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Vulnerable children as change-agents within their communities: an educational methodology co-designed in Namibia.

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Abstract: In the turbulent age we are living, there is an urgent need to create versatile processes that include methods and tools able to solve increasingly complex wicked problems within society and the world around us. In privileged contexts worldwide, Design Thinking is leading the way towards the implementation of educational activities able to include children in tackling contemporary challenges. In fact, children represent the unbiased part of humanity still open to change and the adults of tomorrow. During four months of ethnographic and participatory research on field, I started to investigate how Design Thinking could empower and increase children's awareness towards local issues, in such a challenging and vulnerable context like Namibia. The educational approach I developed from my insights on field, aims at informing further studies and projects focused on turning children into community conscious change-agents seeking a brighter, more sustainable future for their communities.

Keywords: children, vulnerable communities, change-agents, empowerment, community-conscious

1. Innovation in a turbulent age

Humanity is currently called upon to deal with a series of disruptive challenges revolutionizing reference systems and triggering the need to put emphasis on innovations able to transform our reality into a better, more sustainable one.

Innovation, according to Lafley and Charan, is not an atypical rarity achievable only by single geniuses like Leonardo da Vinci, but rather a mindset that should embrace our daily routine and people:

“Innovation is a social process. And this process can only happen when people do that simple, profound thing - connect to share problems, opportunities, and learning. To put it another way, anyone can innovate, but practically no one can innovate alone.” (Lafley, Charan 2008)

From privileged countries to underprivileged ones, we all share the complexity of living in a turbulent age, rife with wicked problems, that according to Horst W.J. Rittel and Melvin M. Webber, professors of design and urban planning at the University of California at Berkeley, can't be resolved by traditional processes. (Camillus, 2008)

Environmental issues like plastic pollution in the oceans (Harada, 2015), humanitarian issues like flows of migrants and refugees risking their lives to reach European countries (IOM, 2016) and technology penetration altering every aspect of people's lives (DuBravac, 2015), are just a minimum selection of not conventional challenges we are all facing. Challenges that require a shared ability to find a way out of the complex combination of causes behind such phenomena, through innovation.

2. Design Thinking for Education

In the past few years there have been increasing critiques to the modern educational approach applied by standard education systems worldwide. Obsolete curriculums and methods often do not teach fundamental contemporary skills required by new professions and are the leading cause of dissatisfaction among students.

According to Ken Robinson - British author expert in education, standard education systems tend to stigmatize mistakes, which are presented to students as the worst thing they can do. This attitude, Robinson argues, educates students "out of their creative capacities" because failure, competing ideas against one another and evaluating options, is proven to lead to a stronger, compelling idea. (Brown, 2009)

Sugata Mitra, Indian educator, considers rote learning which is the standardized form of education (based on mnemonic repetition), inadequate for children to absorb information in the long term, but rather a process that allows for easier evaluation by the education system itself. Education systems which Lizanne Foster, Canadian Professor, deeply criticizes, arguing how they block young students in elaborating compelling mindsets and critical thinking:

"At the peak of their intellectual capacity, at the time they are most creative, we squish them and we say "no, we don't need your creativity. Here, these are the old problems that we have solved, we want you to understand the solutions of the old problems. Here, all these new problems in the world but you can't solve them." At the same time, you can open the newspaper any day today and you'll see 15, 16, 17, 18 year old, solving problems all the time! Real problems." (Foster, 2015)

It appears there is an urgent need to create versatile processes which include methods and tools able to solve increasingly complex wicked problems within society and the world around us. As stated by Robinson, new variables should be embraced, new values and formats explored, to really give children all the means for them to discover their talents:

"Our education system has mined our minds in the way that we strip-mine the earth: for a particular commodity. And for the future, it won't serve us. We have to rethink the fundamental principles on which we're educating our children." (Robinson, 2006)

As a response to the need to embrace new variables, in privileged contexts worldwide, Design Thinking is leading the way towards new educational shifts.

For example, IDEO's "Design Thinking for Educators" toolkit aims at empowering educators to improve school dynamics. A more inspiring classroom environment, a better collaboration strategy

among teachers, a more stimulating curriculum: they are just few examples of the small and big changes educators came up with by applying the “Design Thinking for Educators” toolkit within the school environment.

