DESIGN ON THE MARGINS

ARCHITECTURAL DESIGN & EARLY CHILDHOOD DEVELOPMENT
IN VULNERABLE COMMUNITIES - A CASE STUDY OF
WOODLANE VILLAGE INFORMAL SETTLEMENT
IN PRETORIA, SOUTH AFRICA

DESIGN ON THE MARGINS

Architectural design & early childhood development in vulnerable communities - a case study in woodlane village informal settlement in pretoria, south africa.

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ABSTRACT

Most of the children in Woodlane Village in Pretoria, South Africa, are not attending pre-school due to poverty and economic priorities of their caregivers. There is limited access to positive cognitive stimuli and the conditions of the streets pose multiple hazards for the children. Growing up being exposed to adversities such as poverty, discrimination, neglect, etc. will trigger the body's stress response and can cause long term stress which can have negative consequences for their future development. One of the most effective ways to build resistance towards toxic stress is for the child to have a responsive and reliable relationship with their primary caregiver, usually the mother. The capability to provide this is affected by exposure to serious stress brought on by health issues, financial insecurity, and other hardships.

This study aims to investigate how architectural design and participatory processes can empower the mothers and children of Woodland Village. Through workshops, interviews, and observation I was able to map the community, focusing on the threats, needs, and wants for the children and their caregivers in the Village. The data collected was used to [1] *Create a design proposal with the purpose of designing opportunities for learning and interaction in public spaces* and [2] *Design a process for social and financial empowerment for the mothers through skill-building.*

During interviews with the mothers, they expressed that the three most important qualities for their children to learn is how to share, be respectful and compassionate. When we talked about educational skills, they emphasized the importance of learning English. Not only for their children, but also for themselves. This led to the conclusion that the core purpose of the design intervention had to be to encourage social interaction and collaboration together with opportunities for language development. The main answer to the research question of how architectural design can be used to empower the children and women of Woodland Village is that there is a need for a placemaking design where the children can interact with each other and their mothers, while also focusing on independence and empowerment of the mothers.

Keywords: *Early Childhood Development; Mother-child relationship; Vulnerable Communities; Empowerment; Ownership of Space; Architectural Design*

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BACHELOR DEGREE

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MASTER STUDIOS

Sustainable development & the design professions ARK650 (2021)
Material and Detail ARK338 (2021)
Nordic Architecture ARK079 (2022)
Reality Studio ARK496 (2022)
Histoty, Theory and Method 7 ARK700 (2022)
Master's Thesis in Architecture ACEX35 (2023)

OTHER COURSES OF RELEVANCE

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PREVIOUS EXPERIENCES OF RELEVANCE

Basics of art at KV Konstskola (2016 - 2017)
Visualisation and Design for spatiality at KV Konstskola (2017-2018)

MY CONNECTION WITH THE CONTEXT

During the spring semester of 2022 I was given the opportunity to join a field study course at Chalmers University of Technology, where we went to South Africa to engage with an informal settlement struggling with poverty and political conflict. In this type of context, it is common for children's social and educational needs to get overlooked since there are more urgent needs to fulfill, such as shelter and food for the day. While on site, me and my team spent a lot of time with the children, and among other things we conducted a successful workshop where we together with the children crafted pots out of waste plastic bottles and planted seeds in them. The enthusiasm to take part in an activity and the joy it brought them is something that I will always carry with me.

The time spent in the community had a huge impact on me and left me with a burning desire to go back for my master thesis and continue working with the social challenges in the settlement, focusing on the most vulnerable, the children. With my experience in the context and the knowledge that I have gained through studying sustainable development in third world countries, I am now certain of which path I want to lead my future career. After my academic studies are over, I want to continue and dive even deeper into the field of sustainable development and vulnerable communities. I feel grateful to have thechance to start the journey with my master thesis.

THE VALUE OF ARCHITECTURAL EXPERTISE
IN THE CONTEXT

Architects are trained to map communities from different perspectives, looking at everything from social structures to green areas to flows of movement. It is an important skill that allows us to holistically view the context which is crucial for understanding not only how the built environment affects the social interactions and structures, but also how the social interactions and structures has formed the built environment. ArchitectsWWW have the expertise to vizualise how spatial characteristics can be used to benfefit a community and how to design for social interactions. Every child, regardless of their circumstances, deserves to grow and develop in a safe, nurturing, and inspiring space, and that is were architects and designers can make a difference.

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INTRODUCTION

BACKGROUND

In 2016, the Lancet, a medical journal, published a series on Early Childhood Development (ECD) where they estimated that 43% of children under the age of five in low- and middle-income countries were at risk of not developing to their full potential due to poverty and other aggravating circumstances (McCoy, et al., 2016). A study on Early childhood developmental status in low- and middle-income countries published by PLOS Medicine (2016) suggests that one in three preschool-aged children in developing countries are failing to meet basic milestones in their cognitive and/or socioemotional development (McCoy, et al., 2016).

A poor start in life can have negative consequences for the future development of the child as it can lead to poor health, behavioral issues, inadequate learning, etc. When becoming adults, affected individuals are estimated to suffer a loss of about a quarter of average adult income per year. Zooming out, countries struggling with these challenges may forfeit up to twice their current GDP cost to health and education. This is an example of how negative consequences can impact both present and future generations (Black, et al., 2017).

Informal settlements in South Africa are some of the most densely populated communities in the country and yet they are also the communities that are least likely to have limited or no access to basic services (South African Human Rights Commission, 2020/2021). In Article 25 of the Universal Declaration of Human Rights it is enshrined that the right to a fair standard of living is a human right. Under the same article, it also says that *"Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection"* (United Nations, 1948).

PROBLEM STATEMENT & NEED

The study will be a case study in the informal Settlement Woodlane Village in Pretoria, South Africa. The community has a lot of challenges, including groups of children walking around the settlement unsupervised during the days. This raises the question of their access to personal development in the early years of life, which is crucial for young children. Relationships, routines, and outside events during the first few years in a child's life will lay the foundation for how the brain continues to develop and how children approach and react to situations later in life. In the settlement there is a need for an intervention that offers the children an escape from the toxic stress, keeps them away from physical hazards in the streets, and focuses on the child's development. Long term, there is a need for a plan to empower and financially strengthen the women, to allow them to be independent and build strong connections with their children.

Most of the children in Woodlane Village are not attending preschool due to poverty and economic priorities of their caregivers. There is limited access to positive cognitive stimuli and the conditions of the streets poses hazards for the children. The field of Early Childhood Development agrees that growing up in being exposed to adversities as poverty, discrimination,

neglect, etc. can trigger the body's stress response and cause long term stress which can have negative consequences for their future development. One of the most effective ways to build resistance towards toxic stress is for the child to have a responsive and reliable relationship with their primary caregiver. Due to being exposed to serious stress brought on by health issues, financial insecurity and adversities, the caregiver's capability to build a safe and nurturing relationship with their child can be affected negatively (Center on the Developing child at Harvard University, 2023). By empowering the women, the children will indirectly benefit.

PURPOSE OF STUDY

With the thesis I aim to research how architectural design and co-design processes can be used to create personal value and better prerequisites for the personal development of children in vulnerable communities. The wanted impact of the project is to create a safe space where the children feel empowered to play and interact which gives them better prerequisites for the development of their cognitive, emotional, and social skills. Drawing on theories from participatory design research and the academic field of early childhood development the thesis will investigate how architectural design can be used to achieve a positive impact both short term and long term for children and their mothers in the informal settlement Woodlane Village.

INCLUDING THE CONVENTION ON THE RIGHTS OF THE CHILD

When planning for the project and conducting the fieldstudies I choose five of the issues from The UN Convention of Children's right as a reference. These were article 3, 6, 12, 13 and 31 (*See illustration below*). For a child to be able to build resilience and have the best possible foundation for future development, we must take the childrens best interests into account by respecting childrens views and make them feel comfortable to to share their thoughts freely. I believe that this can be achieved by creating a safe place for them where they are given the opportunity to be creative, play and develop core skills as well as building relationships and learning how to interact with other children.

The UN convention on the rights of the child issue 31 states that *"Every child has the right to rest, relax, play and take part in cultural and creative activities"*. The goal with the final design suggestions is that they, if they are constructed, will contribute to making the children feel more comfortable to approach a common space and inspire them to play and to learn.

Fig 1 a,b,c,d & e: Re-illustrated icons from the UN Convention of the right of the child (Convention on the rights of the child, 1989)

RESEARCH QUESTION

How can Architectural design and Participatory design processes be used to empower and support children and their mothers in Woodlane Village?

↳ *How can we design to give children of Woodlane Village an escape from the daily adversities, increasing their resilience towards toxic stress? [Short term]*

↳ *How can we, by designing context specific strategies and processes, empower the mothers of the children in Woodlane Village? [Long term]*

MANIFESTO
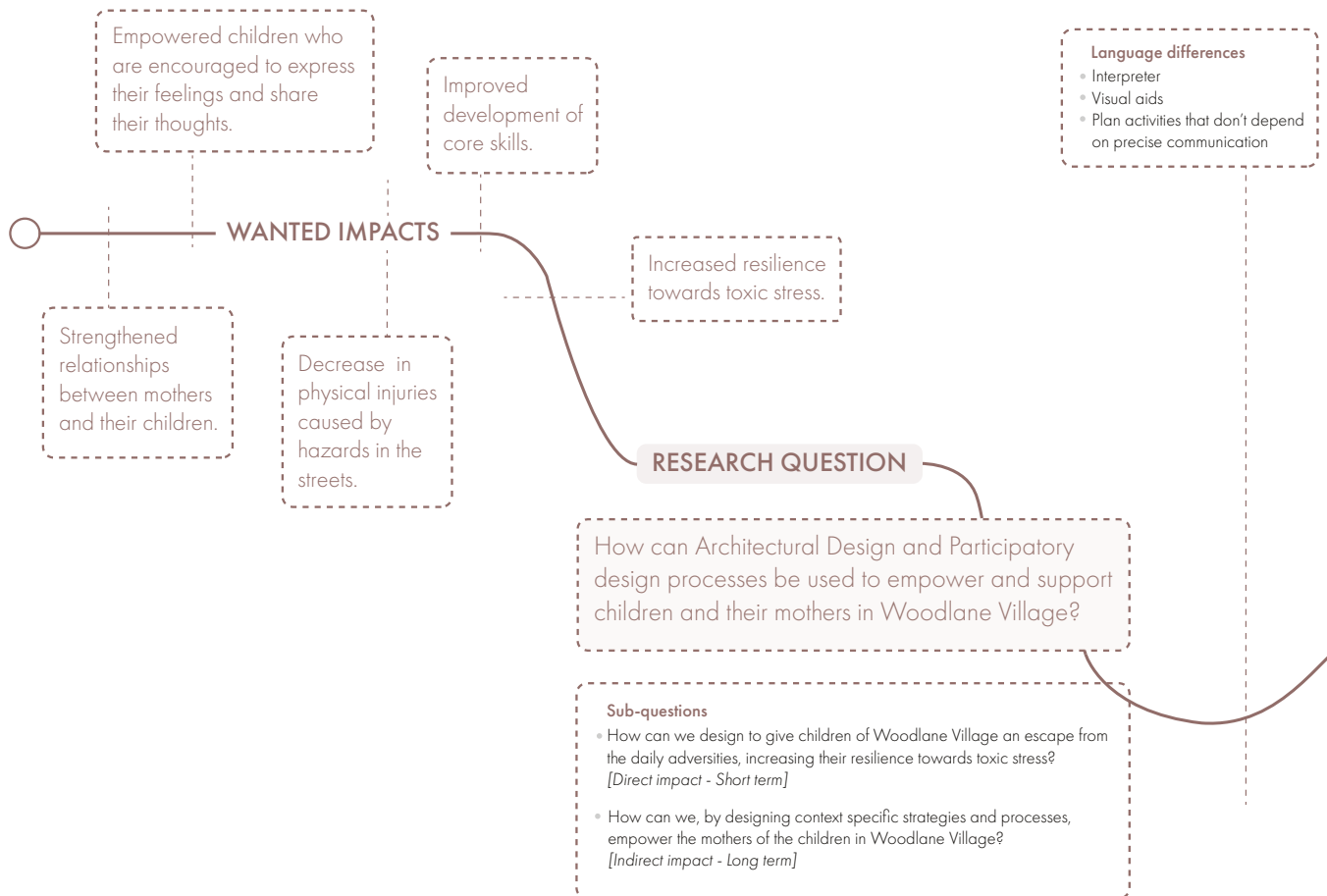
CHILDREN ARE NOT
RESPONSIBLE FOR THEIR
CIRCUMSTANCES

ALL CHILDREN MUST HAVE ACCESS
TO RESPONSIVE RELATIONSHIPS,
SAFE SPACES, PLAY, REST AND
EDUCATION.

ALL CHILDREN HAVE
THE RIGHT TO FEEL SAFE
IN THE PLACE WHERE
THEY GROW UP

CHILDRENS ARE CAPABLE
AND THEIR OPINIONS
MATTER

ROADMAP

Empowered children who are encouraged to express their feelings and share their thoughts.

Improved development of core skills.

Language differences
- Interpreter
- Visual aids
- Plan activities that don't depend on precise communication

WANTED IMPACTS

Increased resilience towards toxic stress.

Strengthened relationships between mothers and their children.

Decrease in physical injuries caused by hazards in the streets.

RESEARCH QUESTION

How can Architectural Design and Participatory design processes be used to empower and support children and their mothers in Woodlane Village?

Sub-questions
- How can we design to give children of Woodlane Village an escape from the daily adversities, increasing their resilience towards toxic stress?
[Direct impact - Short term]

- How can we, by designing context specific strategies and processes, empower the mothers of the children in Woodlane Village?
[Indirect impact - Long term]

Not impose Western ideas
- Focus on what we can learn instead of teach
- Always reflect on how we can be there for them and offer our skills as a *complement* to their skills and knowledgde

Cultural differences
- Be open and respectful
- Accept difference in opinions
- Embrace the opportunity for knowledge exchange
- Reflect before reacting
- Don't be condescending

Early Childhood Development

Participatory Design

Community Development

Communicating with toddlers
- Research established methods
- Communicate on their terms
- Trial and error-process

ROADBLOCKS   AND HOW TO APPROACH THEM

LITERATURE

Miscommunication
- Be clear
- Prepare before each meeting
- Make a chart of what could be misunderstood and how to avoid it
- Prepare for how to deal with the situation if it's unavoidable

Funding
- Apply for grants
- Sell prints of illustrations

STRATEGY

Unpredictable factors
- Plan for the unexpected
- Know that the circumstances are more likely to change than stay the same, and be ready to adapt
- Have a backup plan - don't get stuck

I.   UNDERSTAND
II. CONNECT
III. BUILD TRUST
IV. DESIGN
V.   IMPLEMENT

EVALUATE

CONTINUATIONS →

CHILDREN AGE 0 - 8 YEARS

PAUSE FROM DAILY STRESS
PRACTISE CORE SKILLS
PLAY
CREATIVE OUTLET
ENTITLEMENT

BUILD RESILIENCE
SAFE SPACE
STRENGTHEN RELATIONSHIPS
POSITIVE EXPERIENCES
MOTHERS WELLBEING
EMPOWERMENT OF MOTHERS

MAIN FOCUS

DELIMITATIONS

CHILDREN OLDER THAN 8 YEARS

CAUSES FOR ADVERSITIES
RACISM
POVERTY
HEALTH & NUTRITION
EXPOSURE TO VIOLENCE
ETC.

MEN IN THE COMMUNITY

Fig 2.

FOCUS AND DELIMITATION

There are many factors contributing to a child's development. When a child is at risk at not reaching their full potential, there are generally a few factors that plays a part. All adversities can affect the child's future development negatively on their own, and the more adversities the child is exposed to, the more likely it is for the child to struggle with social relationships, education, and work later on in life. When a child is exposed to the previously mentioned adversities daily, their body is on constant alert, deciding on whether to fight or flight (Center on the Developing Child at Harvard University, 2021). Toxic stress is a common affect of this, and it is also what will interfere with the development of the child.

