Design Thinking for Teacher Innovations

Assessing the Process in
Lindi and Dar es Salaam - **2021**

Project Synopsis

ABOUT SCHOOLS2030

Schools2030 is a ten-year participatory action research and learning improvement programme based in 1,000 government schools across ten countries, currently in its second year of implementation (the first for the full roll out of the programme). Using the principles of Human-Centred Design and focusing on the key transition years of ages 5, 10 and 15 years old, Schools2030 supports teachers and Youth Development Partners to design and implement education micro-innovations. These low-cost and scalable innovations will inform and transform education systems to improve holistic learning outcomes for the most marginalised learners worldwide. In Tanzania, the programme is being implemented in 100 schools and youth development partners across Lindi and Dar es Salaam.

Schools2030 seeks to dramatically change the status quo by equipping frontline teachers, school leaders and the Civil Society Organizations (CSOs) with the knowledge, skills, and platforms to better design, measure and showcase new solutions to achieve Sustainable Development Goals 4 (inclusive and equitable educations) and Goal 8 (sustained and inclusive economic growth) by the year 2030.

The diagram on the right presents the selected learning domains to address through the HCD process for each of the cohort age groups in Tanzania.

5
- Literacy
- Numeracy
- Health & Nutrition
- Creativity
- Relationship Building

10
- Literacy
- Numeracy
- Creativity
- Self Awareness
- Problem Solving

15
- Literacy
- Numeracy
- Arts & Culture
- Critical Thinking
- Civic Engagement

TANAZANIA
LEARNING DOMAINS BY COHORT

Knowledge	Values
Skills	Attitudes
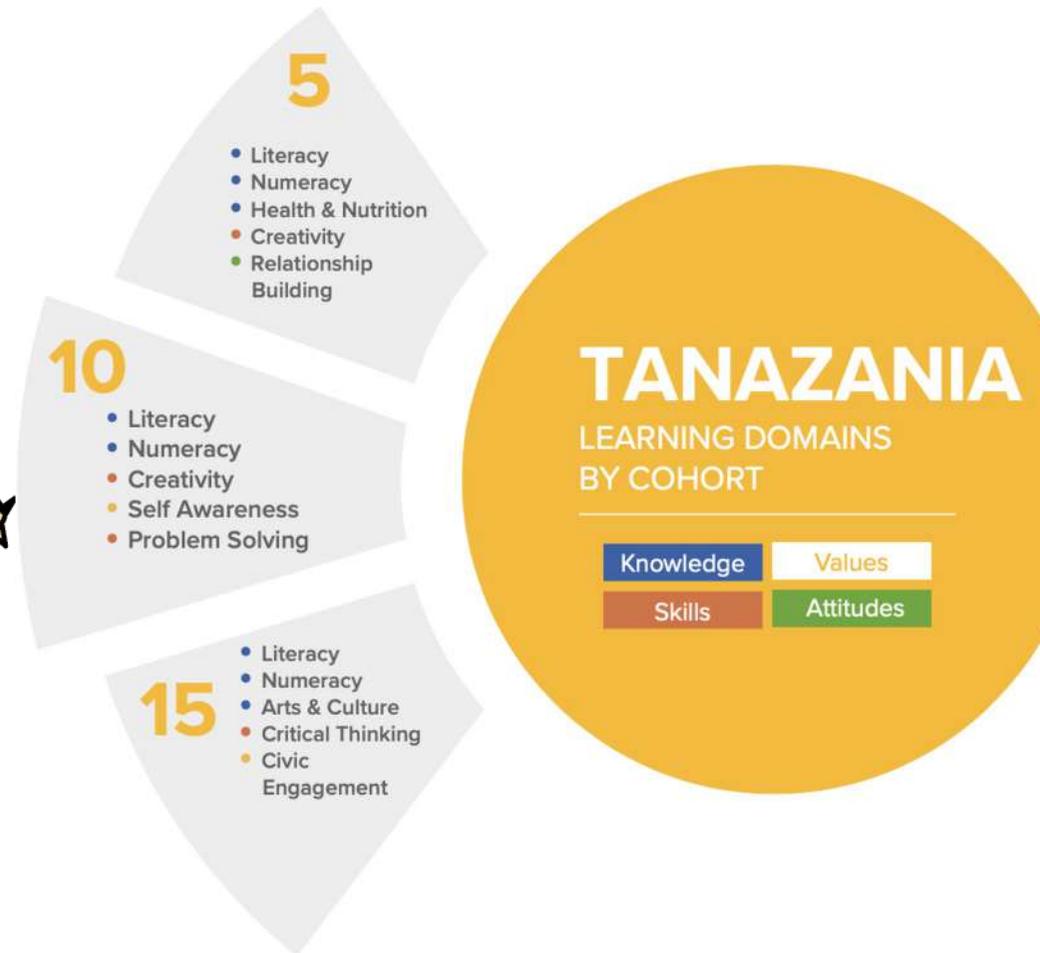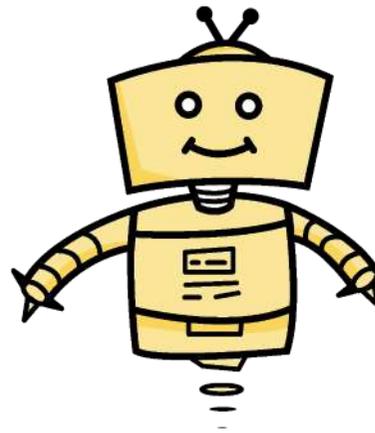
Project Synopsis

PROJECT BRIEF – LEARNING & REPORTING PARTNER

To contribute to the success of Schools2030's objectives through the HCD process, the Learning Partners undertook the following key roles:

1 **Conduct an assessment of the HCD process** in its delivery and adoption in Lindi and Dar es Salaam.

2 **Identify promising solutions** as case studies demonstrating potential impact and scale.