Next to this case study - where educators are encouraged to become designers, other organizations and schools in privileged contexts worldwide moved their focus to children, making them be the actual “designers”. IDEO and the K12 Lab Network at Stanford’s d.school joined together creating the “Design Thinking in Schools” website and network, where parents can see programs to send their children to and people can see this global movement unfold.

Furthermore, some organizations made even a step further and canalized Design Thinking education to global challenges and debated wicked problems worldwide.

Designathon Works - one of the most relevant case studies in Europe, conducts Design Thinking driven curricular programs in Amsterdam schools and global events where children harness their natural creativity, develop empathy and collaboration by exploring with new technologies for better, more sustainable solutions. During the Global Children’s Designathon 2016, children developed ideas to incorporate a circular economy approach to everyday life services and products.

Children are put in the condition of applying the Design Thinking process themselves, having the chance to tackle contemporary challenges and being encouraged to take an active role within society.

Another similar case study is The Riverside School, one of the top 10 Indian schools, which generated a design driven educational approach that on top of everything else encourages children to tackle societal issues like child-marriage.

Moreover in Hong Kong, Cesar Harada - environmentalist and founder of Makerbay, involved children in environmental projects about radioactivity and water pollution merging design and making skills. According to Harada, children’s empowerment in facing the complexity of our world and innovate towards a more sustainable future, is something we must encourage:

“We can no longer afford to shield the kids from the ugly truth because we need their imagination to invent the solutions. So citizen scientists, makers, dreamers - we must prepare the next generation that cares about the environment and people, and that can actually do something about it.” (Harada, 2015)

According to the definition UNESCO gives to education, the ultimate, ambitious goal of education should be children and adults’ empowerment, where empowerment means being active agents of change and transformation within society. (UNESCO) Education therefore, seems to be the key platform to encourage children in fulfilling their role of change-agents, while Design Thinking - as shown in the case studies above, seems to be one promising way to foster this mindset from a young age.

3. A designer in Namibia

From February to June of 2016, I had the chance to spend four months in Namibia to contribute in carrying out the agenda of the EU founded PARTY project, involving several European and African partners. In parallel to this enriching experience, I decided to investigate on field about how Design Thinking could positively impact vulnerable children and their communities. As I mentioned in paragraph 2, in privileged countries worldwide Design Thinking is being increasingly applied as an

empowering tool to tackle contemporary, critical topics with children; while in vulnerable contexts, the range of similar empowering initiatives appears to be more limited and unstructured.

The workshops by InkLink Trust - non-profit organisation working with underprivileged children in India, or by Protsahan - Indian social enterprise working with street children and girls, involve painting, drawing, music, photography, technology and cinema. Dream a Dream - another Indian charitable organisation, on the other hand mainly uses sport as a way to enhance “life skills” in young vulnerable children. Those activities, all aim to foster fundamental skills that are an integral part of Design Thinking as well, such as: collaboration, self-confidence, divergent thinking, critical thinking and creativity.

The key difference is that Design Thinking allows children to experience such empowering skills as a whole, at 360 degrees. And most importantly, it is a structured and iteration-based process with clear steps to follow. For these reasons, within the initiatives related to educating children in Design Thinking proposed by PACO Design Collaborative - a no-profit association based in Milan, Italy - under the name “The Design School For Children”, I decided to explore the Namibian context on this matter as my Master Thesis project at Politecnico di Milano. The aim was to start drawing some initial considerations on the potential of Design Thinking in vulnerable contexts and inspire further studies.

The vulnerable communities I focused on are Katutura and Otjomuise townships, the two main vulnerable communities in Windhoek area, where I was based. I conducted a multifaceted and immersive research approach, based on the constant combination of desk research, ethnographic research and live participatory sessions. I also volunteered in a Day-Care Centre, having the chance to observe children’s learning struggles and daily habits from an internal perspective.

In order to carry out a human-centered research, I created a network of local stakeholders that supported my work, composed by: two Day-Care Centres, two Public Primary Schools, one Children Village and one Montessori Pre-School, all spread across the township areas. Through semi-structured interviews, observations, field notes and photographic and video documentation, I’ve been able to investigate both Namibian vulnerable children’s everyday life and the Namibian Education System.