The field of ECD is huge, and there is a need for a systematic change on a societal level to address and diminish the adversities. In this architectural thesis though, The focus lies on giving children the prerequisites to mitigate the effect of toxic stress. Two established strategies to achieve this is to [1] Offer children an escape from the adversities they are facing on a daily basis and [2] Build resilience towards toxic stress through a caring and responsive relationship between the child and their primary care giver (Center on the Developing Child at Harvard University, 2021).

To clarify, the focus of the thesis is to;
[1] Give children a chance to get a pause from their daily stress
[2] Empower the mothers of the children, giving them better prerequisites to build strong responsive relationships with their children.

The focus is not to;
Address the root of the problems, since it is too big of a project for a one semester master thesis. It is also not primarily in the field of architecture and would require skills that I do not yet obtain. With this said, the adversities are kept in mind and in some cases addressed, even if they are not the focus of the thesis.

Fig 2. To the left: Diagram illustrating the focus and delimitations of the thesis. Note that the adversities mentioned have of course been taken into consideration throughout the project.

METHODS

Combine Methods to reach a design proposal
To reach a design proposal that would benefit the children of Woodlane Village I incorporated already established approaches of designing for marginalized children in vulnerable communities with context specific insights, collected through observing, interacting with, and mapping the community.

Literature
Reading and reflecting on literature in the form of research papers, articles, journal entries, videos and websites, a solid understanding for the field of Early Childhood Development and how adversities during the first years of a child's life can play a role for their future development was established. The theories found within the literature helped establish the theoretical framework and influenced the design process.

Observing & Mapping
By observing the settlement from an outside perspective, focusing on social structure and physical conditions, qualities, hazards, and spaces were mapped out. It helped to get an overview of the environment where the children spend most of their time.

Interacting
Spending time on site helped me to create relationships and build trust. For most of the site visits I walked with a woman who lived in Woodland Village who were also engaged with the NGO SA Cares for life. Through her I met and interacted with a wide range of people from all over the settlement.

↳ *Interviews*
Informal interviews were a way for me to connect with community members on a personal level and to learn about their daily routines. The people interviewed were women who lived in Woodland Village Informal Settlement. Many of them were working inside of the settlement.

↳ *Walk and talk*
Walking around the settlement with a representant from SA Cares for life or a woman living in Woodlane Village allowed me to observe daily interactions and meet members of the community under relaxed circumstances. It was to understand the community on a personal level.

↳ *Workshops*
Activities and Workshops were used as a tool to explore the interests of the mothers and children of the community. This gave further insight into the atmosphere and social interactions, as well as the interests of the children and their mothers. The workshops were planned by me and Kathleen Dieme (*Master's student in architecture at Aalto university in Finland. She has experience in designing workshops for social inclusion from the course "Social Inclusion" that she attended in 2022 at chalmers university of technology)* and conducted with the help of two local women.
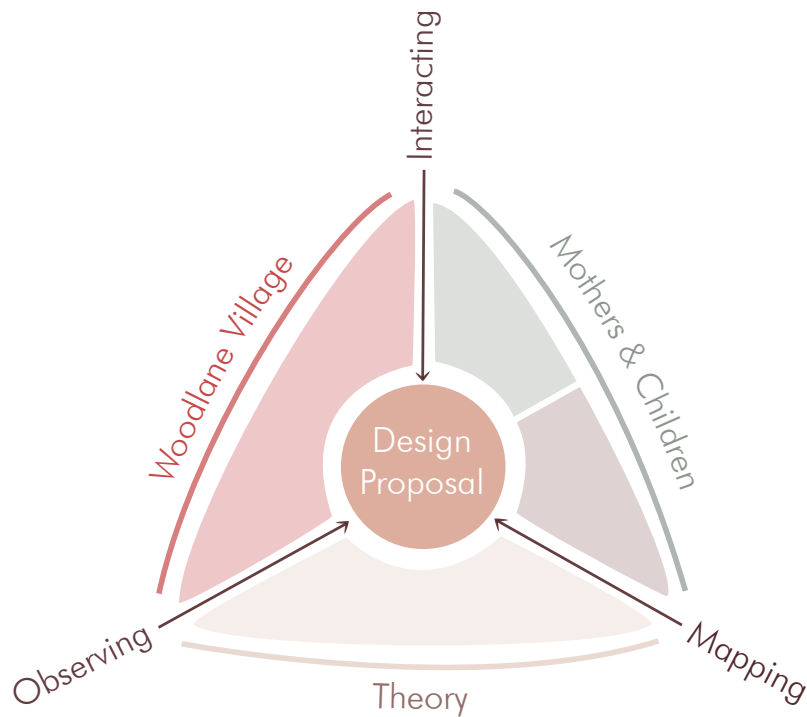
Fig 3. Diagram below showing how context-based knowledge has contributed to the process of developing a design triangulated between the needs of the children, the insights from the mothers and the theory of ECD.

LITERATURE REVIEW

COMMUNITY DEVELOPMENT WITH CHILDREN AS FOCUS

Drawing on the widespread statement that being exposed to long term stress without a break poses a risk for the child's cognitive, social, and emotional development, there is a common census among scientist in the field of ECD that children with higher resilience are able to resist the effects of toxic stress. Jack P. Shonkoff, M.D. (2015) explains resilience as the result of an interactive process between individual characteristics and the environment in which a child is exposed to during their early years. Centre on the Developing Child at Harvard University (2021) presents three basic principles to build resilience which in turn will alleviate the effects of long-term stress. These are to support responsive relationships, to reduce the sources of stress and to strengthen core skills.

The IDEAS impact framework, originally developed through a partnership between the Center of the Developing Child at Harvard University, the University of Oregon Center for Translational Science, and the University of Washington College of Education, offers a toolkit to set a higher bar for development of programs and the evaluation of development projects. The purpose is to challenge the traditional approaches with the aim to help organizations and other actors to build better programs that achieve greater outcomes for more young children and their families.

The framework derives from the decades of research that have shone a light on multiple causes and correlations of negative outcomes for marginalized children. When it comes to solutions, however, the field of ECD has had low positive impacts. They claim that the focus has been on proving that development programs are effective and successful rather than understanding how and for who they work. The team behind the IDEAS Framework connects this to the challenge of receiving funding for projects, since investors want to see instant results. It becomes a vicious circle where projects end when the implementors of the program withdraw, and the situation for the communities will go back to how it was prior to the introduction of the program.

The arguments for the final design intervention and long-term plan of building resilience through empowerment of both children and their mothers are grounded in following theories: [1] *Responsive Relationships* will strengthen when the caregiver is stable and under less pressure. [2] Developing context specific *Core Skills* will empower the child through confidence from realising their competence and value. And [3] Constant stress causes the mind and body to be on high alert and that it's there for a need for a place where the child can disappear into the world of imagination, offering their mind and body a *Break from the constant stress*.

PARTICIPATORY DESIGN AND CHILDREN

Gerison Lansdown (2014) states in his article "Participation and young children", that many cultures view childhood as becoming rather than being, which directly takes away the value of the child and sets adulthood to be the norm. Children are seen as irrational, unreliable, and inferior to adults. According to children's participation researcher Allison Druin (2001) designers often consult the parents of the children instead of including the children in matters that affect them. This strengthens Lansdown's (2004) argument that young children are not seen as competent enough to contribute with valuable insights.

Over the past two decades, there has been a change of mindset when talking about children participating in decisions that affect them. Many children rights advocates believe that children and youth are not just becoming, but that they already are a unique group who has in-

sights of high value to bring to the table (Chawla, Derr, & Mintzer, 2018). The UN convention of the right of the child article 12 established that it is a substantive right for children to be actors in their own lives, regardless of their age. There are in fact many areas where younger children can contribute and demonstrate insights of value. It does require that the designer is open to challenge and adapt their designing process, but if the prerequisites are right, even a young child could demonstrate equal or superior competence to an adult in certain matters (Lansdown, 2004).

Since it does take time to not only see what the child is communicating, but to also understand how he or she communicates, it is difficult to find successful projects where children under the age of three has an active role in the design process. Reflecting on the previously mentioned situation where external actors and organisations that usually depend on financial support, and the investors or donors that want to see instant results to continue the funding, it can explain why there aren't that many projects focusing on the participation of the youngest children in marginalized communities (Center on the Developing Child at Harvard University, 2023).

LEVELS OF PARTICIPATORY DESIGN

Since the concept of participatory design started spreading, there has been an ongoing discussion about what defines participation and how participation can differ. In 1980, Roger Hart, the then director of "Children's Environments Research Group" developed a system to define different degrees of participation (Hart, 2008). The model he created is called the Ladder of Children's participation, and it is a visualization of a ladder with eight steps where the lower three levels explained deceptive participation and the five higher levels have a range from children acting as consults to children planning and conducting their own project (Hussain, 2010).

Roger Hart (2008) explains that his intentions with introducing the ladder was to problematise an issue and stimulate a dialogue that had not yet been addressed. The ladder has since then been widely referred to and used as a guide to measure levels of child participation in diverse projects. Although the ladder is outdated and shouldn't, according to Hart (2008) himself, be treated as a fact, it can still be an effective tool to start the conversation of child participation and the different roles a child can hold in a project.

Allison Druin (2004) presents a model where she proposes that there are four main roles for children in project or a design process. These are the roles of Tester, User, Informant and Designer. The role of the child can change throughout the design process. Druin argues for that every level of participation or non-participation is ok, as long as there is an open conversation, and anyone affected is aware of the premise (Druin, 2001).

CONTEXT
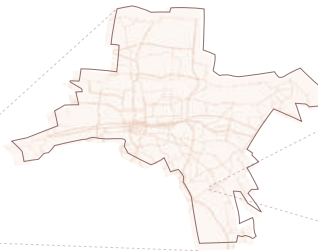

Fig 4a.
Africa / South Africa

Fig 4b.
Pretoria

Fig 4c.
Woodlane Village

SOUTH AFRICAN HISTORY

In the 1940's, when many countries were moving away from racist and marginalizing policies after the end of the Second World War, South Africa went in the opposite direction and introduced the racial policy of apartheid, meaning "apartness". Apartheid was enforced by the National Party in 1948 and it called for the separate development of different racial groups in the country and wrote segregation into the law (SAHO, 2022)The authoritarian political culture of apartheid insured that the country's white minority population would rule South Africa politically, socially, and economically. The population was divided into categories based on their color as the basis for a social ranking system. The highest social rank was given to white citizens, followed by that of Indians and colored's, and lastly the black Africans (Mayne, 1999). Apartheid came to an end in April of 1994, when African National Congress, with Nelson Mandela as the president, won the first democratic election in the country for decades.

Although it has been almost thirty years since the Apartheid government fell and democratic rights were extended to the entire population, the social and economic legacy of Apartheid persists to this day. Particularly the legacy of inequality, which has continued stagnating to this day (Cornish-Jenkins, 2015). Economic inequality has persisted and grown worse, and the Wealth inequality in South Africa still stands at very high rates. Close to 86 percent of the nation's wealth belongs to the top 10 percent of the population, consisting of a majority of white South Africans. Recently, South Africa was rated the most unequal country in the world according to a World Bank report (World Bank, 2012)Besides being the most unequal country in the world, South Africa has the unemployment rate of around 33% (Trading Economics, 2022) and an extreme inequality of income (Chancel, Piketty, Saez, & Zucman, 2022).

Over a third of the population in South Africa are estimated to receive social grants from the government. The grants are a way for the government to provide a safety net to the most vulnerable to the effects of poverty, unemployment, and the effects of national crises, such as the COVID-19 pandemic. There are to main issues with the grants. Firstly, most of them are below the poverty line, which is set at 624 ZAR per month. Second, the grants only apply for South African Citizens. With South Africa being a country where people from surrounding countries migrate to for job-opportunities, this excludes a substantial part of the most vulnerable.

INFORMAL SETTLEMENTS IN SOUTH AFRICA

In 1994 when Apartheid ended, South Africa emerged with a strong "right-based" constitution who were committed to build a "developmental state". The commitment was manifested in a dedication to address the informal settlements, where many of the poor in South African cities were living. A part of the strategy to provide dignified and fair living conditions for those who were previously excluded was through a formal housing programme called Reconstruction and Development Programme (RDP). Between 1994 and 1999 the state built over one 1 million housing units that were allocated to those who had previously stayed in informal settlements or under similar conditions at little to no cost (Cirolia, Görgens, van Donk, Smit, & Drimie, 2016).

Despite the success in terms of housing delivery, the design and implementation of RDP was problematic from a spatial point of view. The locations for the projects were often decided by developers without taking available infrastructure and services into account. The households and communities of the most vulnerable had to relocate, which caused social and community fragmentation. Instead of slowing down the development of informal settlements, the programme resulted in the opposite. Informal areas expanded and multiplied, continuing to provide accommodation to the urban poor. There was a need for a new policy approach that could address informal settlements and the socio-spatial fragmentation of urban areas that had been enhanced by the RDP (Cirolia, Görgens, van Donk, Smit, & Drimie, 2016).

In 2004, ten years after the RDP Programme, the Breaking New Ground policy (BNG) acknowledged the need for a new housing paradigm that was more sufficient. The new Policy included new programmes which aimed to expand the focus of the state, since singularly focusing on rapid development of greenfield projects had been a flop. One of these programmes is the Upgrading Informal Settlements Programme (UISP) which is a tool that allows development of informal settlements in phases (Cirolia, Görgens, van Donk, Smit, & Drimie, 2016). The program is meant to be "an inclusive process through which informal residential areas are incrementally improved, formalized and incorporated into the city or the neighborhood by extending land tenure security, infrastructure and services to residents" (South African Human Rights Commission, 2020/2021).
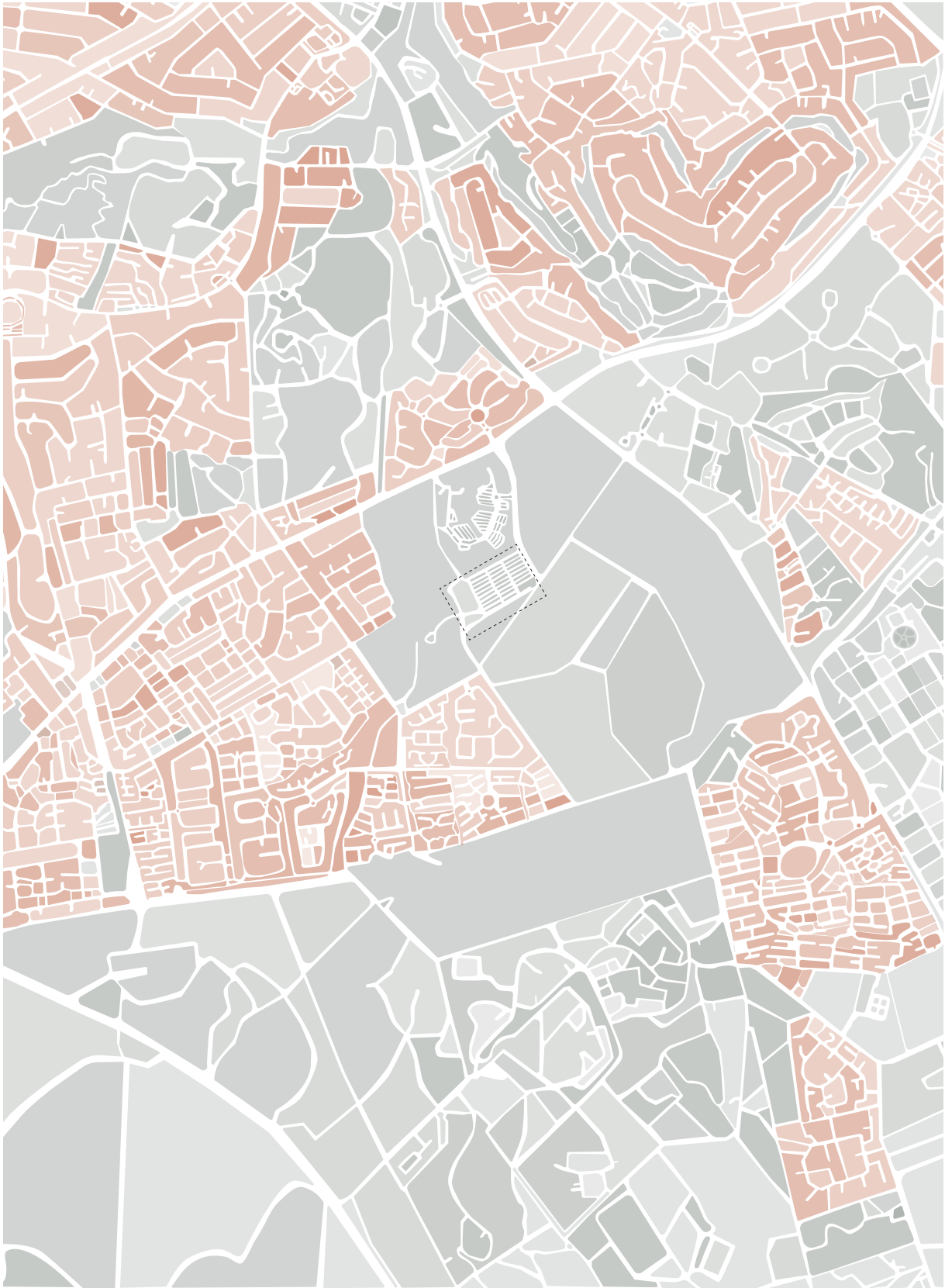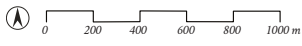
Fig 5. Illustrative map showing how Woodlane Village is strategically situated in relation to surrounding estates. The orange fields represent the estates.