3 **Spotlight one of the nationally selected solutions** and conduct interviews to collect further information for the development of a spotlight report

PROJECT BRIEF – LEARNING & REPORTING PARTNER (CONT'D)

UWEZO Tanzania was engaged as the Learning and Reporting Partner during the first year. Using a mixed-methods approach (qualitative and quantitative methodologies), the research has interrogated the participants' learning journeys, pain points with the process, and the underlying barriers and enablers to the adoption of HCD as an everyday mindset for teachers. This assessment was carried out over a 6-month period between July and December 2021 physically in Lindi and Dar es Salaam regions.

Subsequently, ThinkPlace Kenya was engaged to critically reflect on the findings from Uwezo's research and provide learnings that are communicated as lessons, successes and recommendations for the next iteration of the HCD process. The recommendations are based on ThinkPlace's expertise and experience with HCD, adult learning principles and behavioural and cognitive models in order to design more effective future learning experiences. Additionally, ThinkPlace worked with AKF Tanzania to select 12 case studies of solutions that demonstrate originality and potential for positive impact and scale.

This report highlights the key learnings and recommendations, and case studies to address each of the above goals.

WHO IS THIS DOCUMENT FOR?

This document is intended for the Aga Khan Foundation, the Schools2030 programme team and the National Advisory Committee. It is also for schools and partners within the wider education ecosystem. This includes Ministry of Education representatives, other teachers, development partners and private sector partners in the education space.
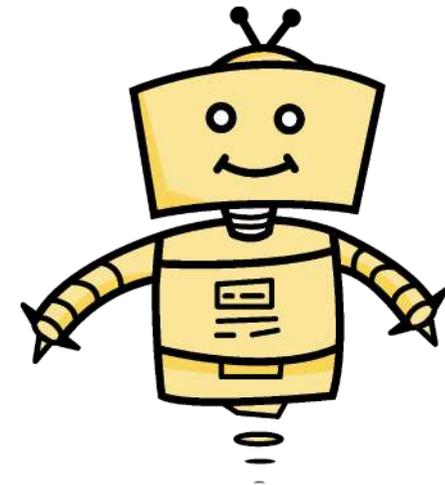
Project Synopsis

From the assessment of the Schools2030 HCD Programme in Lindi and Dar es Salaam, the following are the main learnings and recommendations.

THEMATIC LEARNINGS

Simplicity of the process:

The Toolkit is an essential companion for participants to go through the HCD process. However there is a need for further simplification and contextualisation of its content for ease of comprehension.

Practical and collaborative Learning:

Participants felt that the HCD process could incorporate more practical activities to enhance understanding of theoretical content

Participants enjoy working together as opposed to working individually in silos

Support and Resources

Resources are not always accessible for participants in the formats that they would prefer

Communication gaps exist between participants and facilitators

Time: Time commitment remains a barrier for teachers and facilitators

RECOMMENDATIONS

1 **Contextualization of the toolkit will be key**

2 **Focus should remain on the essential content in the toolkit**

3 **Adopt adult learning techniques in the facilitation process**

4 **Introduce a more team-based approach for continuous capacity building as well as strengthen team confidence and open communication**

5 **Leverage on existing touchpoints to develop a dynamic, flexible and responsive support system**

6 **Have small competitions and rewards throughout the process to create an engaging and interactive environment**

7 **Scaffold the process, but don't close the curtains**

8 **Develop a competency framework**
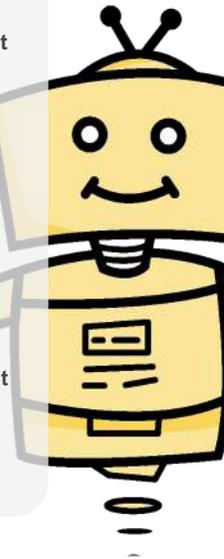
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Terms

The following terms are used throughout the document.

Participant: This is an umbrella term that refers to all groups enrolled in the HCD process - pre-primary, primary, and secondary teachers, and youth development and NGO partners. Where a finding applies to a specific sub-group, they are identified as so.

Teacher: This term refers to all educators that are enrolled in the HCD process. This includes grade-level teachers, subject teachers, and school leaders (who are typically headteachers, deputy headteachers, and senior teachers).

NGO sites: Civil Society Organisation (CSO) including Youth Development Partners, actively engaged in the HCD process. Similar to secondary schools, they are working to create solutions for the 14-year-old cohort age.

Facilitator: Facilitators prepare workshop and project materials, lead workshops, oversee participant learning journeys and provide design critiques.

HCD Process: This term is used when referring to all engagements associated with Schools2030's implementation of the HCD process. This includes the activities that participants engage with both in and out of the workshops to carry out the process, as well as the support mechanisms and resources around them.

Schools2030 Programme: This refers to the wider Schools2030 programme activities that extend beyond the HCD process. This includes monitoring and evaluation activities and occasions such as the showcase event.

Acronyms

HCD - Human Centered Design

NGO - Non-Governmental Organization

YDP - Youth Development Partner

CSO - Civil Society Organisation
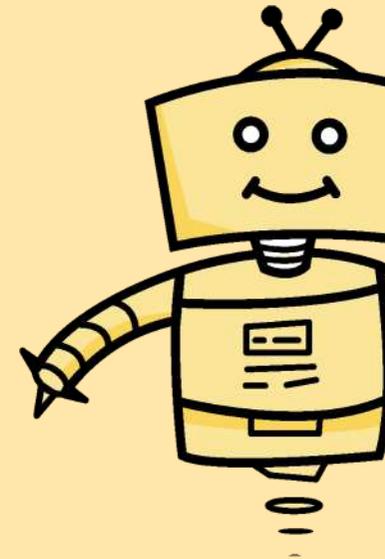
Overview of Activities

1

Project Overview

## Key Characteristics of the field activities

In collaboration with AKF Tanzania, Uwezo Tanzania conducted field activities in Lindi and Dar es Salaam with the help of local research assistants. Initially, the UWEZO team attended the HCD workshops to learn more about the HCD approach, toolkits and implementation processes that the teachers were adopting. With the insights and learnings generated from these workshops, Uwezo developed tools to assess the understanding of participants on the HCD process and its content and their subsequent abilities to develop and test solutions addressing the selected learning domains for their learners.