Being vulnerable children at the core of my study and a delicate target to research about, I have been supported by a social worker, ensuring that my methodology was appropriate. Moreover, as reported by The European Commission, one of the researcher’s tasks is establishing trust. During my field work, I found extremely valuable to include local mediators and facilitators, both to overcome language barriers and to ease a natural bonding with the research participants. The data I gathered has been mapped out and analyzed in order to extract key insights that have made up the foundation of my work and inspired its further development. Concerning the vulnerable communities in Namibia, the insights I identified are the following:

1. The majority of children and adults, live in informal settlements where electricity is partially available while there’s not running water in their homes. According to a Day-Care Founder I interviewed, people usually share a small metal shack:
2. “They live in very small shacks sometimes with 7-8 people inside, sleeping on the floor with no pavement.”
3. (Day-Care Founder, Katutura township, 2016)



Figure 1. Informal settlement in Otjomuise township, Windhoek, Namibia.



Figure 2. Informal settlement in Otjomuise township, Windhoek, Namibia

4. From a really young age, children are used to go around freely without supervision, spending hours outdoors alone or with peers.
5. Healthcare conditions and hygiene are very poor and HIV is still dangerously present. Open dumps like the one I captured shown below, constitute a playground for children and dogs, perilously increasing illness spreading.



Figure 3. Open dump in Katutura township, Windhoek, Namibia.

6. Small businesses selling alcohol are at every corner in the townships of Windhoek. Since the settlement is so merged and open, children and teenagers have easy access to alcohol. Alcohol addiction is one of the vehicles taking the youth over the same vulnerable cycle, as a local educator I met outlines:
 7. "Since there are many orphans and the quantity of bars is enormous, the youth too often find in alcohol addiction the way out of boredom and unemployment, falling back into the same vulnerable cycle."
 8. (Day-Care Founder, Otjomuise township, 2016)

Concerning children's learning process and the Namibian education system, the most important findings I identified are the following:

1. Hunger is wide spread across the vulnerable communities in Windhoek area, deeply effecting children's learning process. According to a Day-Care Founder I interviewed:
 2. "The health conditions of the kids are at risk, the nutrition values of the families are at risk, families don't have food. Children therefore can rely on one meal per day we provide, often not having enough energies to face the school day"
 3. (Day-Care Founder, Otjomuise township, 2016)

4. Moreover, during my observations I noticed that children's attention is generally extremely low and that they struggle in following static, structured activities;
5. The closest subject to Design or Creativity within the Namibian Education System is the Art Class, which still has no curriculum approved by the Government. This means that teachers have no guidelines to follow and often have no expertise on the field;
6. Furthermore, the Art Class is a non-promotional subject. It means that if a child fails the Art Class, he/she still has the possibility to be promoted to the following year, if the subjects which matter such as maths and literature have good grades. This clearly shows a specific hierarchy of subjects within the Namibian Primary School curriculum and that the Education System doesn't value art subjects the same.

According to the local teachers I interviewed, the current Namibian Education System doesn't equip children with fundamental skills like critical thinking, collaboration and divergent thinking, essential to embrace challenges on every scale, but rather stigmatizes them:

"We raise them up with a sort of stigmatization for a beautiful field rich of potential, new professions, in a world that is changing and needs more and more creative solutions."

(Public Primary School Teacher, Katutura township, 2016)

4. Process and insights

Starting from IDEO's Design Thinking process composed by five phases (Discovery, Interpretation, Ideation, Experimentation, Evolution) and from the approach that The Design School For Children applies in different socio-economical contexts in Europe, I started to plan my own research steps.

I decided to start my process by testing the approach of The Design School For Children in a Public Primary School and in a Day-Care Centre, both in the townships of Windhoek.

Aware of the deep geographical, cultural and economical disparities between the European and Namibian contexts, my aim was exactly to let those incongruities emerge. By drawing an initial framework on children's engagement and behaviors towards the activity, I could have identified the drivers to work on for a tailor-made application of Design Thinking in Namibia.

The approach applied by The Design School For Children is characterized by the following features:

- Short sessions, 2-3 hours time;
- Several static activities;
- The facilitators, such as the adults leading the session with children, are always expert designers;
- The context of application is privileged, medium-high income.