0   200   400   600   800   1000 m

WOODLANE VILLAGE

In the South eastern part of Pretoria, the informal settlement called Woodlane Village is situated. According to a mapping of the settlement executed by students from the Honours studio "Urban citizen studio" at University of Pretoria, it is ca eight hectares and houses around 10 000 people (Haese, o.a., 2021). The settlement was officially re-populated in 2006 after a series of court cases started by a brutal and illegal eviction of the people squatting the land. The people living in the settlement in 2023 are mainly from Zimbabwe, South Africa, Lesotho, Mozambique and Malawi. Many of them have come to Pretoria for the alleged job opportunities and to earn a fair wage that they can send to their families back in their home countries. However, there are not enough jobs for everyone, especially for those who don't have valid papers. This leads to a vicious circle where they do not earn money to send home, and they don't have enough money to go back. They end up being stuck in the settlement with no legal rights. There is a development plan for the site, which states the aim to evict and relocate the residents of Plastic View to a township nearby. However, the relocation only applies to the residents with proper documents for South African residency. The other approximately 80% will be evicted with no other place to go.

The village is surrounded by wealthy gated communities, a placement that is both strategic and that can cause conflict. The strategic aspect is that there are job oportunities for domestic work and gardening within the estates, which means that the people from the village do not have to spend money on travelling to get to work. It also means that some people from the surrounding communities does not want the settlement to be located close to their estate, which sometimes causes tension.

Fig 6. Plan drawing of Woodlane Village. Since the settlement is constantly changning, the map is not 100% correct.

Fig 6.

OVERVIEW

Population: Ca 10.000 people
Area: 80.000 m2
Density: 119.000 people/km2 *[8,5 m2 p/p]*
Average size of Dwellings: 12-15 m2
Access to basic infrastructure: No
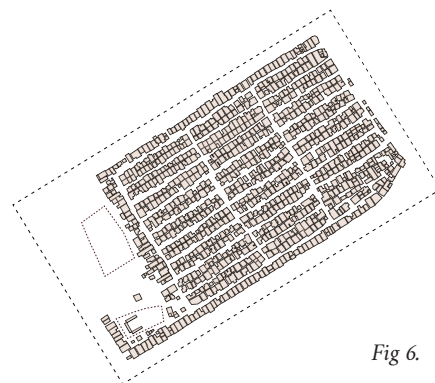**Nationalities represented:** Zimbabwe, Lesotho, Mozambique, Malawi & South Africa

One of the streets in Woodlane Village.

Child helping their mother to collect water from the water tanks.

Trash by the football field. The water is due to rain the days before the photo was taken. There is no way for the community to get rid of the waste that they cannot recycle on their own so it ends up along the edges of the settlement. In the background one of the estates surrounding the settlement is visible, with greenery acting as a barrier between the extreme contrast.

Photo from a meeting me and Kathleen Dieme (master student in architecture, design and planning at Aalto university in Finland who helped me with workshops) had with mothers on Block 10.

Within the sketch (handwritten): Children in the streets of Woodlane Village April 2023

Fig 7. Sketch of children from block 10.

THE CHILDREN OF WOODLANE VILLAGE

The children in the settlement are living under though conditions in a community with no real infrastructure. There is no electricity, no dedicated place for sanitary hygien, no running water. Their parents are living on a day to day basis, which means that the children can eat one day and go hungry the next. Out of the children under the age of five living in the village, there are only 70-75 attending preschool. The rest are spending their days with their mothers and other children in the streets of the settlement. The conditions of the streets are bad, and there are many hazards for both children and adults. The greywater is highly contaminated, and, according to one of the preschool teachers, some of the children not attending preschool will drop their food in there, only to pick it up and continue eating. This is because they have not been thought not to. With their mothers being occupied with household duties, they can't always keep an eye on their child. The children in the settlement are living on the margins, and are exposed du adversities that can lead to long term stress on a daily basis.

Fig 8. Diagram of adversities contributing to toxic stress. The pink circles shows the adversities the children of woodlane village is exposed to on a daily basis, and the yellow circles shows the adversities that are common for children in the village to face, but it differs from household to household. It shows that the Children of Woodlane Village are at huge risk of not reaching their full potential.

NEGLECT   DISCRIMINATION

VIOLENCE   EXPERIENCE OF TOXIC RELATIONSHIPS

XENOPHOBIA

RACISM   **ADVERSITIES THAT CONTRIBUTES TO TOXIC STRESS IN EARLY CHILDHOOD**   NOT FEELING SAFE

POOR HEALTH & NUTRITION

LACK OF SAFE SPACES

POVERTY

SCARCE ACCESS TO EDUCATION   ISOLATION

Fig 8.

LITERATURE

PARTICIPATORY DESIGN & CHILDREN

The key principles of participatory design, which is explained by Shuler and Namioka (as cited by Hussain, 2010) is a concept with the core idea that people affected by a decision should have the opportunity to influence it. When designing for someone else, whether it is an adult or a child, their perspective will enrich the process and the result. Druin states (as cited by Hussain, 2010) that when designing for children, designers tend to primarily consult the caregivers of the children instead of children themselves. Excluding children from the process of creating a design for them results in loss of valuable user perspectives and insights that an adult caregiver cannot provide. Including children in the different stages of a design process can lead to not only empowered outcomes, but empowering processes as well (Hussain, 2010).

In 1992, the then director of "Children's Environments Research Group" Roger Hart described the inclusion of children in projects and programmes with a ladder showing different degrees of participation. The ladder has eight steps that ranges from "Child-initiated and shared decisions with adults" which is the highest form of participation to "manipulation" which is when children are included in project only to justify the outcome. The highest five steps of the ladder represent ways of real inclusion of children. The lowest three steps of the ladder, including "Manipulation", is seen as deceptive child-participation (Hussain, 2010).

"REAL" PARTICIPATION ACCORDING TO LADDER OF CHILD PARTICIPATION

One of the lower degrees of "real" participation is when children take part in a project and are informed about the content and goals of the project, even if they do not have much influence over the process and result. It requires that the adult in charge communicates honestly with the children about their role and influence *[Assigned but informed]*. If a project is planned and run by adults, and children are included in a manner that enables them to express their opinions and understand the process, the children are considered as *[Consulted and informed]*. Taking it one step further, A project can be planned and executed by adults with children taking part in the decision-making process [Adult-initiated, shared decisions with children]. If the project is initiated, planned, and executed with no interference from adults, it is referred to as *[Child initiated and directed]*. Lastly, a project can be initiated and started by children, with the support of adults *[Child-initiated, shared decisions with adults]* (Hussain, 2010).

Fig 9. Diagram showing the ladder of child participation based on Roger Hart's diagram (Hart, Children's Participation - From Tokenism to Citizenship, 1992) published by the United Nations Children's Fund.

Fig 10. Digram to visualize how the roles of children suggested by Allison Druin (2001) in a design process correlate to the level of participation.

DECEPTIVE PARTICIPATION [NON PARTICIPATORY]

An example of deceptive child-participation could be that children are asked to make a drawing of their perfect playground, but then never receives any feedback on how or if their contributions have been considered *[Manipulative]*. Another example is that children are invited to the opening of a new playground and asked to wear promoting clothing. The children are used to implicate that they have been a part of the project, even if they have not *[Decoration]*. Lastly, deceptive participation can be described as children being pushed to participate in situations where they are not comfortable, like a child-panel or similar *[Tokenism]* (Hussain, 2010).

ROLE OF THE CHILD IN PARTICIPATORY DESIGN

Allison Druin, who has conducted significant research on children's participation within the field of technology, proposes that there are four main roles that children can play in a design process. Children can be asked to test existing products on the market while the adults observe or test for skills *[User]*. They can also be asked to test prototypes of not yet released products and be asked to review them and comment on the user experience *[Tester]*. They can be given the role of consulting the designers in the initial state of the project, and then be asked to comment on sketches or prototypes *[Informant]* and if they are equal partners with the adults throughout the whole process, they will be considered as *[Design Partner]* (Druin, 2001).
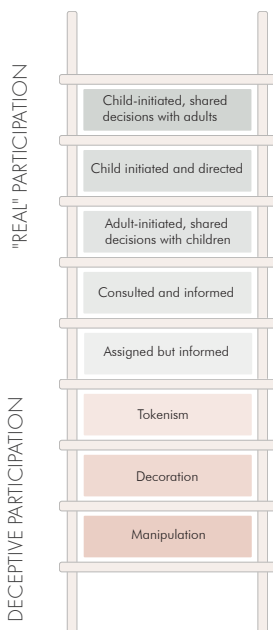

"REAL" PARTICIPATION

Child-initiated, shared decisions with adults

Child initiated and directed

Adult-initiated, shared decisions with children

Consulted and informed

Assigned but informed

Tokenism

Decoration

Manipulation

DECEPTIVE PARTICIPATION

Fig 9.

Degree of participation

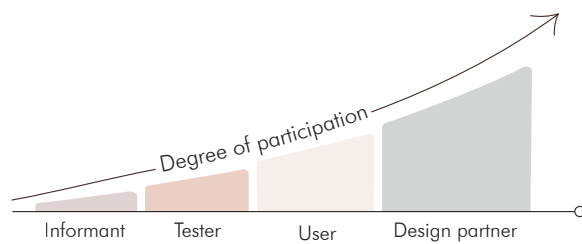Informant   Tester   User   Design partner

Fig 10.

RESEARCH IN EARLY CHILDHOOD DEVELOPMENT FOR THE PAST TWO DECADES

For the past twenty years there has been great progress in ECD-research and the number of equitable polices for early childhood to reach Sustainable Development Goals has increased. Despite the advance of research and programs designed to take action to ensure better pre-requisites for ECD, services are of varying quality with uncoordinated and inequitable access. To make sure that services of high quality are available during the child's first years there is a need for coordination, monitoring and evaluation across sectors (Black, et al., 2017) *[KEY: The burden and cost of inaction is high, both for individuals and society as a whole]*

THE GROWING BRAIN

Development of the brain begin at conception, and by the time the child reaches five years of age their brain will have grown up to almost 90% of the adult brain. 80% of the 90% will grow and develop during the first two years. The brain is comprised out of trillions of connections among billions of neurons across all areas of the brain. The connections are enabling communication among neurons that are as fast, if not faster, than lightning. These connections start to form before conception, and they continue to form throughout our life. Most of these connections are set in the first five years of a child's life, and experiences can either reinforce or diminish these connections. The connections are reinforced through repeated use. Connections that are used more grow stronger and more permanent, meanwhile, connections that are used less fade away through a normal process called pruning. Simply explained, experiences shape the process that determines wheter a child's brain will provide a strong or weak foundation for all future learning, behaviour and health. (Center on the Developing Child at Harvard University, 2011).

Illustration of how a connection is Formed [Fig 11a.]. The connection can either be reinforced [Fig 11b] or fade away in a process called pruning [Fig 11c.].
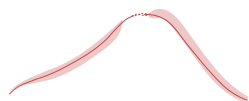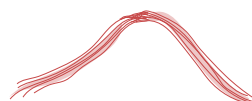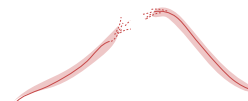

Fig 11a.   *Fig 11b.*   *Fig 11c.*

THE IMPORTANCE OF A GOOD FOUNDATION

In the Swedish documentary "Din Hjärna" (Hansen, 2021), Swedish pediatrician and professor Hugo Lagercrantz describes the importance of a stable foundation by referencing to the construction of the eiffel tower. The base must be strong to cary the rest of the tower. A crackled foundation will lead to future hardships when the child grows up and are situated in different social settings. The child will not be as resilient to the effect of stressfull situations later in life if the foundation is already damaged.

Fig 12 a,b,c. Genes provide a basic blueprint for the architecture of the brain, but experiences shape the process that determines wheter a child's brain will provide a strong or weak foundation for all future learning, behaviour and health. The illustration shows the relation between the child's age and the amount of connections being made. It also shows how a strong base will provide better prerequisites to tackle future hardships.

Fig 12a. represents the effects of a child who's been exposed to and affected by toxic stress from the moment they were born. Fig 12b. represents a child where the exposure to toxic stress started after their third year of life. Fig 12c. represents a child who has not been exposed to toxic stress during Early childhood.
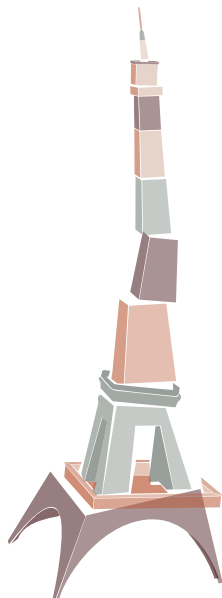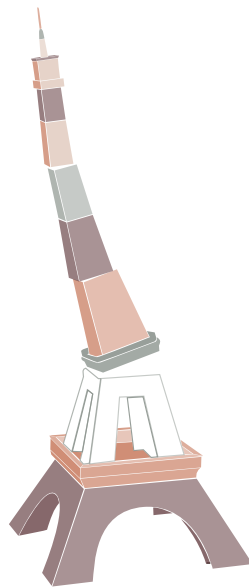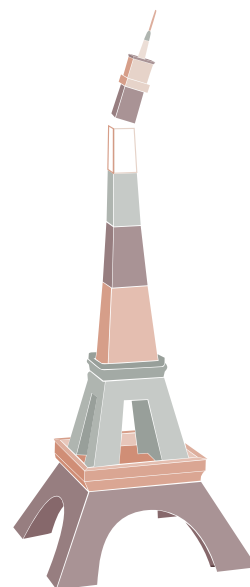

Fig 12a. *Fig 12b.* *Fig 12c.*

THEORY OF RESILIENCE

The definition of resilience can change depending on the context, and in the field of social development social determinants like socioeconomic status, mental and physical health and systematic racism are factors that needs to be taken into account. According to The American Psychological Association (APA) resilience is "the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress - such as family and relationship problems, serious health problems or workplace and financial stressors" (American Phsychological Association, 2023).