Based on the learnings documented by Uwezo, ThinkPlace has further developed actionable recommendations on how to improve both the implementation of the process and the materials used within it by leveraging evidence-based tactics in learning, instructional design, and behavioural science. The next slide presents an overview of the data collection work conducted in the field.

Our Approach - Data Collection Tools

Uwezo adopted a mixed-methods approach combining qualitative and quantitative methods. Insights from the qualitative research would provide the "why" to give context to the quantitative "what" insights provided by the survey.

QUALITATIVE

QUANTITATIVE

INDIVIDUAL INTERVIEWS (PHYSICAL)

One-on-one interviews were conducted with all target groups during the HCD training sessions and site visits (both schools and youth development partner organisations) Interviewers used a predetermined set of interview questions as a discussion guide.

FOCUS GROUP DISCUSSIONS

Focus group discussions were conducted with teachers, youth development partners both during the HCD training sessions and site visits.

OBSERVATION

Direct observation was carried out during the HCD sessions and Site Visits in both Lindi and Dar es Salaam. The observation focused on the engagement of the teachers with the training activities in order to understand what was working well and identify areas of improvement.

ONLINE SURVEY

Two surveys were deployed: 1) To facilitators to understand their comprehension of the HCD process, facilitation techniques and recommendations on how best the HCD process could be implemented in Tanzania; and 2) To teachers to understand their experience of the HCD process through the phases.

Our Approach - Sampling and Sites

Where and with whom the HCD Assessment was conducted.

TANZANIA

Dar es Salaam

Lindi

PARTICIPANTS

74
Sites visited
(physically)

126
Teachers/Educators
(30 from Dar es Salaam, and
96 from Lindi)

26
NGO
Participants

Sites Visited by Type

- NGO 12.2%
- Secondary 16.2%
- Primary 41.9%
- Pre-Primary 29.7%

QUANTITATIVE

64
Survey Responses from
Teachers & Educators

9
Survey Responses
from HCD Facilitators

The HCD
Content Journey
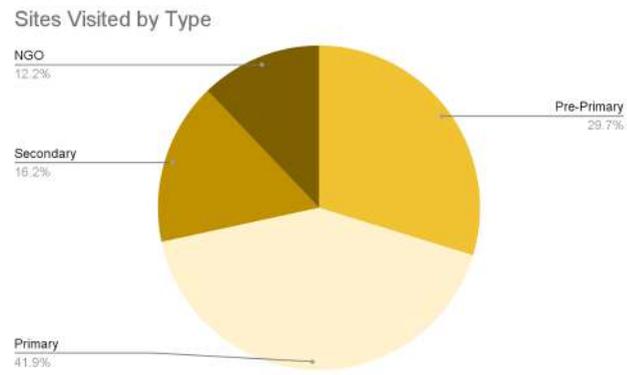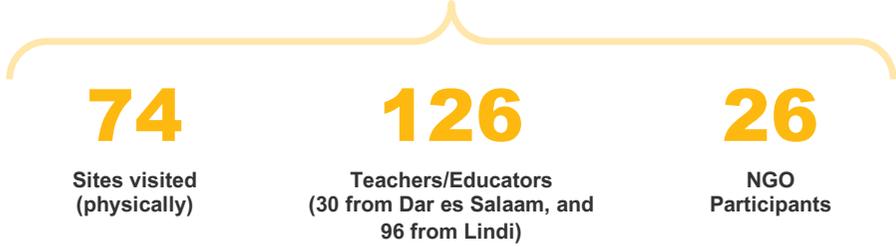
Learnings phase by phase
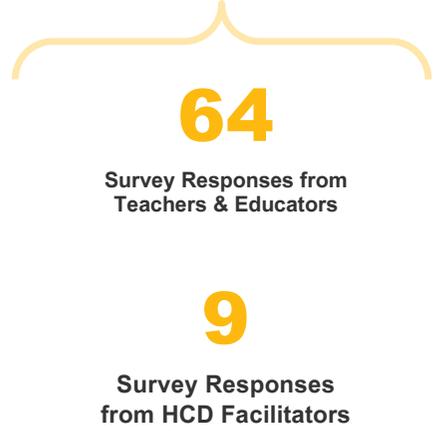
Survey: HCD Phase by Phase Experience

Uwezo Tanzania administered a questionnaire to the 180 participants of the HCD process in Lindi and Dar Es Salaam to understand their experience of the various phases throughout the process. From the 180, the team received 64 responses. Suffice to note that one of the major barriers to completing the survey for the participants was limited mobile and internet access in their local areas. The graph below shows the proportion of the teachers who found each phase to be easy, fair, and difficult across each of the phases.
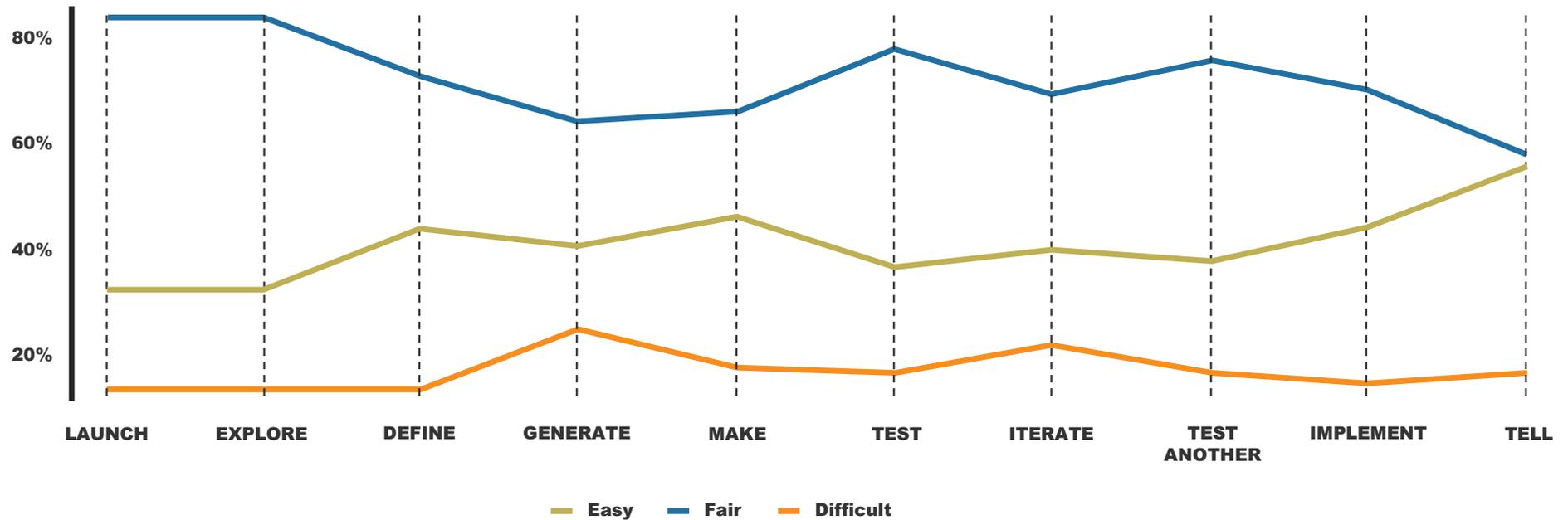
Observations