The common daily schedule is structured in the following phases:

- Energiser;
- Brainstorming;
- Prototyping;
- Presentation.

The initial insights I obtained during the first two orienting sessions are the following:

- Both Public Primary Schools and Day-Care Centres suited the activity, even though the environment and resources available can be extremely different;
- Vulnerable children shown very low engagement and struggles in keeping up the attention during static activities;



- Figure 4. Brainstorming session during the “Cool School” workshop, Otjomuise township, Windhoek, Namibia. Children were asked to re-design the school experience.
- Children appeared to be extremely pragmatic, not used to express oneself or deal with similar activities involving critical thinking, collaboration and working with materials;
- Children struggled with their writing skills, even at 10 years old.



Figure 5. Prototyping session during the “Book Of The Future” workshop, Katutura township, Windhoek, Namibia. Children were asked to imagine and design the book of the future.

Based on these initial take aways, I organized two additional workshops: one in a Day-Care Centre and one in a Montessori Pre-School. Having noticed the lack of experience in dealing with materials and three-dimensional making, I specifically investigated about what kind of cheap, analogue equipment could have successfully supported children in facing the prototyping phase, such as the process of translating a concept into a tangible artefact.

The insights I extracted after these two prototyping workshops are the following:

1. Upcycling based materials like food packaging and trays, cardboard boxes, yogurt vases etc are very engaging for children;
2. Wooden sticks tend to easily trigger children’s creativity;
3. Easily bendable materials like plasticine, aluminum foil and textile tend to facilitate children’s making skills in accomplishing the three-dimensional version of their idea;
4. Children under 7 years old shown to be too young to fully participate within the process and children above 12 years old shown to require a completely different approach in order to feel engaged.



Figure 6. One of the outcomes during the prototyping workshop in Katutura township, Windhoek, Namibia. Children were asked to make an object of their choice using the materials available.



Figure 7. One of the outcomes during the prototyping workshop in Otjomuise township, Windhoek, Namibia. Children were asked to make a customised "magic box" using the materials available.

Leveraging the positive and interesting insights collected so far, in the following couple of workshops I extended my investigation covering other aspects of the educational process I was trying to frame: space, group dynamics, engaging themes and adding a reflective moment as a conclusion of the activity.

My findings regarding to these workshop sessions are the following:

1. The space should preferably be indoors to enhance children's concentration;
2. Children tend to show greater engagement towards familiar, context driven themes rather than unfamiliar themes they can't personally relate to;
3. Both peer and mixed groups shown equal successful group dynamics between 7 and 12 years old;
4. A reflective moment as a conclusion of the activity where children are asked to spend few minutes reflecting on what they have learned on the theme deeply strengthens the educational purpose of the activity;
5. Visual language positively supports children in overcoming their writing lacks: allowing children to sketch rather than write during the brainstorming phase and the use of infographic language in the questionnaires, positively contributes to accomplish so.