Based on the previously mentioned definition, a child that is resilient will be more persistent towards toxic stress, even though the child is exposed to risk factors. This view is shared by Philip A. Fisher, Ph.D., a member of the National Scientific Council on the Developing in a video series published on YouTube by Harvard University Center on the Developing Child where he describes resilience as "the counter balancing of difficult things that may exist in the child's life" (Center on the Developing Child at Harvard University, 2015).

BALANCING POSITIVE AND NEGATIVE EXPERIENCES

A way to visualize and understand the development of resilience in a child is to imagine a balance scale where positive experiences and coping skills are on one side, and negative experiences and significant adversity is on the other. As a child is growing up, the scale will change based on experiences and environment. Positive and empowering experiences during the first five years of life can make a significant difference in how each child copes with hardships and how they learn to manage stress. When a child's health and development tips towards the positive outcomes, even if there is a heavy load of factors on the negative side, resilience is evident. Genetics play a part for how the scale is positioned from the start and how receptive a child is towards negative and positive experiences. It is important to consider that all children start at different levels and will therefore need more or less positive experiences to tip the scale (Center of the Developing Child at Harvard University, 2023). Children who are growing up in informal settlements do have the odds stacked against them, but as the theory of resilience explains, Opportunities for positive experiences have the power to shift the scale in their favor.

Fig 13 a,b,c. resilience is built depends on Genetics, experiences and environment where the child grows up. Fig 13 a. illustrates How The genetics will decide the starting point in how well a child can resist toxic stress. Fig 13 b. shows that the circumstances which The child is exposed to can level or tip the scale. Fig 13c. Shows that depending on where you start off, you will need more or less of positive experiences to tip the scale towards a stronger resilience.
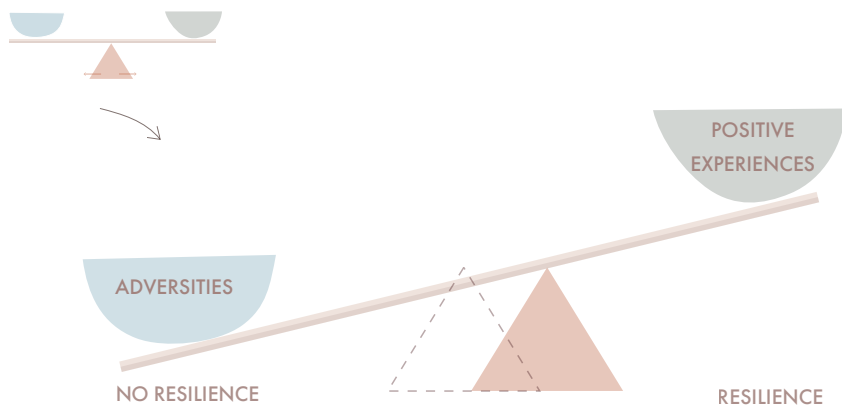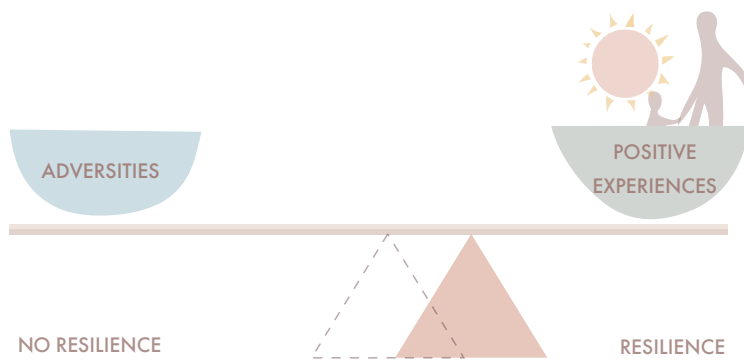
ADVERSITIES

POSITIVE
EXPERIENCES

NO RESILIENCE

RESILIENCE

Fig 13a.

ADVERSITIES

POSITIVE
EXPERIENCES

NO RESILIENCE

RESILIENCE

Fig 13b.

ADVERSITIES

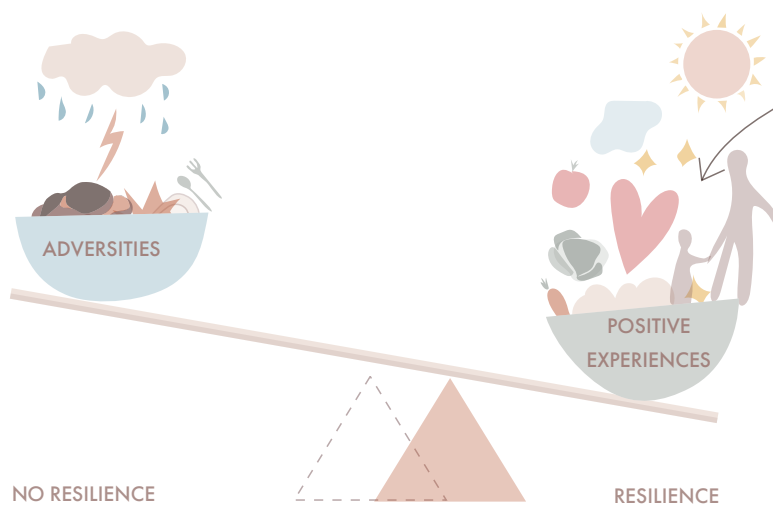POSITIVE
EXPERIENCES

NO RESILIENCE

RESILIENCE

Fig 13c.

THREE BASIC PRINCIPLES

Grounded in science and emphasized by Center on the Developing Child at Harvard University (2021) there are three basic principles that can be used as a guide for decision-makers and practitioners as they choose how to design new approaches to improve outcomes and quality of life for children and their families in vulnerable positions to best support the building of healthy brains and bodies. These are:

↳ *Support and strengthen relationships*
Responsive relationships with adults have double benefit, it promotes a healthy brain development as well as it provides the emotional buffer needed to cope with negative experiences and keep the body from responding with toxic stress. Responsive relationships in general early in life are one of the most important factors in building a strong foundation for brain architecture.

Personalized and responsive relationships offer children a buffer from developmental disruption and increases prerequisites for capabilities that enable individuals to thrive in school, work, and general life. The most common factor for children to overcome serious hardship is them having a stable and committed relationship with at least one supportive parent, caregiver or another adult. Responsive relationships can help both children and adults to deal with stress as well as regulate emotions and behavior. In contrast, children who experience social isolation due to neglect or similar, can suffer further isolation and damaged relationships.

*Responsive relationships: It can be when an infant or a young child is making gestures and an adult responds appropriately with a smile, eye contact or a hug. Then neural connections are built and strengthened in the child's brain (Center on the Developing Child at Harvard University, 2021).

↳ *Strengthen core skills*
Core skills help people manage their life, including work and relationships successfully. No one is born with the core skills; They develop through practice and feedback. Core skills include the ability to focus, plan for goals, achieve goals, adapt to changing situations and to resist impulsive behaviors. They are referred to as executive function and self-regulation skills in the scientific world. It can be compared to an air traffic control system, where the person in the control room safely manages the arrivals and departures of many aircraft on multiple runways. These skills are needed to filter distraction, prioritize tasks, remember rules and goals and control impulses. They help us in our everyday life to make healthy choices (Center on the Developing Child at Harvard University, 2021).

Even though most of the connections in the brain is cemented within the first five years of a child's life, the brain continues to adapt to experiences throughout life. This means that adults too can strengthen their core skills. Core skills are highly attuned to the environment where the person grows up and/or live in and will be strongly influenced by the context. In some cultures, for example, punctuality is highly valued, while in others it is considered less important (Center on the Developing Child at Harvard University, 2021).

↳ *Reduce sources of stress*

Being exposed to stress and learning how to deal with it is in an important part of development, but when the stress is constant it can cause lasting problems for children and their caregivers. Reducing the pile of adversities or offering a safe space where the children and their mothers can escape from the adversities for a while will reduce the pile-up of potential sources of stress. Directly since the child's stress response is triggered less frequently and indirectly through the wellbeing of their primary caregiver, which in this context is the mother. Children are more likely to thrive when their parents are given better circumstances to meet their families' essential needs (Center on the Developing Child at Harvard University, 2021).

IDEAS FRAMEWORK

Years of research within the field of Early Childhood Development have demonstrated it is possible to improve the outcomes for children and families in vulnerable contexts. Despite the research, the effects have not met the expected levels, and they have not improved over time. Part of the problem is that typical research methods generalize the needs and don't investigate beyond the average, leading to a gap in information about what works for whom and in what contexts. Another issue is that funding of projects and programs in the field put pressure on the innovators to prove that their programs work rather than to learn and improve the programs. This tends to put the focus on findings that can confirm that the program is effective and downplay what isn't working. In its turn, it leads to the field not learning from previous mistakes, and continued usage of unproductive strategies (Center on the Developing Child at Harvard University, 2023).

Another issue is that the new programs and services often develops without input from community members who are the ones affected by the interventions and decisions. Not taking the culture and societal structure into account will hinder the community from progressing withing their own context, and the program aimed to empower people will fall flat (Center on the Developing Child at Harvard University, 2023).

To address these challenges, The center on the developing child at Harvard University has developed a framework for impact called IDEAS. The framework includes four guiding principles to help answer the question of "How can we build better programs that achieve greater outcomes for more young children and their families?". These principles, which are Precision, Fast-cycle, co-creation, and shared learning, are concepts and ways of working that address challenges to achieve wanted and improved impact (Center on the Developing Child at Harvard University, 2023).

↳ *Precision*

What about the project works? How does it work? For whom does it work? In what context does it work? It is important to have a clear understanding of what the project entails and how it has an impact. The knowledge generated by answering these questions will most likely contribute to a greater understanding of risk, resilience, and beneficial change.

↳ *Fast-Cycle Iteration*

Start with Low cost, relatively small scale tests that can be evaluated and refined for each fast-cycle iteration. Track what is working and what isn't, and use this knowledge to move towards higher levels at an accelerated pace. Fast-cycle iteration is a multiple rapid learning method.

↳ *Co-creation*

Brings together different parties to produce a valuable outcome for everyone involved. This process increases the likelihood that the programs developed meet communities unmet challenges and are relevant to real-world contexts.

↳ *Shared learning*

Don't explain away negative results. Learn from failure as well as success. Share the learnings. What does not work is equally important knowledge as what does. Evaluate why it work/ doesn't work.

THEORETICAL FRAMEWORK

Mixing the theories from the field with the site-specific knowledge, building on the assumption that all cultures have different aspects of qualities that they value for their children to have, a theoretical framework for how to reach a design proposal and the strategies behind it has shaped. For more in depth explanation of the theoreical framework, see apendix.

Fig 14. The diagram below is a visual representation of the aspects considered in the theoretical framework and the specific topics from the research field that will be covered in the thesis.

Mothers & Children [Site specific]
Children's interests
Mother's wants and needs for their children
Participatory Activities / Design
Levels of Child Participation in design processes
Woodlane Village [Site]
Mapping of the settlement
Quantitative information about Woodlane Village by previous students
Theoretical Framework
Creative activities as a tool to build trust and get to know a community
Theory of Resilience
Three basic Principles to improve out-comes
IDEAS Framework
Early Childhood Development

Fig 14.

MAPPING & INTERACTING

APROACH

The strategy to approach the context to learn about the settlement and to collect data to reach a design proposal was divided into four stages. Understand, Connect, Build trust and Design. The interactions with the community went from a general to intimate. Each step was informed by the result from the previous step, and therefor tailored after what I found worked in the context.
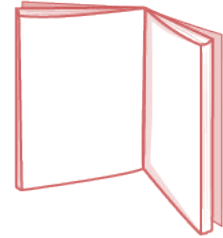
Fig 15. Shows the methods and interactions used during the field studies. Below is an estimation of time spent on each phase.
I. UNDERSTANDING [4 Weeks]
II. CONNECT [3 Weeks]
III. BUILD TRUST [3 Weeks]
IV. DESIGNING (Including analyzing data) [5 Weeks]

Learn about the Context from previous research and projects.
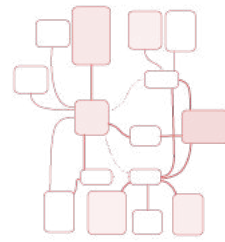

Interviews

II. CONNECT

Talking session with mothers - Identifiy needs and wants, both expressed and latent.
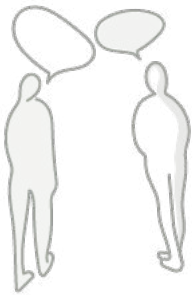
Observe.
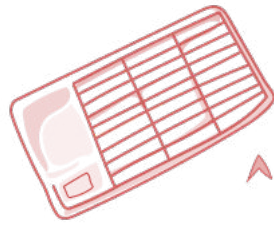
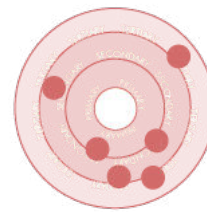Identify flows, place for interventions, feeling of safety, physical hazards, etc.

Map out the social structures and connections within the community.

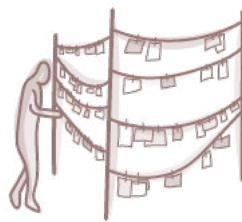Walk and talk with Key Person's

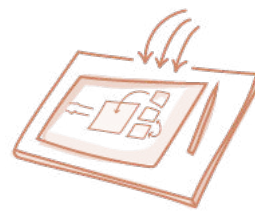Find Key person's

Identify Stakeholders.

Photography Workshop

Event/Vernissage

Take the learnings from the field studies and translate into a design and/or project plan.

III. BUILD TRUST

IV. DESIGN

Fig 15.