The following observations and analysis can be made from the graph in the previous page:

Generate

'Generate' appeared as the **most difficult phase.** Generating wild ideas through brainstorming, both individually and as a group, can often push participants out of their comfort zone. Moreover, collectively prioritizing ideas after a brainstorm session can be met with confusion without a clear process or criteria to prioritize ideas. This was also found in Kenya, where many teachers were unsure of how to prioritise their ideas.

Iterate

This phase was followed by **'Iterate'** as the **second most difficult phase**. Iteration is typically a novel concept for new HCD learners to absorb and requires participants to think critically about what was and was not working with their initial idea(s). This phase therefore requires one to adopt the 'fail fast, learn fast' mindset, core to HCD, which can be difficult to adopt as new HCD learners are often attached to their initial ideas.

Tell

'Tell' was the **easiest phase.** This may be attributed to the fact that there are only two tools for this phase. Moreover, this phase does not require participants to understand specific HCD concepts or conduct HCD-related activities, as this is a storytelling exercise. Teachers are generally accustomed to presentations and storytelling, and so this phase may feel familiar and less daunting for them.

There appears to be a general inverse relationship between 'fair' and 'easy', suggesting that responses mostly oscillated between the two options. The perception of what is 'fair' and 'easy' is subjective and relative to an individual's own understanding of the terms.

In the next year of the HCD process, this will be interrogated further to better understand the WHY behind the perceived difficulty/ease among the various phases through qualitative immersive research.

1. Launch

2. Explore

TOOLS THAT PARTICIPANTS FOUND DIFFICULT
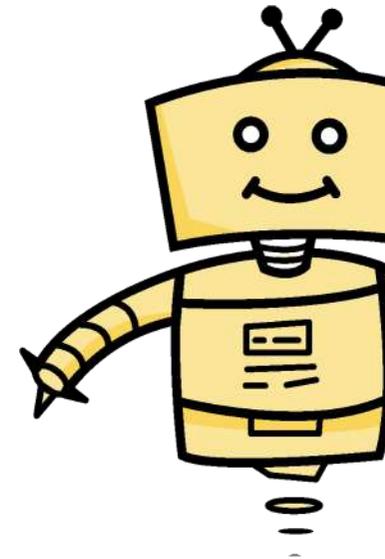
- Smooth sailing
- Quantitative Data Analysis
- Secondary Research

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Observation & Journey Mapping
- Shadow Notes & Reflection

RECOMMENDATIONS FROM TEACHERS

- More time should be set for training at this phase
- Facilitators should use more examples and involve participants in practical activities during the learning sessions
- The explanations during training should be simplified and incorporate easy-to-understand examples

RECOMMENDATIONS FROM TEACHERS

- More time is needed on this phase for teachers to better engage with the content herein
- Group discussion should be encouraged so that teachers can learn by themselves
- Make it simple - some tools should be removed or simplified
- Teachers should be given more practical training on how to conduct activities in the Explore phase

Facilitators should use participatory methodology during training workshops and live examples from the environment we work in so that we get to understand easier and move smoothly through this phase during our designing process.

— Secondary School Teacher, Lindi

We should be given more time for learning and more discussion, because we differ in understanding; others just grasp things fast and others are slow learners.

— Primary School Teacher, Lindi

3. Define

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Observations & Guesses
- Point of View

RECOMMENDATIONS FROM TEACHERS

- More time is needed for practical training in this phase and also more time to carry out these activities in the school to allow space for creativity and critical thinking

- Facilitators should always encourage teachers to come up with large numbers of "How Might We" questions as these are the ones that lead to getting the solutions for a learning challenge

- The tools at this phase should be reduced. Having few straight and self-explanatory tools will be useful

" *The 'Guesses' tool should be removed completely in the process as guesses cannot assist anymore to solve the actual learning challenge "*

– Secondary School Teacher, Temeke

4. Generate

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Idea selection
- Group brainstorming
- Prepare to brainstorm

RECOMMENDATIONS FROM TEACHERS

- More time for orientation around this phase is required

- Facilitators should follow the instructions provided in the toolkit

- Provide more aids and tools for understanding during orientation

- Facilitators should use simple, clear and understandable language

" *"The Generate phase was fair, however, it would have been easier if enough time was available for facilitators to discuss issues with teachers"*

– Primary School Teacher, Lindi

5. Make

6. Test

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Design a prototype
- Combine ideas
- Tips for designing and testing prototype

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Testing prototype reflection
- Reflection grid
- Evaluating prototypes to get to next steps

RECOMMENDATIONS FROM TEACHERS

- More time for orientation and practice is required
- Facilitators should use several examples during the lessons
- Facilitators need to be cooperative to guide teachers during workshop sessions
- There should be the use of various aids/tools for training to increase understanding of the lesson
- There should be a summary of instructions in each topic for easy comprehension.

RECOMMENDATIONS FROM TEACHERS

- Orientation time should be extended
- Guiding questions should be brief
- Orientation activities should be done practically i.e. hands on activities
- Relevant materials should be available for practicing the design process
- Simple and understandable language should be used in the toolkit and by the facilitators during orientation.