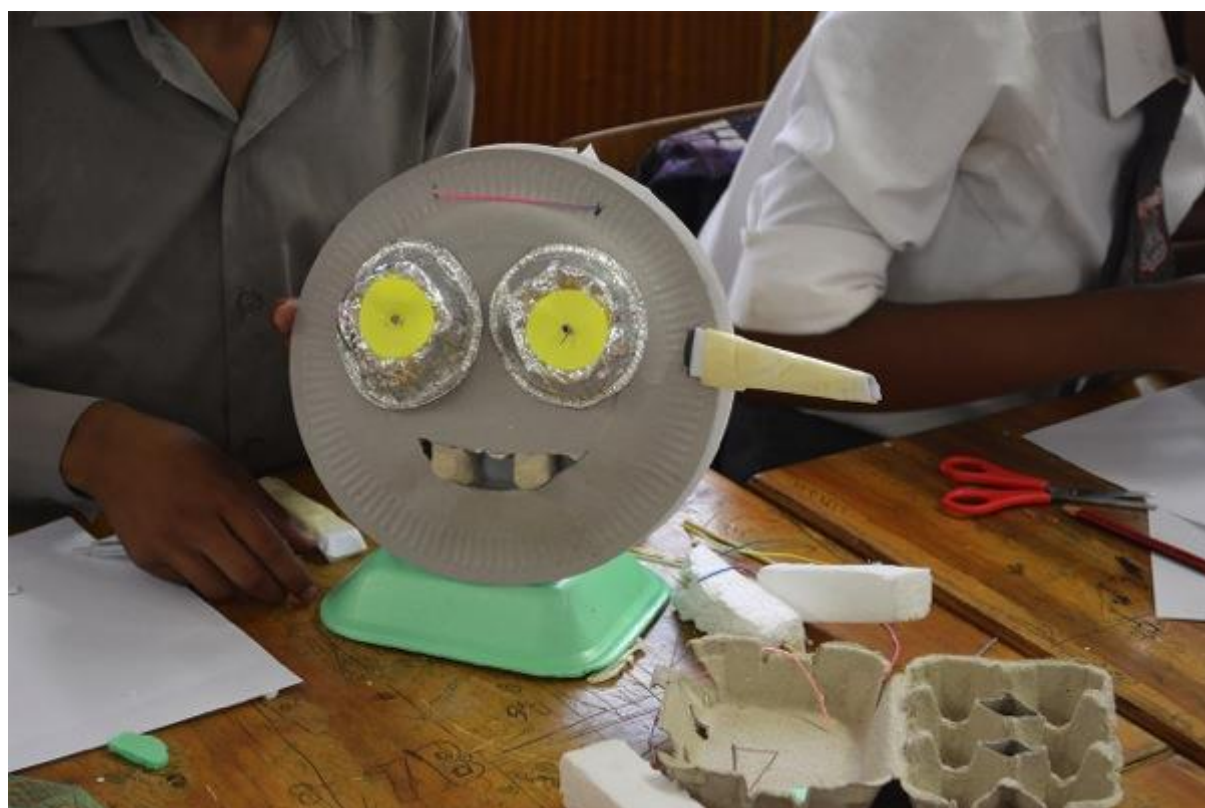


Figure 8. One of the outcomes children came up with during the “My Book In 2999” workshop in Katutura township, Windhoek, Namibia. Children were asked to imagine and design the book of the future.



Figure 9. Brainstorming phase within the “Super Objects” workshop in Windhoek, Namibia.

After six iterative sessions, I looked at the data collected from an external point of view.



Figure 10. Mapping session and data analysis of the six initial participatory sessions, Windhoek, Namibia.

I therefore mapped it out starting to read it through several layers of analysis and pattern identification. I firstly divided the data collected into three categories: planning, implementation and outcomes. Also connecting them to other aspects like equipment and feedback collection. I analyzed their relevance across the different themes the workshops dealt with: the school experience, the book of the future (twice), prototyping (twice), everyday life objects.

In doing so, I figured out that the approach I've been able to refine session after session had shown to effectively engage children while letting them familiarize with the Design Thinking process in a pleasant, enjoyable way.

Nevertheless, I realised how the themes I picked with the aim to explore children's behaviors towards such kind of educational experience, could have canalized on something more meaningful, both for them and their communities. From this reflection, the concept of Design Seeds For Change emerged, bridging the local community issues children experience with the Design Thinking process as a vehicle to tackle them.

5. Outcome – Design Seeds For Change

My work aims at introducing an experimental process where Design Thinking becomes a vehicle to open up a conversation with the local, young members of vulnerable communities about the wicked problems they experience every day.

The advantage of introducing Design Thinking to children rather than adults, is that children still represent the neutral, unbiased part of population, open to the unknown and enthusiastic to embrace new challenges. This aspect, within the vulnerable Namibian context assumes a peculiar fundamental value. In the vulnerable communities I worked, the youth tend to easily fall back into the same vulnerable cycles of poverty, unemployment and social immobility, since alternatives are harder to see than in privileged countries.

On top of accessibility though, in my experience I noticed how people's mindset is extremely submissive and resigned and the youth tend to embrace such mindset from a young age. In response to that, my project encourages an active, change driven mindset that finds its strength in collaboration and in developing a sense of unity with peers to face the issues within the community and find solutions together.