COMMUNITY STRUCTURE

HELPS MOTHERS AND CHIL-
DREN IN THE SETTLEMENT
WITH THE SUPPORT FROM SA
CARES FOR LIFE

THE LINK BETWEEN SA
CARES FOR LIFE AND THE
COMMUNITY

EMPOWER COMMUNITY
MEMBERS THROUGH
ENGAGING THEM WITH THE
COMMUNITY AND OFFER
THEM EDUCATION

CLUSTER CARE
WORKERS

SUPPORT WITH NECESSITIES
FOR COMMUNITY MEMBERS
IN NEED

SA CARES FOR LIFE
(NGO WORKING
WITH THE SETTLE-
MENT)

TEACHERS/COMMUNITY
MEMBERS INVOLVED WITH
LOCAL PRESCHOOL

SUPPORT WITH FUNDING FOR
IMPROVING LOCAL SYSTEMS

CRECHÉ
(LOCAL PRESCHOOL)

CHAIR HOLDERS

COMMUNITY LEADERS

THE LINK BETWEEN SA
CARES FOR LIFE AND THE
COMMUNITY

INCLUDED IN BIG DECISIONS
SURROUNDING THE
SETTLEMENT STRUCTURE

PART OF THE PLANNING AND
UPGRADING OF PHYSICAL
ATTRIBUTES IN THE
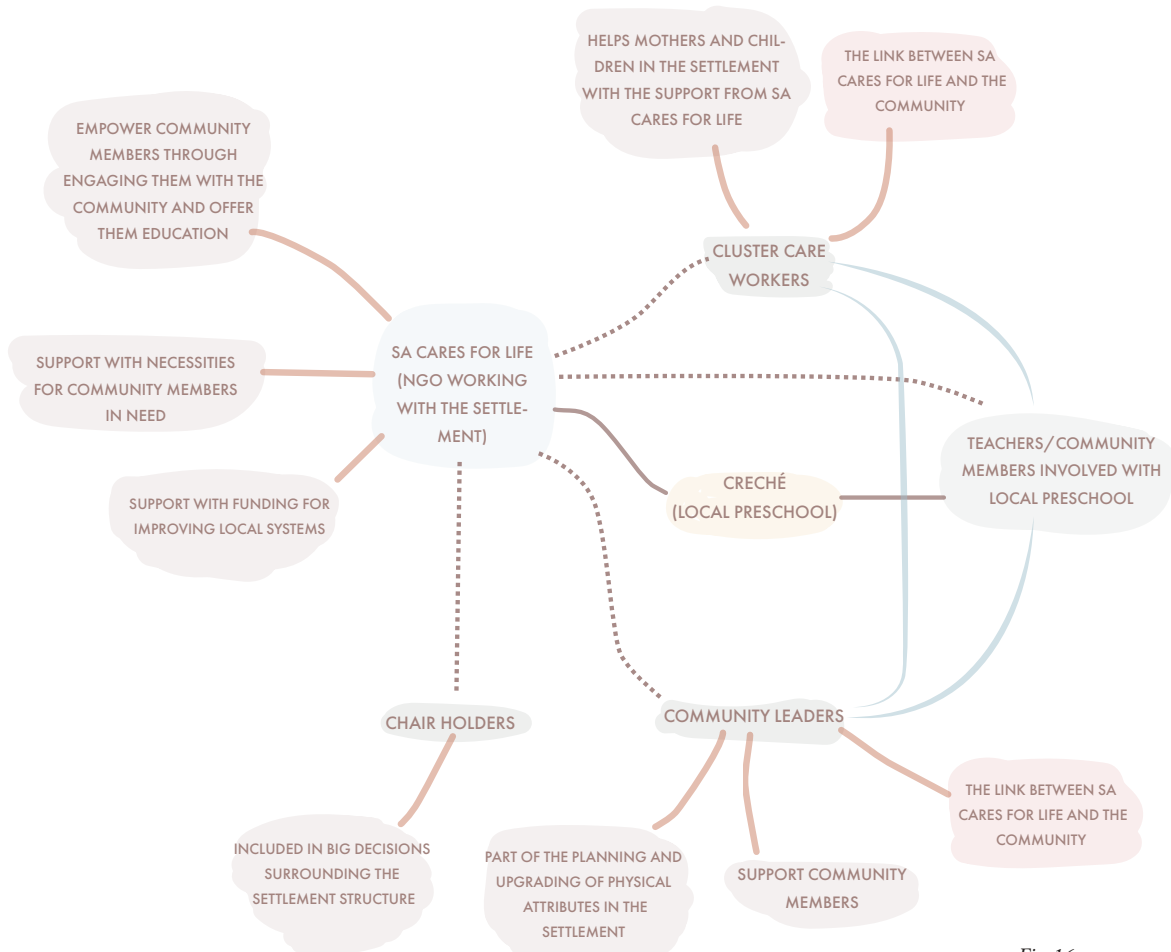SETTLEMENT

SUPPORT COMMUNITY
MEMBERS

Fig 16.

Fig 16. How the different stakeholders connect, and also how the roles in the settlement works. Orange lines: Function, Blue lines: connected through both function and as community members, Ticked line: Connected through function, Brown line: School started and/or run by XXX.

Fig 17. (Next page) Diagram showing the different stakeholders I have involved and/or interacted with and stakeholders that I am planning to involve long term if the project continues and is being realized. The closeness to the center represents the importance of the stakeholder for the thesis. If I continue with the project I would have to look for sponsors, which is another type of stakeholder for the context. It doesn't fit in the circle, hence it is placed outside.

STAKEHOLDERS

Mothers & Children who are not attending preschool are the target group for which the project aims to benefit. The children who are attending preschool is also stakeholders in the sense that they will also have access to the interventions, but they can also be a reference when measuring the impact of the interventions on the children not attending preschool by comparing the difference in the knowledge level of these two children groups before and after the implementation of the intervention. Teachers at preschool are experts in knowing what skills are important to teach the children and they know how to best reach the children. Through interviews, they have had the role of consultant (Druin, 2006). SA Cares for life was intended to play a bigger role in the thesis project, but ended up helping me connect with one of my key persons in the settlement. They, whereas one is a cluster care worker, have been my guides in the settlement and introduced me to all of the other stakeholders.

For the continuation of the project, I plan to contact a Welder who lives and works in the settlement to help me build the intended intervention. To pay for the material that can not be found on site, and to pay the Welder for his services, funding will be necessary. The community leaders and my key persons can then help keep track of how and if the design is used, and if it is popular.
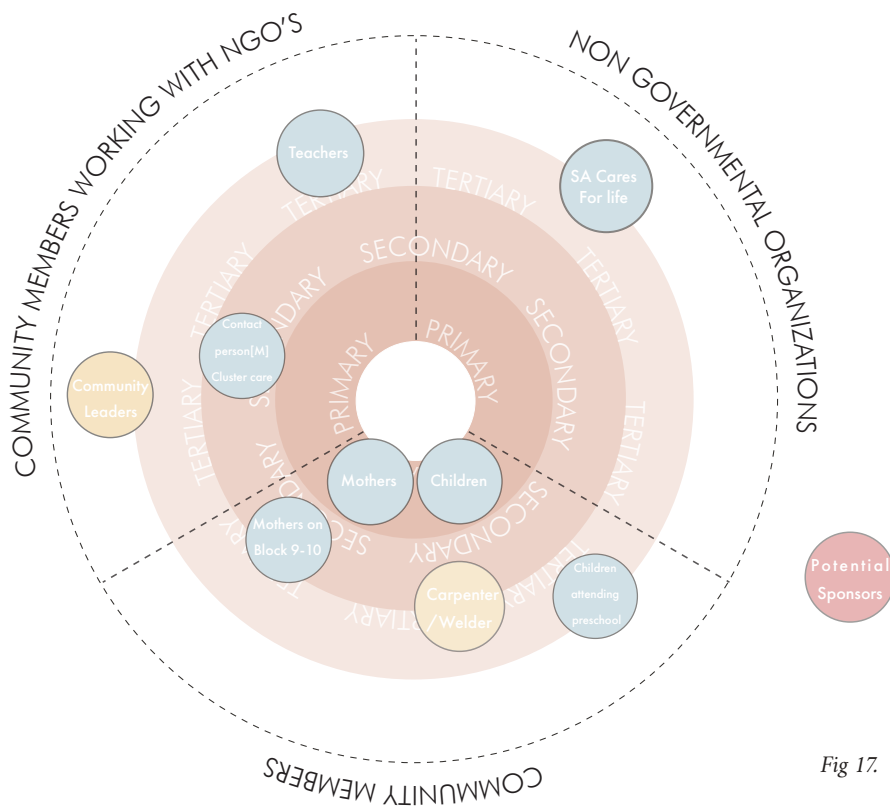

Fig 17.

INFORMAL INTERVIEWS, INTERACTIONS & OBSERVATION

During the time on the field, I conducted interviews with women with different roles in the settlement. The interviews helped me to better understand the social structures in the community and how a typical day could look for the households. The people interviewed were women who lives or works in Woodlane Village Informal Settlement. Informal interviews was a way for me to connect with community members on a personal level and at the same time observe and learn about the daily interactions.

QUALITIES OF VALUE IN THE SETTLEMENT

During the first women-meeting in Block 10, I asked the mothers which were the most importatant qualities for their children obtain before the age of 5. They all agreed that it was to learn the art of sharing and respecting. They also emphasized the importance of learning how to speak English, since they believe that that specific language skill will benefit their children. Lansdown [2004] referrs to a study on the topic of desirable qualities for children to have by the age of five, and how it differs depending on context and culture. Reflecting upon the qualities the mother's considered to be the top three, I would argue that it is a clear distinction between which of the qualities came from culture and which came from the context. Share and respect is practised in the community on a daily basis. The women cook togtether, helps each other with household choires, and takes care of each others children. They don't have much, but they have eachother and have built a strong sense of community through working together.

REFLECTION ON CONTEXT BASED VALUES AND THEIR ORIGIN

In contrast to the soft and social qualities, I am sure that the wish for the children to learn English is strictly related to the context. When entering a new country to work, a place where you do not speak the language, life will be difficult. Without education, the possibilities for work is scarce and the best opportunities are to be a domestic worker. The language barrier is not uncommon to be a hinder, since the families who buys the services want to be able to communicate with their employee. Because of these experiences, I believe the women are thought to see the value in speaking English in a country like South Africa, were the the narrative was controlled by the Europeans for secads, making English into one of the most speaked languages in Sout Africa.

SAFE/UNSAFE SPACES IN WOODLANE VILLAGE DURING WEEKDAYS

I asked women living on block 10 & 9 about the general feeling of safety in the Village. They all agreed that there was a difference depending on which day it was. During the weeks the streets are generally calmer since many of the people are at work. Both men and women are working, but in families there is common for the man to earn the money elsewhere while the woman takes care of the household and the children. During the days when the men are off working, the women socialize with each other and many of them are doing their household chores simultaneously while chatting.

At the block where I mostly spent my time, they organized cleaning days for their part of the street. They also work together to keep the street fairly for the children. When I asked if it was the same on other blocks, they said no. According to them Block 9 &10 are more organized than the others. Block 4-8 is organized, but Block 1-3 is not structured at all. As an answer to the question of why they think that is, one woman said that it has to do with the women/men ratio. There are more women living on the later blocks, and therefore the structure is better. The other women agreed and said that the way the Block is organized correlates to the general safety for both women and children.

Fig 18a. The map below shows perceived safety for children to stay and play on during the weekdays Woodlane Village based on comments from mothers who lives on Block 9 and 10.
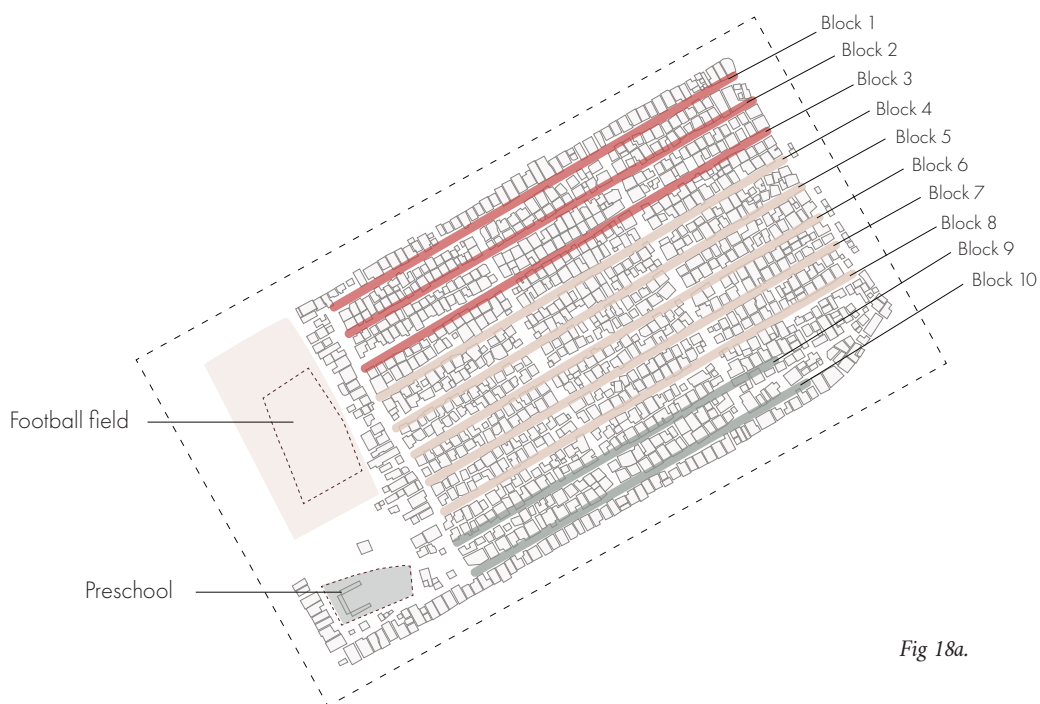*Red: Unsafe; Green: Safe; Beige: In between.*

Fig 18a.

45

SAFE/UNSAFE SPACES IN WOODLANE VILLAGE DURING WEEKENDS

During the weekends many of the adults in the settlement drinks alcohol. They start after 12.00 o'clock at friday and continues tohroughout the whole weekend. This makes the whole settlement less safe for both the children and the women. The children are therefor kept inside their saturdays and sundays, to not get in harms way. One woman said that the soccer field is the most safe place for children to be during the weekend, if they are not in their house. There are a lot of people around the football field and usually there are football and netball being played. This is in contrast to the week days where the plot is empty except for the children playing there.

Fig 18b. Perceived safety for children to stay and play on during the weekends in Woodlane Village based on comments from mothers who lives on Block 9 and 10.
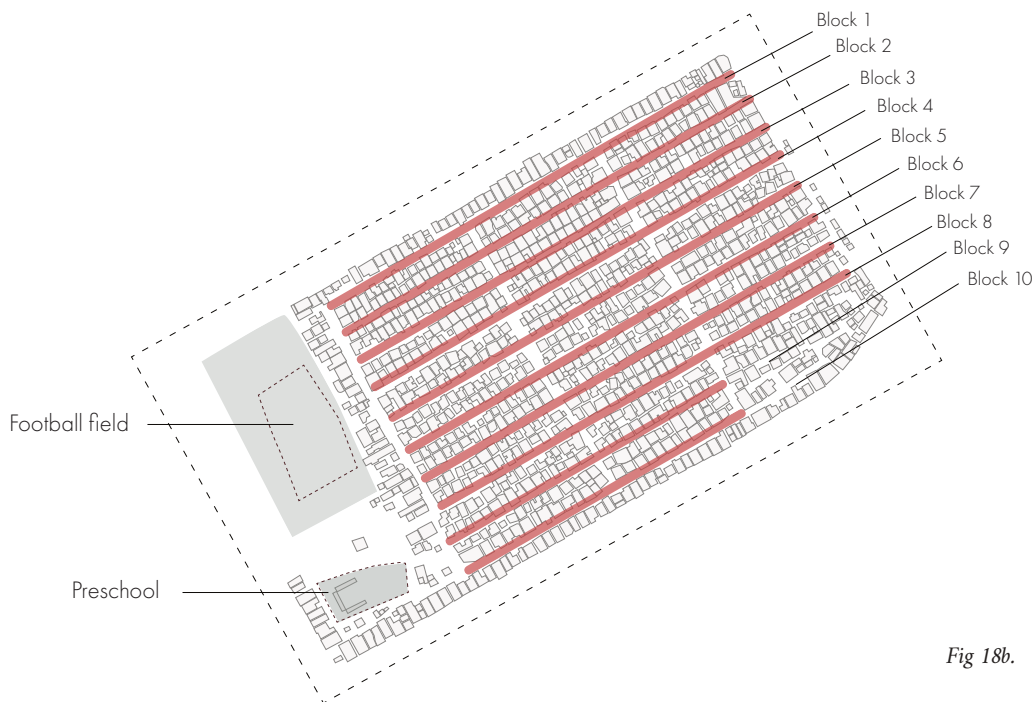*Red: Unsafe; Green: Safe; Beige: In between.*

Block 1
Block 2
Block 3
Block 4
Block 5
Block 6
Block 7
Block 8
Block 9
Block 10

Football field

Preschool

Fig 18b.

MY PERCEIVED FEELING OF SAFETY

As I was walking around the settlement with my contact person, I observed what the women had been telling me, and from what I experienced I felt safer in Block 9 and 10. It was also cleaner and less hazards for children on the streets. I was only in the settlement during the weekdays this for this project per request from SA Cares for life. Last year I was in there for a saturday and watched football and netball. The general feeling was uncomfortable while walking past all men sitting on the side of the field.