"*There are a lot of concepts and procedures to comprehend, it would be imperative to have a brief summary of instructions in order to simplify the journey''*

– Primary School Teacher, Temeke

"*"The use of simple, clear and understandable language could yield positive results as far as understanding the make phase is concerned. Also, orientation which is practical oriented is important for enabling easy understanding''*

– Primary School Teacher, Temeke

7. Iterate

8. Test Another

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Design another prototype
- Building to iterate

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Reflection grid
- Test a prototype reflection

RECOMMENDATIONS FROM TEACHERS

- The training period was not enough considering that there was a lot to practice in this phase and one would repeat some steps if they did not do so well during prototype testing

- Facilitators should use vivid examples to take the teachers through the HCD phases.

- Facilitators should apply participatory facilitation techniques such as demonstration and group discussions.

RECOMMENDATIONS FROM TEACHERS

- Provide more time to design an test the prototypes

- Facilitation should incorporate more practical activities

There should be a proper way of going through the prototype of each participant so that it can help to identify challenging areas and make comments for improvement"

- Secondary School Teacher

Involving stakeholders in testing prototypes helps in getting feedback but you get a chance to improve you prototype"

- Primary school Teacher

9. Implement

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Refine your idea

RECOMMENDATIONS FROM TEACHERS

- In the toolkit, there should be a summary book for the developed prototypes to summarise their solution in all stages.

- The language used in the toolkit should be simple and understandable.

10. Tell

TOOLS THAT PARTICIPANTS FOUND DIFFICULT

- Storytelling

RECOMMENDATIONS FROM TEACHERS

- The instructions should be summarized to allow quick understanding of the concept.

- We request to be re-oriented before we pitch our learning solutions to other stakeholders.

- There should be other ways of making a pitch for the solutions rather than telling stories only.

- Before we make a pitch to other stakeholders we should first organize and meet ourselves as teachers and present our solutions in groups.

3 Learnings from the Facilitators

Facilitation

Facilitators were selected from NGO partners and trained on design thinking prior to the process. Uwezo was able to collect feedback from the facilitators on their experience with delivering the HCD process. Findings from the questionnaire deployed to the 9 facilitators are presented below:

1 **Facilitators felt both well prepared and confident to deliver the training sessions** according to the questionnaire. When asked 'How well do you think you were trained and prepared to become a trainer to facilitate HCD training workshop', all respondents selected 'Good', or 'Very Good'. In addition, when asked 'How confident were you when facilitating the HCD workshop for teachers', all respondents either selected 'Confident', or 'Very Confident'.

2 **The majority of the facilitators were able to adequately answer questions from the teachers about the HCD process, but there is still room for improvement and continuous adaptation of the process.** The graph on the right suggests that facilitators can develop more confidence in their ability to answer questions that arise regarding the HCD process. Possible ways to achieve this may be through further training or by providing more time per phase.

67%
GOOD

22%
SATISFACTORY

11%
VERY GOOD
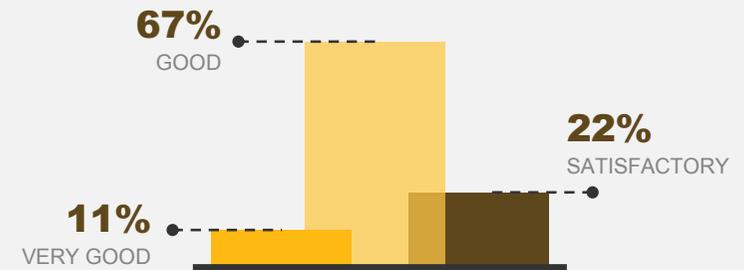
To what extent were you able to correctly respond to the teachers' questions during the HCD sessions?

Chart

Phase	Percentage
NONE	11%
LAUNCH	
EXPLORE	
DEFINE	22%
GENERATE	22%
MAKE	44%
TEST	11%
ITERATE	11%
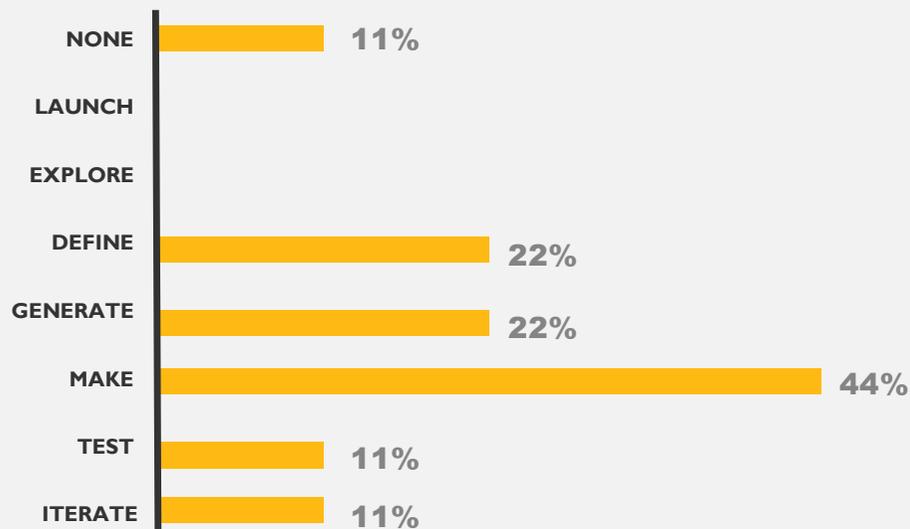
Which of the phases did you find difficult to facilitate?

The Make Phase was the most difficult to facilitate. This may be due to the concept of assumptions and designing prototypes to test these assumptions. Understanding how to identify assumptions and create prototypes to directly test them is often met with confusion in the HCD process for new learners and requires ample time and repeated practice with examples in order to grasp them.

RECOMMENDATIONS FROM THE FACILITATORS

The following recommendations on improving the quality of delivery and experience of facilitation were proposed by the facilitators themselves:

1 **More time** is required to train facilitators on the HCD approach and how to deliver HCD facilitation sessions

· ·

2 Provide an Appreciation Certificate for **increased motivation and recognition**

· ·

3 **Assess the level of proficiency** on the HCD process for each of the facilitators before having them facilitate HCD sessions

4 Thematic Learnings

Thematic Learnings

From the findings and evidence of this research, the following thematic areas have been identified as critical to increasing the efficacy and impact of HCD processes in Tanzania.