The Design Seeds For Change educational approach allows a highly customizable Design Thinking process composed by six steps (Define, Discover, Ideate, Experiment, Show and Reflect) which any educator can adapt to his/her specific educational environment: from a more equipped Public School to a Day-Care Centre in a shack. The aims and activities for each phase are the following:

1. Define (10-15 minutes). It includes a verbal introduction to the activity, the statement of timing and goals and making the teams;
2. Discover (15-20 minutes). The challenge is explained with simple words by the teacher/educator and children can learn about the theme and be inspired through printed or digital images selected by the educator with worldwide case studies;
3. Ideate (20-35 minutes). Divided in groups, children face the brainstorming session and one idea has to be selected before moving to the next phase. The brainstorming session is done on the wall, so that children can move and embrace it like a game;
4. Experiment (40-50 minutes). Each group has to make the idea tangible using the available upcycling based equipment;

5. Show (10-15 minutes). Each group has to present the idea generated in front of the teacher, who will ask questions and give feedback;
6. Reflect (15 minutes). Through a verbal or written questionnaire, children are asked to think about what they learned on the theme.

The Design Seeds For Change approach is supported by its tangible extension: two manuals of guidelines. The purpose of the manuals is to be effective and concise tools that in the hands of local teachers and educators, can allow the replicability of my project directly from local community members.

The manuals require only 15 mins of reading in total for preparation and 2 hours for the activity implementation, favoring an overall very practical, as effortless as possible format.



Figure 11. Local Namibian Teacher prototyping my educational approach and first manual draft with his children in Otjomuise township, Windhoek, Namibia.

After two tests conducted by myself (“Waste and Water Saving” and “Save Baby Rhino” workshops) and a prototyping session conducted by a local Namibian teacher, I realised how splitting the contents - originally collected in one single manual, would have increased flexibility in the application of the tools by local teachers.

The first manual aims at providing an intro to Design Thinking, giving a theoretical framework and stating the values behind it; while the second manual is strictly operational, showing the actions to apply, step by step.

Through the guidelines provided, teachers can learn how to plan and lead a Design Thinking driven activity, tackling local community issues like saving water, waste, hygiene etc, in an enjoyable, engaging way.

Designed to be open source tools teachers can download for free from a dedicated online platform, the manuals can also be printed. In this case, the colour scheme has been designed to work also in black and white – since colour printing is rarely available, and the manuals are condensed in just few A4 pages.

The Design Seeds For Change manuals are addressed to teachers and educators willing to embrace Design Thinking for the first time, even in countries where design culture is not spread, therefore the language is very simple and no preliminary design knowledge is required.

Moreover, my approach includes a cheap, upcycling based equipment in order to encourage children towards the re-use and optimization of the local resources available.

Teachers can deal with the chosen theme crosscutting other school subjects, use the format during the Art class or simply as an integration.



Figure 12. Research phase conducted through inspirational images in the “Waste and Water Saving” workshop, Otjomuise, Windhoek, Namibia. Children were asked to come up with ideas about waste upcycling and water saving in their community.



Figure 13. One of the outcomes from the “Save Baby Rhino” workshop in Otjomuise, Windhoek, Namibia. Children were asked to come up with ideas against the rhino poaching phenomenon spreading across Namibia.

6. Scale up vision

Vulnerable communities are spread worldwide: around the city of Rio de Janeiro for example, there are 700 favelas. According to ISPI (Istituto per gli Studi di Politica Internazionale), Venezuela, Mexico, India, Pakistan, Haiti, together with African countries like South Africa, Nigeria, Kenya, Egypt, are the hosting countries of the biggest slums in the world. (ISPI, 2015)

As part of my scale up vision, the educational approach I specifically generated in the Namibian context, could be extended to other vulnerable communities worldwide. This would amplify the idea of children as agents of change within their communities in a wider scale, triggering a scenario where Design Thinking driven education could become more accessible and valued in vulnerable contexts.

In order to embrace this transition towards a broader action of the project, several drivers should be considered. Since the current approach and manuals are tailored on the Namibian context, if replicated in other geographical and cultural environments, both could show inconsistencies and lacks.

By testing my approach with other vulnerable communities worldwide, it would be possible to understand whether some aspects should be partially or consistently changed according to the different geographical and cultural elements.

Aware of the limits of my research and that more testing would be required, this project aims at opening the way to further studies and explorations on field both in Namibia and in other vulnerable communities worldwide to dig out the best approach to positively impact vulnerable children and communities through Design Thinking.

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