PHYSICAL HAZARDS

Through observation and informal interviews while spending time in the settlement I was able to identify the most common physical hazards on the streets. There was broken glass, razors, metal threads, feeses from dogs, grey water from water tanks/the daily cleaning, etc. Most of the street has erosion to some degree. Some street have plastic pipes that has been placed under ground to remove the water, but they don't lead to a well so at some point when the pipes stops there will be an unplanned sewage with waste and toxic chemicals. A common problem is that children get small wounds from playing on the street, which requires sanitation to clean. The environment they live in is not a good place for those who wishes to keep their wounds clean.

The most common hazard for the children is boiling water. My contact person in the settlement told me about how pans are filled with water and left unsupervised on the fires/gas stoves for heating. The set up is instable more often than not, and when the children in the household or around the street play close to the dwellings, they sometimes get boiling water over themselves. This generates serious burns that requires a change of bandage and care for the wound at least once a day for a long time. The infection-risk is high.

Last year they had a problem with dogs biting the children, but since I arrived in February the dogs have not been a problem. I know that they were starting a training problem for the dogs and volunteers last year when I left, and it looks like it has been successful. The hazards connected to dogs are their feces and the bacteria it brings.
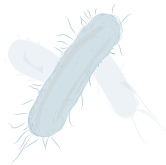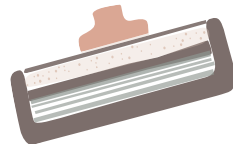

Fig 19a.
Contamination

Fig 19b.
Razors
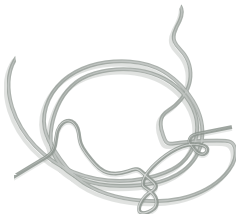
Fig 19c.
Crushed glass

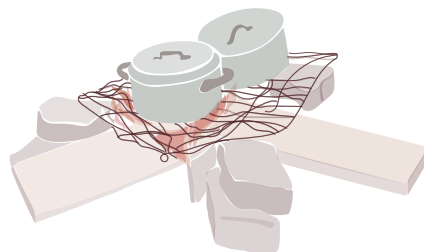*Fig 19d.*
Diverse sharp metal objects

Fig 19e.
Boiling water

Fig 19f.
Barbed wire

Fig 20. Sketch of a meeting with the mothers from Block 9 & 10.

CREATIVE ACTIVITIES AS A TOOL TO BUILD TRUST AND UNDERSTAND THE CONTEXT

In the paper "The way art works – Insights for community development" by Crawshaw & Gkartzios (2017) the authors are exploring the ways art works in the context of community development. Drawing on a one-year experimental study on the Holy Island of Lindisfarne in the northeast of England where the researcher is combining artistic fieldwork with ethnography, they argue that the experience of art can be a catalyst to processes of community engagement. It encourages personal and collective reflection, reveals relationships within the community as well as the relations between community and environment (Crawshaw & Gkartzios, 2017). The output of the creative activities is not the focus, what is more important are the relations that are built and the knowledge that is shared. Crawshaw & Gkartzios (2017) argues that the intangible effects regarding the role of art in community development are undermined in the academic literature.

Illustration to the left: Mothers from Block 10 during one of our meetings where we talked about feeling of safety in the Village. During this session I got to see how the mothers interacted with eachother and how there was a clear hierarchy among them. The mothers who had been living there the longest, who also knew how to speak English, had the last word in most discussions.
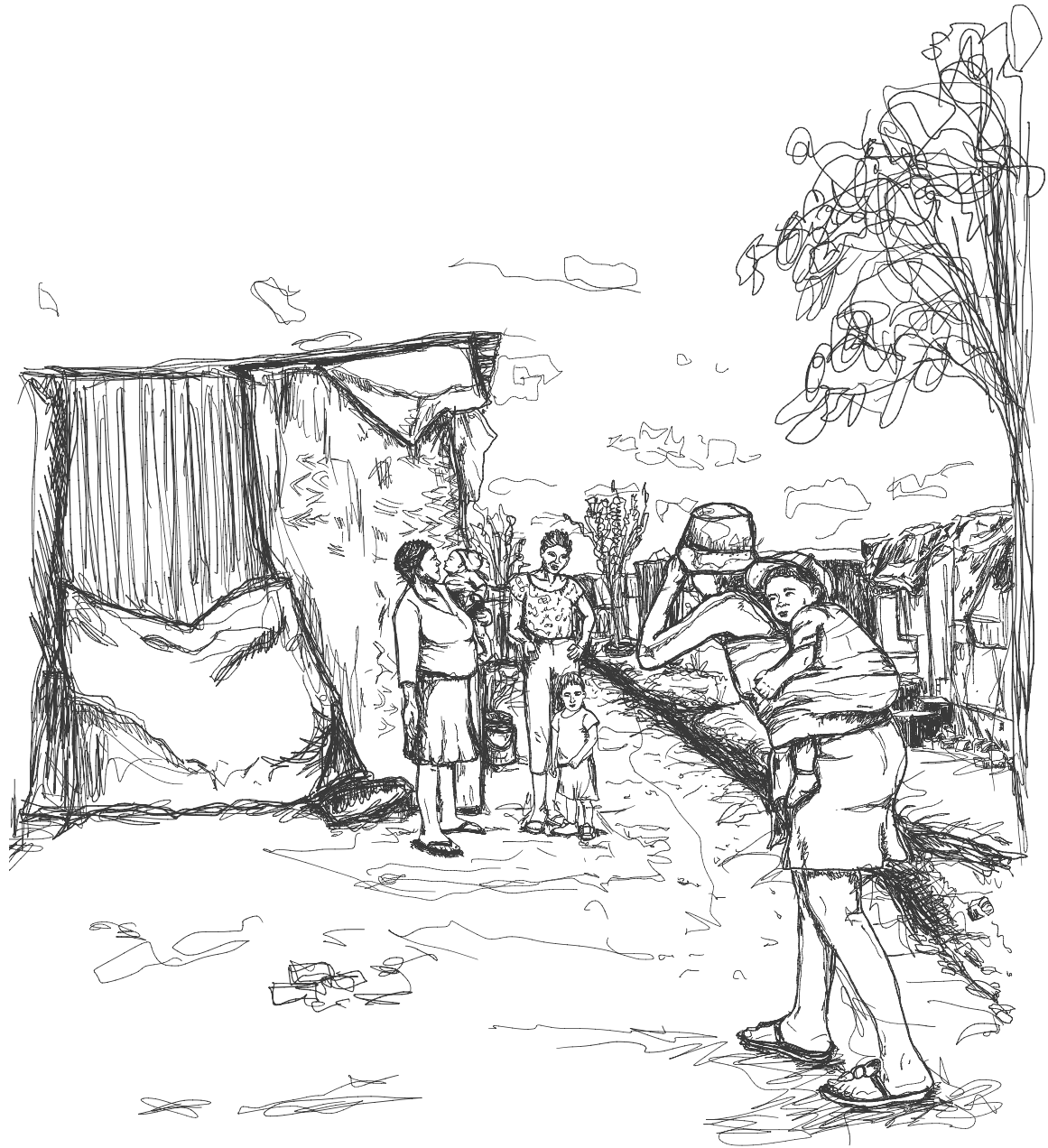
Fig 21. Sketch of a mother taking a photo with a disposable camera during the workshop while her children is playing next to her.

PHOTOGRAPHY WORKSHOP

As a tool to explore the interests of the mothers and children of the community, a workshop using the creative media photography was conducted. By handing out disposable cameras to mothers and their children with the instructions of documenting their everyday life however they wanted, I wanted to give them the opportunity to narrate their own story. The output, the photos, gave another perspective on life in the settlement. A second workshop when the photographs were developed was also carried through. For this workshop I gathered the mothers and their children to hand out the photos and talk about them together. This gave further insight into the atmosphere and social interactions, as well as the interests of the children and their mothers.

The target group was women with children under the age of seven and their children. The task was for the mother to work together with each other and their children to take photographs of the settlement and each other. Me and Kathleen intentionally left the instructions open because we wanted the families to tell their story through their photographs. As a thank you for participating, the families will get to keep the photos once they are developed. I informed them about this when we were signing the consent forms. I also informed them that the personal data collected through photographs will be used as a way to map their interest for my project where I will create a design proposal with the purpose of designing opportunities for learning and interaction in public spaces.

In total there were eight disposable cameras being handed out, and more than twenty women with their children were joining. They shared the cameras between them in groups, and when the film was full they gave us back the cameras. Not a single camera went missing, and there were a lot of smiles. It was an overall fun activity for everyone involved. Some people joined in later, when there was no film left. They also wanted photographs of themselves and their children, so we photographed them with my phone and told them that we would print those too. They had probably heard from the others that they would get to keep the pictures.

Fig 22. Sketch of a mother taking a photo of her friends during the workshop, with a baby on her back.

What we learnt was that they mostly took pictures of each other in big groups. They gathered in the street and in front of the dwellings nearby and rotated in taking photos. Most of the photos were taken nearby, which was not our intention with the workshop since we wanted the photos to be more spread out over the block. Even though we told them that they could walk wherever they wanted, most of them wouldn't. It is another indicator that community and the bonds between the women are what is most important. Another way to look at it is that the dwellings are not their real homes, and that they therefor don't feel the need or want to walk there to take photos. It is not their priority for what they want to remember. Some of them went back to their houses to change clothes and take photos of eachother and their families.

THINGS WE COULD HAVE DONE DIFFERENTLY

Leave the cameras over night
The original plan was to leave the cameras in the settlement overnight, but Matsehla told us that that would not be a good idea because the cameras would probably get lost. What we wanted to achieve by leaving the cameras over night was to see the community during night time, when all of the family members were at home. We thought it would give more variety to the photographs, and also show a glimpse of their life when we as outsiders was not around.

Fewer participants and detailed instructions
Choose a handful of people and have a meeting with them and give them more specific instructions on what to document. Like safe places, unsafe places, them and their children spending time together etc. If I had more time, this is what I would do. As it is now, it takes a minimum of two weeks to develop the photos. The time I have left here is simply too short, and I also have to put focus into the design intervention.
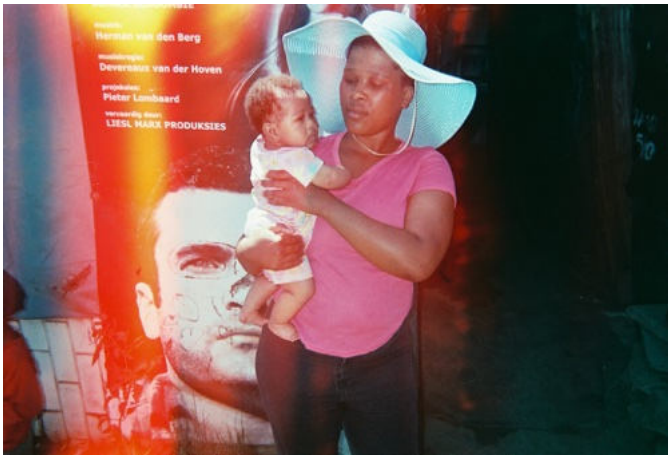
Fig 23. Sketch of children drawing on the rubber mats placed next to the vernissage.

VERNISSAGE

The vernissage, which was directly related to the photography workshop, was a fun way to display the printed photos to the women and children. We wanted to combine the hand out of the photos with an activity that would bring the participants together while giving them a nice break from their everyday life. It took place in block 10, where the photography workshop and the meetings with the women and children had been. To organize the vernissage two women, my contact person and a woman I met last year were helping us. After the vernissage the women collected the photos that belonged to them, and we had fika together while the children were playing.

EXPERIMENT - SMALL INTERVENTIONS

When we opened the vernissage we put out rubber mats next to the photos for the children to play and draw on, with the main purpose to see if small gestures and spaces dedicated to the children would catch their eyes. It was an experiment to test the idea of a small design intervention actually being used by children on their own initiative. The result was that children ran to the rubber mats and started drawing straight away - which reinforced the thesis that small design interventions can have an impact.

OUTPUT AND OUTCOME

The Output was the photos and the vernissage, but the outcome was much greater. The joy of seeing the mothers and children interacting with eachother over the photos and laughing with each other was priceless. From what I understood from the two women helping me with the workshop, most of them had never seen an analogue photograph of themselves before. A lot of them are younger than 25 years old, and they have grown up in poverty plus in the digital era. Some of them do have smartphones, but those pictures are easily lost if you don't have a harddrive to put them on. While we were arranging the photographs before the vernissage, hanging them around a plot on Block 10, both women and children started gathering around to look at the photos. The smile on the children's faces when they found themselves and their friends in the photos was magical to see.

DESIGN STRATEGIES & DESIGN PROPOSAL

APPROACH TO ANSWER RESEARCH QUESTIONS

When I entered and interacted with the community, I learned that there was a need for both short- and long-term solutions. The most effective approach long term is to work with the root of the problems causing the risk for children to reach their full potential and healing the wound from within, but there is still an urgent need for the children to build resilience here and now. An open wound must be dressed simultaneously with the proactive work to prevent new wounds from forming. Therefor I have divided the answer to the research question *"How can Architectural design and Participatory design processes be used to empower and support the development of the children and their mothers in Woodlane Village?"* into two parts;

↳ *Short term / Direct*
Design Intervention focusing on the children's urgent need to escape long term stress and develop core skills specific to their context. Another primary focus is to keep the children from the immediate physical dangers that they are exposed to when playing unsupervised on the streets in the Village.

↳ *Long term / Indirect*
A plan for a project aimed to strengthen relationships and empower the women and mother's in the settlement through education. The longterm project can be linked to the design intervention. The concept is that the mothers mental state is important for her to develop a responsive relationship with her child - which is one of the most effective ways to build resilience towards toxic stress in the child.

For both short term and long term sollutions, the general idea is that there is a need for an inclusive approach when designing for marginalized children, one that is tailored around their context. It must be based on the understanding of how multiple factors co-relate and ultimately ends up affecting the children's prospects for development. I argue that the solution should be a process that can be developed and continued by the community rather than a coming as an outside actor, implement a project in a community and then unitentionally taking the project with them as they go.

As introduced in the beginning of the thesis, the suggestions for a short and long term sollution is the result of a design process where theory and context-based knowledge gathered from the field studies are intertwined.

Fig 20. Diagram showing where, with who and under which phase of the project the criterias was developed. Blank means that it is general criteras that aren't context or theory specific.

CRITERIAS FOR DESIGN
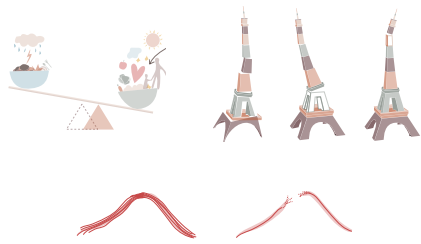
THEORY

Space to practise core skills
Space to work on social relationships
Distraction from daily adversities (Positive Experiences)
Dedicated to children (Entitlement)
Encourage play and learning

CONTEXT

Available materials (Local, Cheap)
Simple construction (Community should be able to build and fix it)
Community can make own additions
Portable, Easy to move
Not attractive to steal

MOTHERS & CHILDREN

Practise skills as sharing and respecting
Language Development
A place for natural interaction
Keep children from physical hazards

GENERAL

Simple to understand
Versatile
Interactive
Safe

Fig 24.

DEVELOPLAY

CONCEPT

The proposed design is based on the idea that small interventions, if targeted right, can be effective in reducing the impact of toxic stress for children in vulnurable communities. The design approach is triangulated between context, identified needs of the children & insights from the mothers , and theories from the scientific field of Early Childhood Development.

PURPOSE

The purpose of Developlay is to give children in Woodlane Village an opportunity to escape their daily stress and develop core skills specific to their context through a design that stimulates their creativity. Another primary focus is to keep the children from the immediate physical dangers that they are exposed to when playing unsupervised on the streets in the Village.