In what follows, we'll present general learnings pegged on the thematic areas, along with the overall and actionable recommendations to increase the likelihood of successful implementation in subsequent years.

Simplicity & contextualization of the process & content

Practical & Collaborative Learning

Time

Support & Resources

SIMPLICITY & CONTEXTUALIZATION OF THE PROCESS & CONTENT

The Toolkit is an essential companion for participants to go through the HCD process, however there is a need for further simplification and contextualisation of its content

The toolkit is useful because it helps us to remind ourselves about various ideas and processes in order to clear some misconceptions during the journey of designing our prototypes" – Primary School Teacher, Lindi Rural

Uwezo observed that the toolkit was useful in helping teachers revise various phases and document them during the practice and actual creation of the learning solutions. Generally, this toolkit provides an overview orientation regarding the HCD concept and process from the starting to the ending point. Overall teachers appreciated the presence of the toolkit because it provided a comprehensive orientation through the HCD journey.

The toolkit is the main companion to every teacher in the process of HCD " – Secondary School Teacher, Lindi Rural

Despite the usefulness of the toolkit, the following challenges were identified:

Language: Teachers encountered difficulties in comprehending certain words and phrases, as some that were translated directly from English to Kiswahili were found to be ambiguous and difficult to understand for the teachers. For example, 'Toolkit' was translated as *Kivunge*, which would have been better translated as *Kitini*, a word that is more familiar in the Tanzanian context.

Documentation: It was observed that, during the site visits, some teachers did not comply with the instruction given in the toolkit. For instance, some teachers did not document their ideas in the toolkit as instructed while others skipped some tools during their process.

Simplification: Many teacher requested for the language and instruction in the toolkit to be simplified, and for a summary to be provided for the instructions in each phase. Teachers also suggested removing some tools for various phases to further simplify the process.

Connecting the phases: Some teachers pointed out that there should be a section to summarise the development of a prototype from all stages. This suggests that teachers found it difficult to connect the phases together through the Toolkit, and this was a similar finding from the assessment conducted in Kenya.

The toolkit is helpful; however, its processes are tedious given the limited time for accomplishment of the HCD approach'; thus, the process should be simplified and straightforward" – Primary School Teacher, Lindi Municipal

THEMATIC AREA 1:
SIMPLICITY & CONTEXTUALIZATION OF THE PROCESS & CONTENT

How Might We contextualise the HCD toolkit in a way that makes it easier to understand for teachers yet retains the essence of HCD?

50%

Strongly felt that the HCD toolkit should be more contextualised to the Tanzanian swahili language

- Schools 2030 participant interviews

PRACTICAL & COLLABORATIVE LEARNING

Participants felt that the HCD process could incorporate more practical activities to enhance understanding of theoretical content

From conversations with the participants, most teachers noted that they were overwhelmed by the fast pace adopted when going through the various HCD process. With such a pace, teachers noted that the did not have enough time to practice the theoretical aspects of the process. Teachers noted that it would be better to phase out the HCD process in a way that allows them to gain knowledge of the process but also allow for practical sessions for each HCD phase before they can move on to the next. Through Learning by Doing, teachers could more easily understand the process.

The lack thereof of more practical sessions led to most teachers noting that they did not have a full understanding of the HCD process and whilst teachers noted that facilitators needed to dedicate more time for their sessions, there is need to allow for more practically learning sessions thereby allowing teachers to dedicate more time developing their ideas and solutions and develop innovative prototypes eventually.

These findings correlate to the process in Kenya, where teachers enjoyed practical and hands-on activities such as sketching, building, and giving presentations.

How Might We redesign the toolkit and/or process to be more practice oriented?

Participants enjoy working together as opposed to working individually in silos

For many teachers, working together in a group was the most effective way for them to understand and engage with the HCD material. By working together, they can practically share their ideas and get feedback from each other and from other stakeholders, which strengthens the ideas further.

Furthermore, teachers noted that working in silos has affected knowledge sharing and capacity building in the various sites. For example, if a teacher is transferred from one school to another, it means that they go with all the HCD knowledge and expertise they had acquired and at times such schools are left without a teacher who understand the process as much.

75% | Respondents did not fully understand the HCD process

How Might We create a supportive community that enables collaborative learning throughout the process?

THEMATIC AREA 3:
TIME

Time commitment remains a barrier for teachers and facilitators

Given the rigorous process of HCD, the time allowance to conduct all activities in each of the phases was not enough. For most teachers, participation in the HCD workshops and process was an added responsibility, and whilst they can fit it in their day to day activities, teachers felt that they needed more time to go through the process and fully understand the HCD process. As earlier noted, with the limited time available, teachers ended up struggling to have a good understanding of the process thereby affecting the quality of the final solutions they produced.

How Might We create realistic learning expectations that allow participants to successfully carry out HCD whilst considering their existing responsibilities?

How Might We reduce the perceived time commitment of the process?

84%

Teachers reported that there was not enough time to create and design an innovative prototype
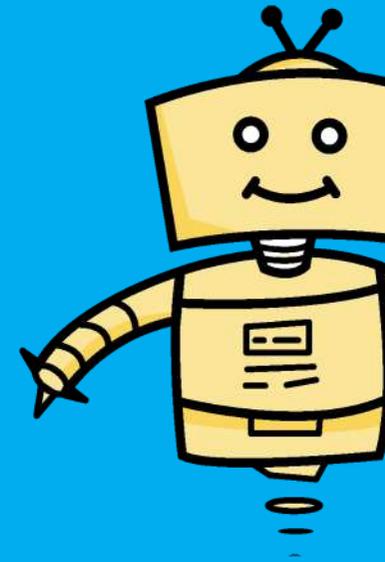
SUPPORT & RESOURCES

Resources are not always accessible for participants in the formats that they would prefer

Teachers noted that at certain times they would request for certain materials to help with the development of their concepts but they'd then receive materials that were not consistent with the initial materials they had requested. This resulted in delays developing their solutions and at times, they'd have to adapt their solutions to fit the materials they had received, thereby altering their initial solutions.

