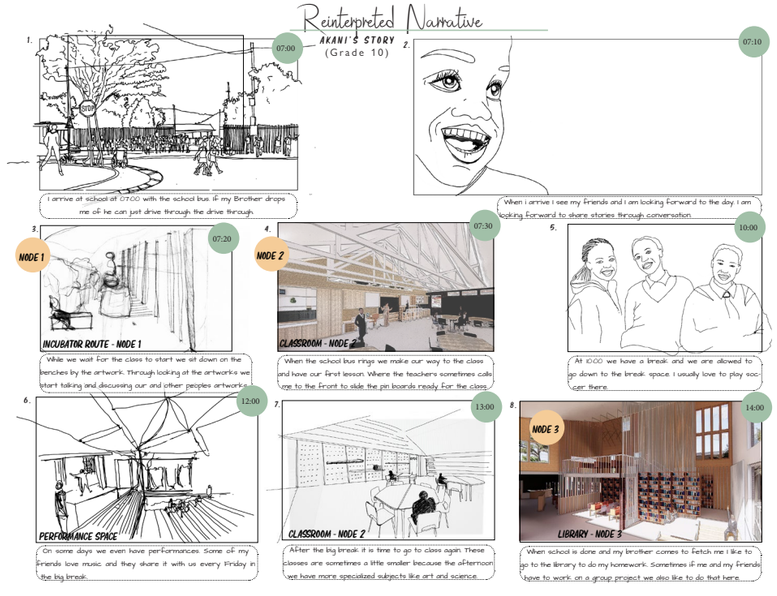
DETAIL C2.2 PULL DOWN DISPLAY





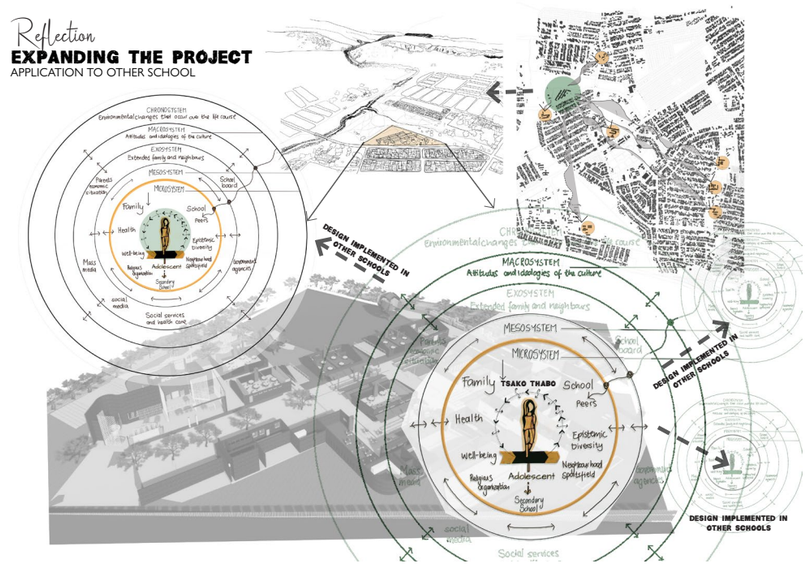
Reinterpreted Narrative

AKANI'S STORY
(Grade 10)



Reflection

EXPANDING THE PROJECT
APPLICATION TO OTHER SCHOOL



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CRIT AND PRESENTATION DAY















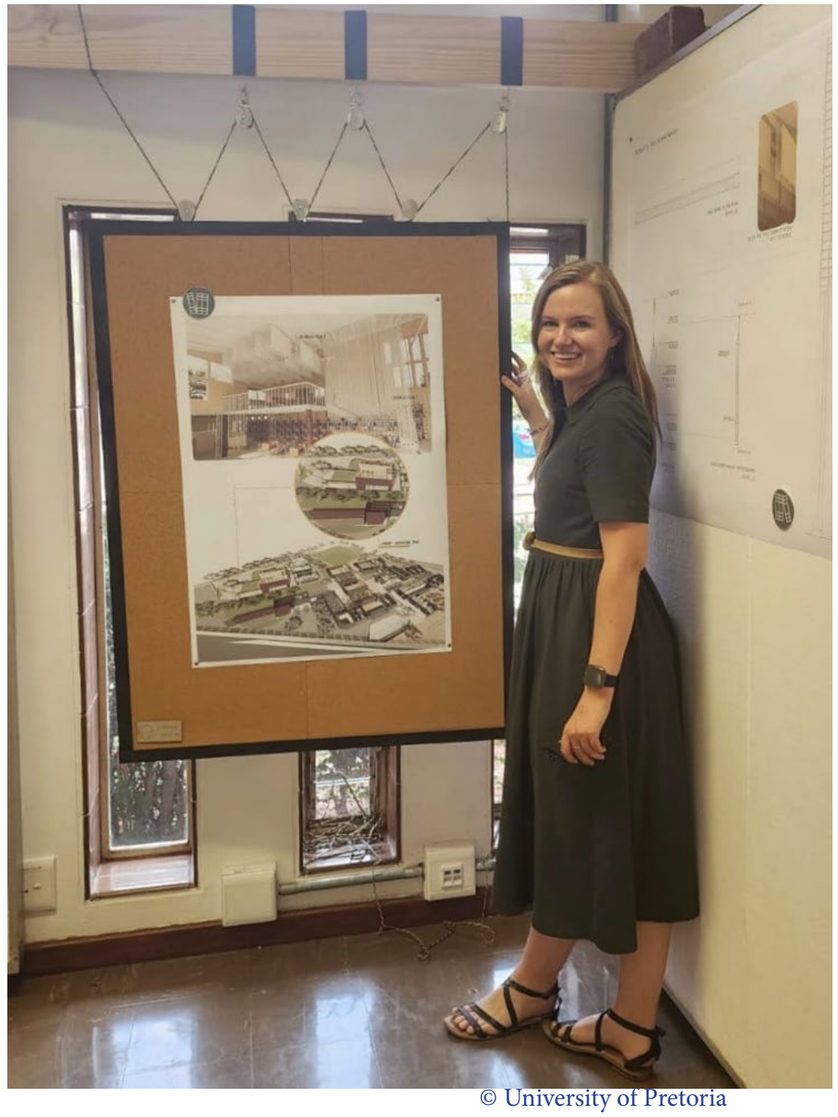














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