DESIGN IDEA

The proposed design is a rectangular box that can be placed in different locations in the settlement. It is a portable design that can be placed all over the settlement, meeting the requirements that it should be a design available for everyone anywhere. Three of the sides of the box have a frame where boards can be slid in. The boards are intended to have interactive designs with focus on play, creativity, collaboration, developing core skills and practice cognitive abilities. These can be adapted after the needs and wishes. The design is simple, so that the people in the settlement can create their own add-ons. It is Multifunctional and can be used as a table, a chair, for storage of toys, as a roadblock, and the children can play on it. The possibilities are endless. To keep it stable I have designed a system where PET-bottles, a common material in the settlement, can be filled with water and placed inside the box.
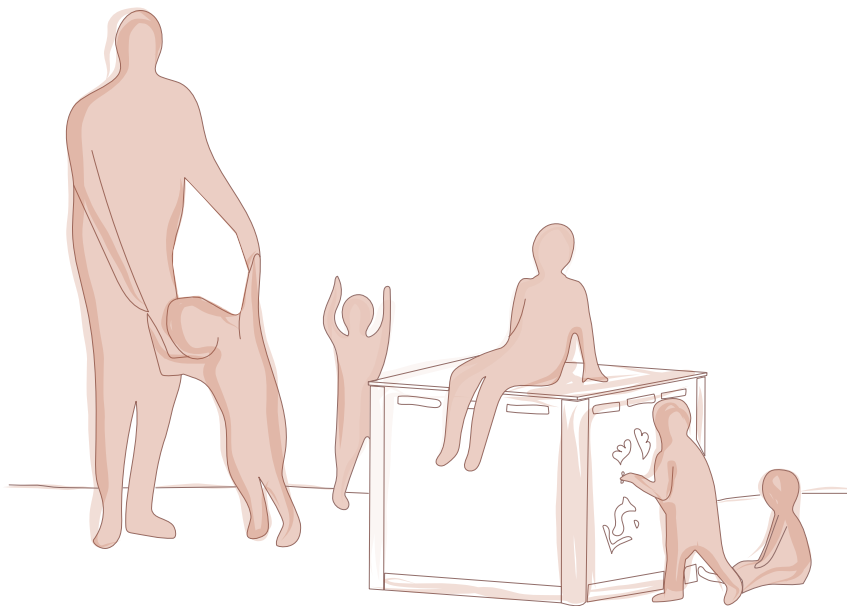

Fig 25. Illustration of how Developlay can bring children together and allow them to be creative.
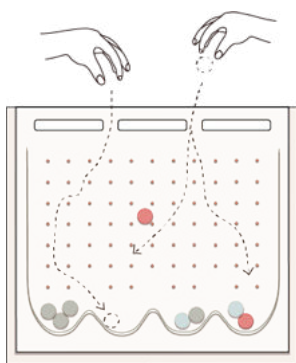
Fig 26a.

Fig 26b.

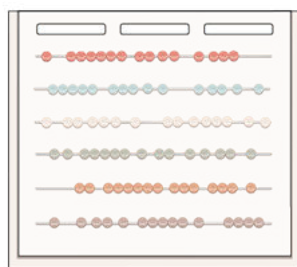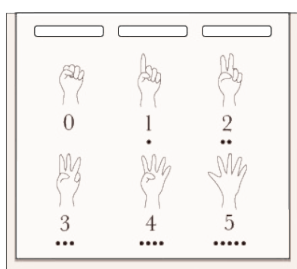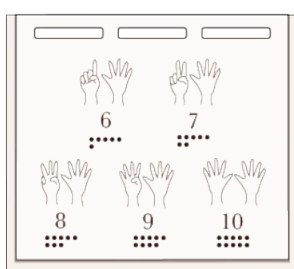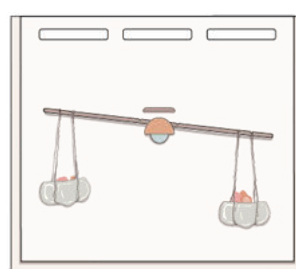Fig 26c.

Fig 26d.

Fig 26e.

Fig 26f.

Fig 26 a-f. Example of Creative boards with focus on (a) interaction and play, (b) Colours, math, how things relate, (c) Creativity, writing, play, culture. , (d-e) Numbers, connect language with movement and shapes, , and (f) Math, how things relate, balance.
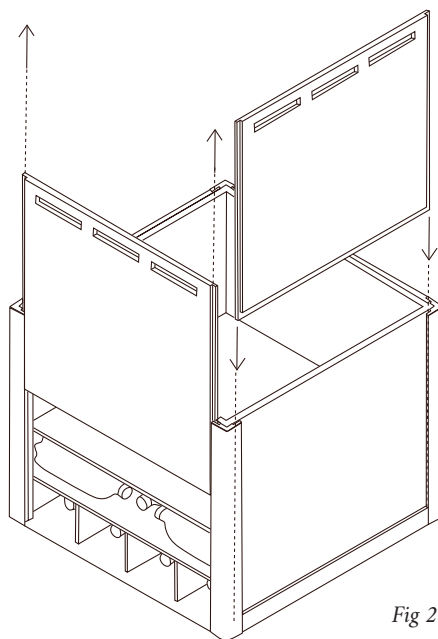

Fig 27.

Fig 27. Isometric line drawing showing the sliding function of Developlay.
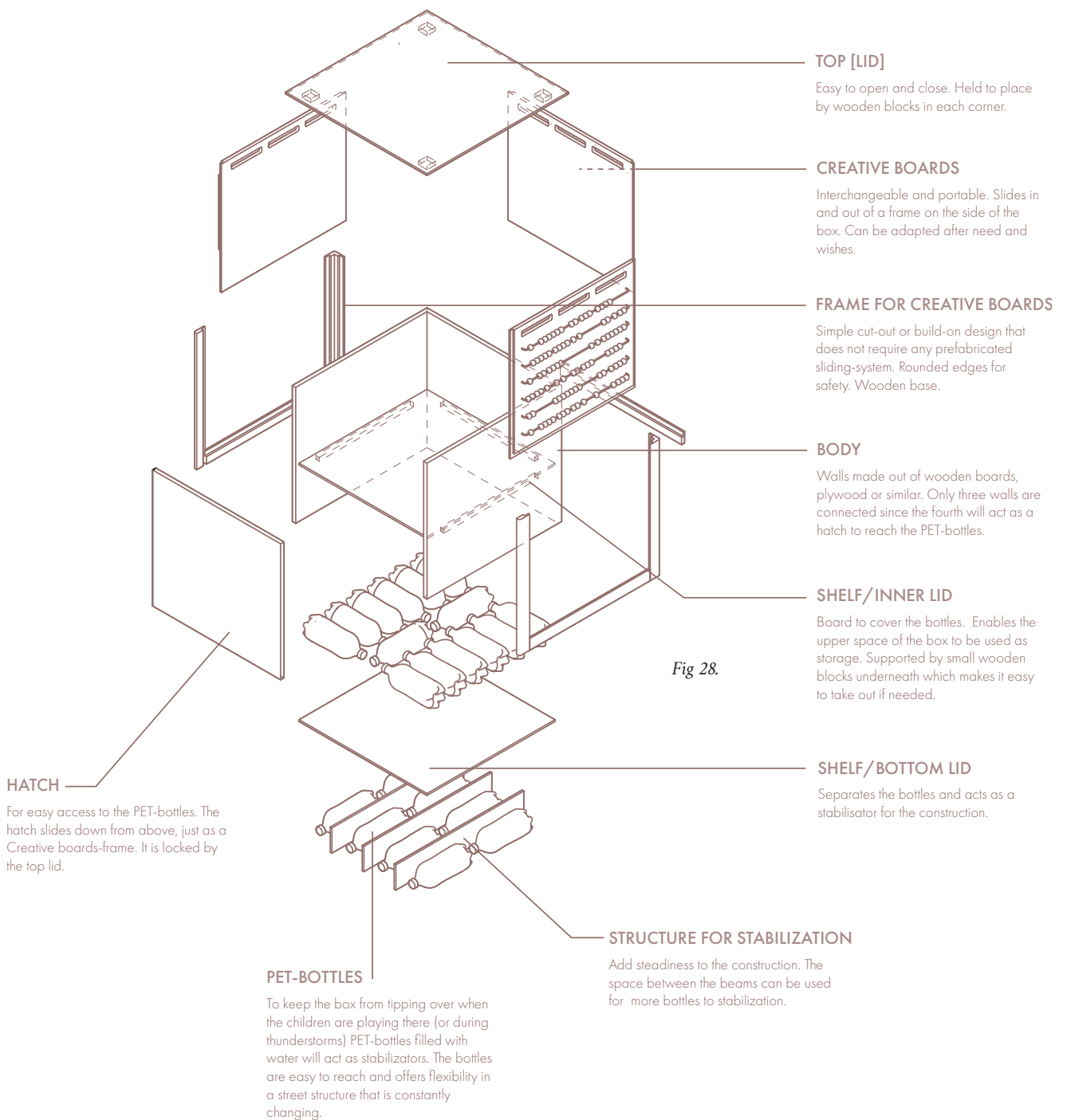
TOP [LID]

Easy to open and close. Held to place by wooden blocks in each corner.

CREATIVE BOARDS

Interchangeable and portable. Slides in and out of a frame on the side of the box. Can be adapted after need and wishes.

FRAME FOR CREATIVE BOARDS

Simple cut-out or build-on design that does not require any prefabricated sliding-system. Rounded edges for safety. Wooden base.

BODY

Walls made out of wooden boards, plywood or similar. Only three walls are connected since the fourth will act as a hatch to reach the PET-bottles.

SHELF/INNER LID

Board to cover the bottles. Enables the upper space of the box to be used as storage. Supported by small wooden blocks underneath which makes it easy to take out if needed.

SHELF/BOTTOM LID

Separates the bottles and acts as a stabilisator for the construction.

STRUCTURE FOR STABILIZATION

Add steadiness to the construction. The space between the beams can be used for more bottles to stabilization.

HATCH

For easy access to the PET-bottles. The hatch slides down from above, just as a Creative boards-frame. It is locked by the top lid.

PET-BOTTLES

To keep the box from tipping over when the children are playing there (or during thunderstorms) PET-bottles filled with water will act as stabilizators. The bottles are easy to reach and offers flexibility in a street structure that is constantly changing.

Fig 28.

Fig 28. Exploded axonometry showing the basic construction of Developlay.

LOCATIONS FOR DESIGN INTERVENTION

Analyzing the illustrated map, the ideal places for the design intervention is on the streets that crosses over the Blocks. This is space that everyone can use, which makes it ideal for a public design intervention. Placing the design inside the blocks between dwellings is a bit trickier. The space is limited and there is a risk that someone decides to claim the design. In Block 10, where I had the workshops, is a space where the design could work. It is because of the organization and trust between the women. From the knowledge I have gained by spending time with them, I have faith that it could be a good placement. What is positive with placing the design between the dwellings is that the children always can be close to home which adds another layer of safety.

Fig 29. Identified places in the Village where the design intervention could be placed based on the criterias; [Visible], [Accessible], [Space].
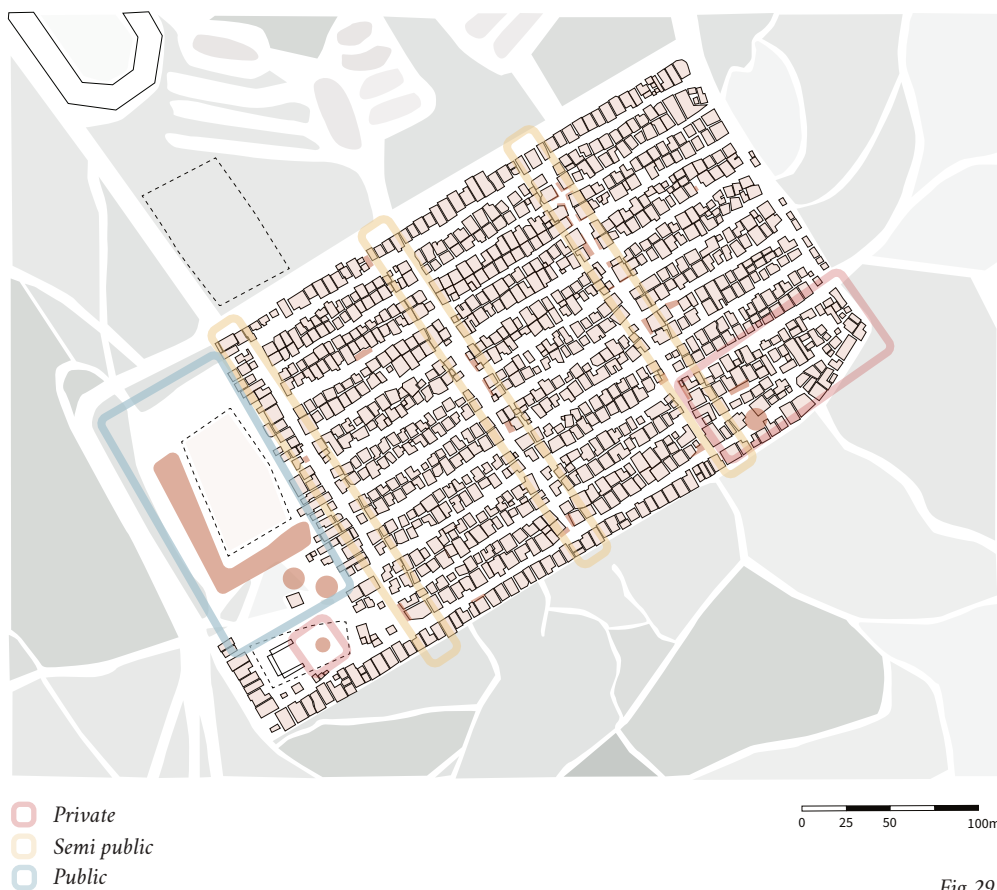

○ *Private*
○ *Semi public*
○ *Public*

0 25 50 100m

Fig 29.

Fig 30. Map showing in which area the first Develoylay's should be implemented. It also shows were (Fig 31) is situated.
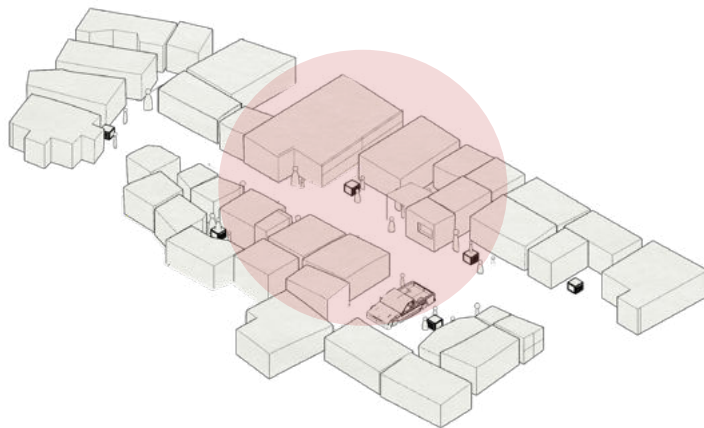

Fig 31. Axonometry showing were the collage is taken.

Fig 32. Collage of children using Developlay. The location for the visualization is in the court yard infront of one of my key person's dwelling.

IMPLEMENTATION PLAN

STAGE I

In the first stage of introducing the design intervention, five Developlay-boxes will be placed on in the north eastern part of Block ten. It is where the workshops were conducted, and where I have established connections and where my key person's live. They can then see how and if the design is used when I am not there and it is also way to hand over the ownership of the design to the community.

Fig 33. The different steps of implementation in the first stage, including stakeholders. Read from left to right, one row at a time.

LOOK FUNDING AND FOR SPONSORS OF MATERIAL TO BUILD

FIND MATERIAL ON SITE (BOTTLES, TIRES, ETC)

BUY NEEDED MATERIAL

BUILD FIRST PROTOTYPE TOGETHER WITH THE WELDER

PLACE FIRST PROTO-TYPE TOGETHER WITH COMMUNITY LEADERS

OBSERVE

PLAN FOR CREATIVE BOARDS WITH MOTHERS AND CHILDREN

MAKE BOARDS WITH THE WELDER, MOTHERS AND CHILDREN (MAYBE UP-STUDENTS?)