Communication gaps exist between teachers and facilitators

From conversations with various participants, it was noted that there remains a gap when it comes to having open communication between the facilitators and teachers. For example, teachers noted that at times they would communicate certain changes in their ideas and solutions and ideally this would require either new materials or adapted materials to help them implement these changes. However, teachers noted that there were no clear communication lines to communicate these changes to facilitators and subsequently to AKF. The teachers ended up either maintaining their solutions as they are without making the necessary changes or adapting the solutions without the requisite materials.

How Might We leverage on existing touch points to develop an open and flexible support system for teachers?

5 Recommendations

Recommendations

Contextualization of the toolkit will be key

Given the fact that the toolkit is the primary HCD guide for the teachers, it will be critical to contextualize it to the Tanzanian context to ease the understanding of the same. As highlighted in the thematic areas section, teachers struggled to understand some of the terminology used in the toolkit and they felt that the language could be better adapted to their context.

The language used in the toolkit could be modified in collaboration with the teachers and other stakeholders. This will ensure that the toolkit is better contextualized as well as ensure full buyin from the teachers as they will be part of the process.

Focus should remain on the essential content in the toolkit

Given the rigorous process of the HCD process and the time limits that teachers experience, participants felts as though there is too much information to cover in a short period of time and this could they noted, limited their understanding of the HCD process.

However, with a focus on what is essential in the toolkit, this may make the workload appear more manageable within the limited time that teachers have, while similarly promoting a willingness to engage with the process and material as well. It would also be critical to phase out the HCD process such that participants have enough time to internalize each phase before moving on to the next.

Adopt adult learning techniques in the facilitation process

To ensure that the HCD process remains engaging for the teachers, it would be imperative to avoid extensive theory and background, and focus on specific practical examples and challenges that directly relate to real life scenarios. Teachers want a more practice based approach for them to critically engage with the HCD process and understand the process well.

Andragogy has been referred to as the as the art and science of helping adults learn. Andragogy works on the premise that adults are better suited to direct their own learning thus having the participants learn by doing helps in their retention capabilities.

Recommendations

Introduce a more team-based approach for continuous capacity building as well as strengthen team confidence and open communication

To ensure that the HCD process is not only driven by one teacher in any given school, it would be key to have the HCD sessions crafted as team based sessions as compared to having teachers work in silos. By working together as a team, the HCD skill is passed on to many other teachers thereby mitigating the risk of having the HCD process coming to an end if one teacher leaves a particular school. Teams can also be created amongst teachers from different schools that seek to address similar challenges.

Additionally, participants are confident when they are comfortable and open. For example, working in groups with other participants that they are comfortable with promotes sharing and sense checking of ideas and increased excitement, and this reflects in the confidence they have in themselves and their ideas during their presentations.

When you use collaborative learning, not only amongst the teachers but also with the facilitators, a number of social influences act to get the automatic and emotional part of the brain involved. Group activities require negotiation, open communication, support, social obligations, and other small-group dynamics that require this part of the brain to engage and pay attention. In groups, participants can:

1 Create something, together

2 Work together to teach something to the rest of the class

3 Argue different sides of a debate

4 Comfortably share any concerns or distractions they may be experiencing

Eventually, working collaboratively enhances team results and foolproofs the HCD process thereby ensuring sustainability of the process.

Recommendations

Leverage on existing touchpoints to develop a dynamic, flexible and responsive support system

In order to provide timely and personalised support to address individual challenges in the learning journeys of the participants, the following suggestions can be explored:

1 *Create intentional learning communities and/or time-bound task forces:* participants can come together in groups to answer a specific question or solve a particular problem related to the process in a defined timeframe. By having a focused objective and a sense of urgency to achieve it, it may produce better results.

2 *Set up office hours for additional learning support:* Facilitators can set aside a time slot every week for participants to reach out for guidance and clarification*.*

3 *Support teachers to develop their professional network:* Build in opportunities for participants to make connections with those outside of their schools and organisations, both nationally and internationally. This can be done by pairing schools together through a buddy system, scheduling time for networking, and connecting teachers with those that are going through the process in other countries.

4 *Create accessible materials in diverse formats and make them timely, along with frequent reminders:* Content in the form of videos, audio notes, and cheat sheets will allow participants to interact with the content in the ways that they prefer and are easy for them to access, increasing the likelihood that they will engage.

Recommendations

Have small competitions and rewards throughout the process to create an engaging and interactive environment

Putting participants in healthy competition with each other creates room for more engagement, enjoyment and fun, in ways that can also be used to promote learning. Being rewarded for these efforts boosts morale and collaboration amongst participants.

For example, having teachers from different schools in healthy competitions to see who completes certain interviews first by having them add an emoji of their choice to their school's name on the group. Or having competitions on the best ideas and awarding the teachers could be a way of encouraging teachers to better interact with the HCD process.

Scaffold the process, but don't close the curtains

The process can be scaffolded such that each step is covered, but the responsibility of who leads can shift between the participants and the facilitators. All steps can remain visible to the participants to maintain transparency, and as participants gain experience, they can begin to take responsibility for more of the activities. For example, AKF can absorb the complexity of the Explore phase by taking responsibility of most of the data collection activities so that new participants can move more smoothly through the process.

Develop a competency framework

A competency framework can help the process leaders to set realistic targets on what they would like their participants to achieve in a particular year. This will enable them to identify the amount of time and resources to allocate to develop particular competencies and help to answer the question 'what is the minimum level of understanding and proficiency in HCD needed for participants to successfully carry out the HCD process and create quality solutions?'. With every year, the expected level of understanding and sophistication can increase. This will help to avoid expecting too much from participants in the earlier years and establish a realistic view of success.