BUILD FOUR MORE PROTOTYPES TOGETHER WITH THE WELDER AND COMMUNITY LEADERS

PLACE PROTOTYPES TOGETHER WITH COMMUNITY LEADERS

OBSERVE

EVALUATE

Fig 33.

STAGE II

If appreciated, the second step is to place seven more boxes along the streets that crosses the Blocks. Here they will be seen by more people, since the flow of people is high. There are spaza shops and watertanks along the street, which are common spaces for people to meet and chat. Usually they have their kids with them.

STAGE III

For the final step, Design interventions will be placed by the soccer field at the south western part of the Village. During the weekdays it is very calm there, a big contrast from the weekends when there are soccer and netball tournaments. These events are very popular, and hundreds of community members are there watching the games.

STAGE IV - EXPANSION

For the area next to the soccer field, there are possibilities for expansions and bigger design interventions. Since the space is unused during the weekdays, there are opportunities to create a space where the mother's can meet and practise their english etc. This could be combined/mixed with a play hub, giving the space multiple purposes.

Fig 34. Map over the settlement showing the intended locations for the different stages of implementation.

I.   PRIVATE
II. SEMI-PUBLIC
III. PUBLIC
IV. EXPANSION

Area for Play hub

0   25   50   100m

Fig 34.

THE ENGLISH PROJECT

CONCEPT

The most common factor for children to overcome serious hardship is them having a stable and committed relationship with at least one supportive parent, caregiver or another adult. For this bond to form, the mothers physical and mental health plays a big role. The general concept is that an empowered mother equals an empowered child.

PURPOSE

Strengthen relationships between mothers and children by empower the mothers through education.

IDEA

The idea is to start a process to empower the woman and mothers through developing their language skills. This will increase their chances of being employed, and will overall strengthen their confidence and believe in themselves. Indirectly this will affect their children through better prerequisites for a nurturing and responsive relationship between mother and child.
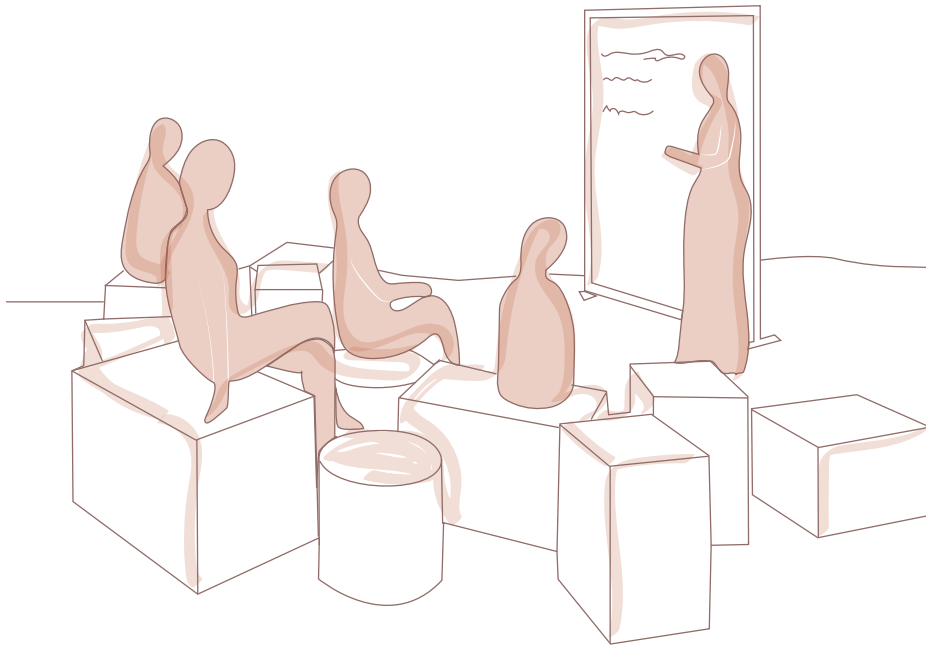

Fig 35. Illustration of how The English Project can bring mothers together to work towards a common goal, to develop their language skills, which will indirectly, if successful, lead to empowerment and resilience against toxic stress for their children.

THE ENGLISH PROJECT

Opportunities for women to gather and practice their English skills on a regular basis

Potential **"Educators"**

Financial compensation
A system where the mothers pay a small fee per class, with the intention to empower and motivate the educator and to hand over the project completely to the community.

Women from Woodlane Village
It is important that the person teaching the mothers knows the general languages being spoken in the settlement.

Teacher student
Involve teacher students from University of Pretoria. Requires expansion of collaboration between the university and the settlement.

Build on already established system
Just as Cluster care workers and preschool teachers, there could be a role of adult educator supported by SA Cares for life [NGO]. This will empower the woman teaching and offer her a job = financial stability.

Potential **Locations**

Location [1]
Close to Developlay

Location [2]
Close to football field and creché

Children can interact and play with each other while being in the prescence of their mother. Overhearing the mothers practising English is positive for the development of the child's linguistic skills and general understanding of English.

Design intervention is placed next to the football field

Closeness to the creché will act as an advertisement for the gatherings and it is possible to reach more mothers that could be involved in the English project.

Closeness to the creché will act as an advertisement for the preschool. Some mothers might reconsider their financial priorities when they understand the concept of the preschool [Preschool includes one meal per day for the child].

Fig 36.

Fig 36. Mindmap over the different possibilities with The English Project.
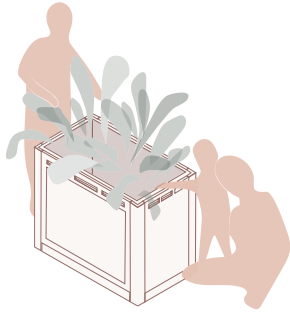
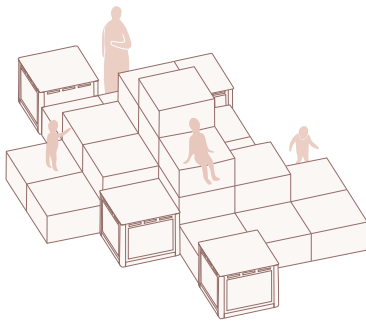# CONTINUATIONS / SCENARIOS
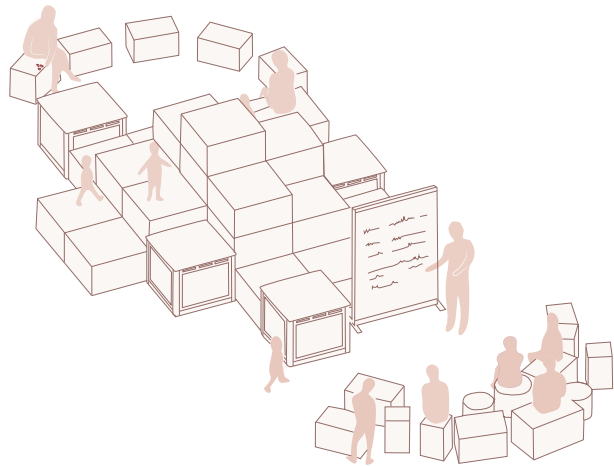

Fig 37 a.

Fig 37 b.

Fig 37 c.

Fig 37a. Garden and Play. The Developlay boxes can be turned into gardening boxes that can be placed in front of and between houses. This offers an opportunity for mothers to connect with their children while they are doing gardening. It also contributes to food security, since they are growing their own crops.

Fig 37b. Expansion - Playground. An intervention that could be placed next to the football field, where the Developlay is complemented with a playground made from wooden cubes in the same design style.

Fig 37c. This plan includes the English Project as well as Developlay. It also has the possibility to give the children a base for their language development if they are close to the mothers during the english classes. At a young age the brain picks up on the language being spoken around them, giving them a base for the continuation of learning English. It also helps the mothers to keep track of their children while they are engaged in social activities. Here the possibilities are endless, it could be used as a stage for performances or as a workshop area etc.

Fig 38. Collage to illustrate all of the scenarios together.

FINAL THOUGHTS

GENERAL REFLECTION

As a white european student coming into a settlement which is exclusively black, I had to be very considerate and careful when approaching the community. I had to be very aware of my privilege. It was something I kept on struggeling throughout the project, the feeling of intruding. There was never any implications from the community that led me to feel this way, everyone was welcoming and intrested in what I was working with. The feeling of unease was a biproduct of not feeling entitled and the fear of being labeled the stereotype of the white saviour who is entering a third world country wanting to provide a western solution in a non western context. Why am I here, when there are South African locals that could do the same project?

The answer to the question of my entitlement is complicated, and there is no one correct answer. The facts are that I could have stayed in my first world country, working with a similar project in the suburbs of Sweden. Since I was in Woodlane Village with Reality Studio in March 2022, I have been wanting to come back and continue to work with social development. Being there sparked my creativty and I saw the importance of interventions, regardless of who is providing them. On a personal level, I wanted the cultural exchange and knowledge sharing. I wished to work in a context where I could contribute in-situ (Cirolia, Görgens, van Donk, Smit, & Drimie, 2016), which means on site.

I think it is important to reflect upon your role when you enter into any context that you are new to. It should be an ongoing interative process of questioning what you are doing and why you are doing it, and who will benefit. The benefit should always be mutual or tip in favour of context. To reach a place where the community can benefit and be uplifted, it is important to be responsive and open to learn from the community, as suppose to just assuming that you know best because you have studied literature on Early Childhood Development and Participatory design. Most of the research of Early Childhood Development are written by Western authors, and the studies that has been conducted in participatory design projects are often with western children.

Over all, I want to merge my skills as a designer with research and cultural/context-based knowledge, finding a sollution that includes the focus-group both in process and executuion, listening and adapting after the community.

EXPECTATIONS VS. REALITY

SHIFT OF FOCUS GROUP

When planning for the project I was under the impression that the reason children where running around in the settlement during the days was because of the low capacity of the preschool which meant that children had to share time slots. Although the low capacity is a factor, it is not the primary reason for the children aged 1-6 years old spending their days on the streets. The most prominent reason, as I learnt through talking with community members, is the cost of 100 ZAR/month/child. For families living on the margins, 100 ZAR is pricey. One woman I talked to said that the families often can afford it if they cut back on other purchases such as cigarettes, meat and alcohol, and that it is a question of priority. A few others agreed and added that since most of the people living in the settlement are uneducated, they do not consider the value of early education.

For me, personally, I do think that they value see the positive effect that education can have, but since many of the families are living in the settlement temporarily with the intention to go back home once they have earned enough money, they do not think long term. Why pay to the preschool in a location where you do not intend to stay, in a country where you know that your children will struggle with documents for further education as soon as they are too old for preschool? It could also be a matter of them not having enough information about how to enroll their children, and not understanding all the benefits that comes with having the child enrolled. These benefits include: One warm meal/day, learning skills adapted to the context, structure, interactions in a safe enclosed area and a curriculum with focus on the basics, teaching the children colors, shapes, numbers, letters etc.

Learning about this led to a shift of focus in my thesis, since I first based my thesis on the fact that the children running around the settlement actually go to preschool in some extent. My plan to work with the children at preschool changed into working with the children who do not go to preschool. The topic of the thesis was still the same, but I had to rethink (or iterate) the places and methods I used. The process became more intricate since I didn't have the safety and support of the preschool. It meant I would work on my own and had to rely on my ability to make connections in the settlement. This was not a problem since the community is very welcoming. It also helped that I had contacts from both this year and last year who were living in the settlement.

EXPANSION OF FOCUS GROUP

As I researched Early childhood development and different ways to improve the possibilities for children to reach their full potential, it was clear from the beginning that a nurturing, responsive and reliable relationship between a child and at least one adult in the child's proximity is the most effective way to build resilience towards toxic stress. In a settlement where the families are struggling to meet the most basic needs such as food, shelter, and security, the responsive relationships that are crucial for a child to build are not certain to form. For a safe connection to form, I found that the primary caregiver's overall health and mental health is just as important as the child's. With this in the back of my head I expanded the focus of the thesis to include the wellbeing and empowerment of the mothers and women in the settlement. Their state is directly affecting their child's possibilities build the resilience needed to thrive despite the hardships they experience.

TIME / LACK OF TIME AND HOW IT HAS AFFECTED THE RESULTS

The aim was to include children in the design process from an early state, but with language barriers, the young age of the focus group and the overall situation in the settlement I realized that the time for the field studies was not going to be enough for a participatory process of the level that was first intended. I now understand why a lot of documented participatory design projects is executed with children over the age of five, and why there is a significant gap for co-designing with toddlers. With my prior knowledge and competence as a designer, I would have had to concentrate exclusively on developing workshops that enables toddlers to co-design. The final design proposal for is my translation of the needs and wants for the children in the settlement that I have found through collecting data and interacting with the community. I've held participatory workshops with the women and children, but as far as participatory design, that is unfortunately as far it has gone.

Fig 39 a. Diagram shows my own addition [Consultant] to Druins (2001) categorizing of roles children can have during participatory design processes

Fig 39b. Diagram shows a timeline to continue the project connected to different levels of child participation during the process.

LONG TERM PLAN TO ENGAGE CHILDREN IN THE DESIGN PROCESS

Referring to Allison Druin's (2001) model of dividing children's participation into four different roles, my hope is to, by continuing the project after the thesis is submitted, reach different levels of child participation. The plan is to develop a design based on findings from the field study, go into depth with how it can be constructed and what materials that should be used, and then come back to the community and build a prototype for some children to test out [role of tester]. They will then be able to give feedback, which I will base the new iteration of sketches on. I define this as a consulting role, something that Allison Druin (2001) has not included in her model. It is a role that I think is missing from her original model, therefore the [Role of Consultant] is my addition when defining what roles children can play in a design process. I will then show the sketches for the mothers and children and ask them to contribute with their ideas, and then do the final iteration before building the design. When the design is built and placed out, children will take the [Role of the User].
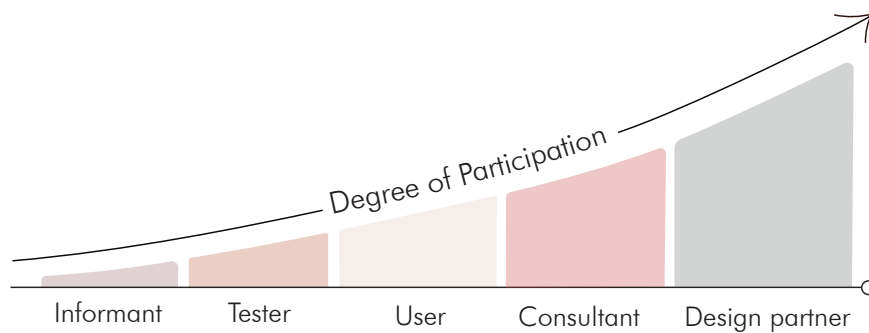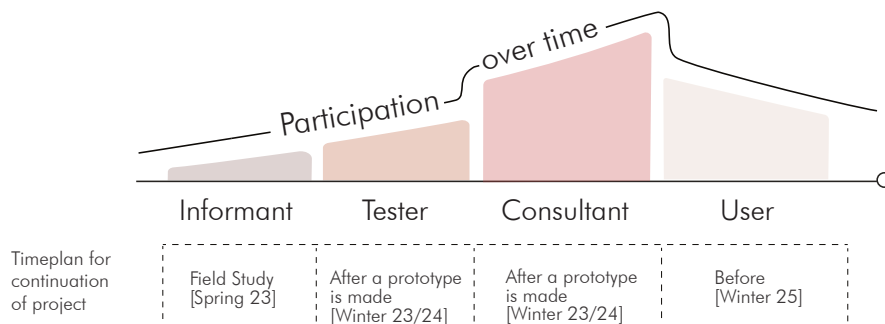

Fig 39 a.

Fig 39 b.

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