This can either be done for each phase of the HCD process, or for each mindset. A number of taxonomies, such as Bloom's Taxonomy, can be used to develop this framework.
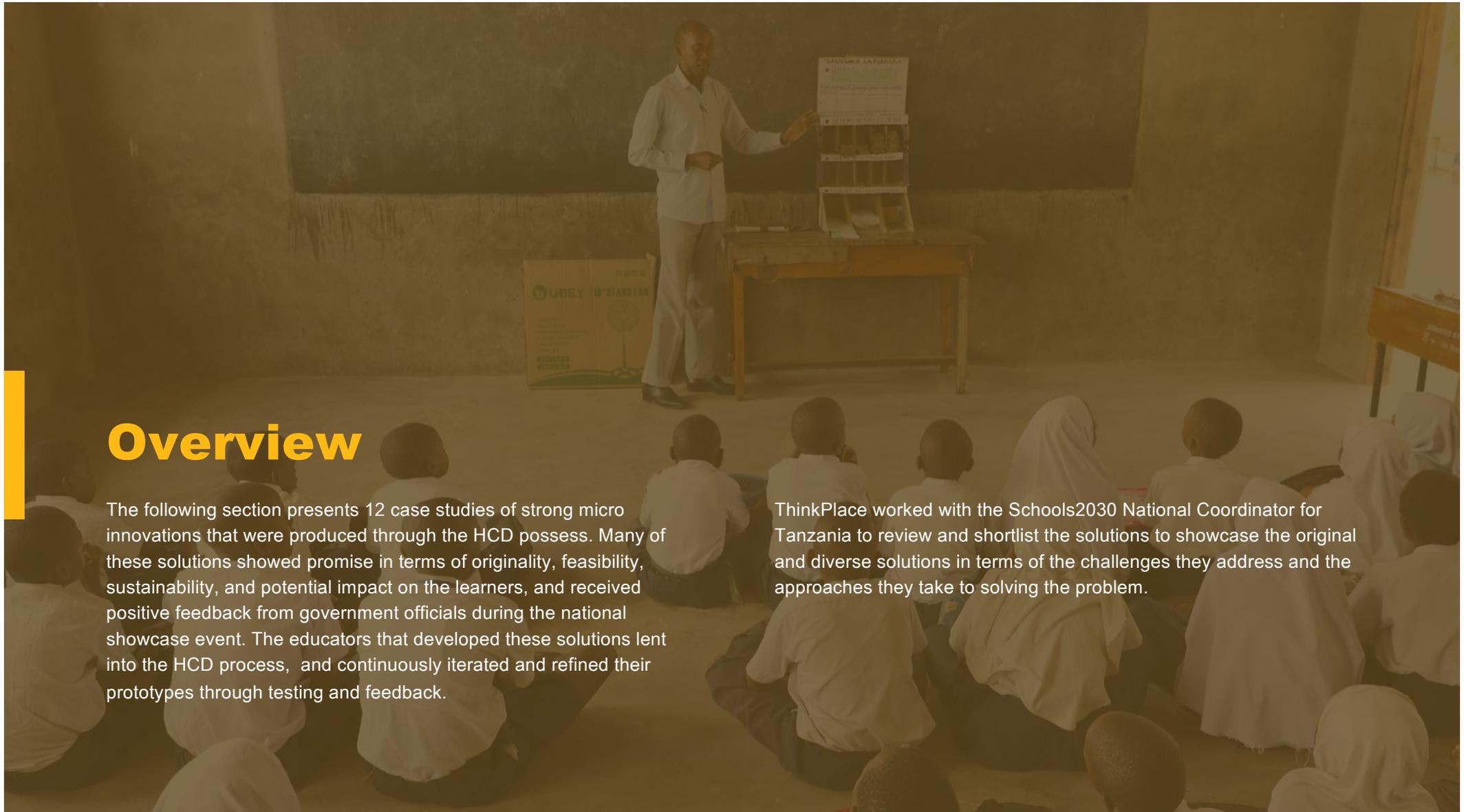
Overview

The following section presents 12 case studies of strong micro innovations that were produced through the HCD possess. Many of these solutions showed promise in terms of originality, feasibility, sustainability, and potential impact on the learners, and received positive feedback from government officials during the national showcase event. The educators that developed these solutions lent into the HCD process, and continuously iterated and refined their prototypes through testing and feedback.

ThinkPlace worked with the Schools2030 National Coordinator for Tanzania to review and shortlist the solutions to showcase the original and diverse solutions in terms of the challenges they address and the approaches they take to solving the problem.

Pre-Primary

The tree of words & numbers and a T-shirt of letters

School: Madangwa

CHALLENGE IDENTIFIED

Struggling with mastering basic reading, writing and arithmetic (3Rs) skills

ABOUT

Tree of numbers and shirt of letters solution will base on developing different teaching aids such as the shapes of numbers and letters that hang on the walls, tree of numbers and shirt of letters distributed to students. Also,the numbers and letters painted on walls and written on paper plates. Games will be developed that attract students' attention and make them interested in the subject. Students can read and write small and capital letters and numbers until they develop literacy.

Training in Sign Language and purchasing materials

School: Nyangao

CHALLENGE IDENTIFIED

Students with disabilities struggling with learning

ABOUT

Nyangao primary school is an inclusive school with children with disabilities learning alongside other children. teachers are not aware of sign languages and inclusive education at large. The solution is to train teachers on sign language and inclusive education. The training equips teachers with the best communication skills,knowledge, and pedagogical skills to facilitate children with disabilities in regular classrooms.

A Learning Mountain

School: Nachunyu

CHALLENGE IDENTIFIED

Struggling with mastering basic reading, writing and arithmetic (3Rs) skills

ABOUT

A learning mountain is a solution to help pre-primary students develop numeracy and literacy skills; students will learn through seeing the complex and straightforward tools. The learning mountain will be like a birthday cake with four steps.

Primary

Vocabulary bucket, tree of words and Mancala game

School: Mtama

CHALLENGE IDENTIFIED

Students lacking self express competence

ABOUT

"This solution will involve learning materials that will require students to perform an act that will enable him/them to express him/themselves clearly. These tools are a vocabulary mat, tree of words and Mancala game. **Vocabulary bucket** will be comprised of varieties of vocabulary. Teachers will guide students to get the meaning of the vocabulary in the bucket.

Artistic Huts

School: Nachunyu

CHALLENGE IDENTIFIED

Students not mastering creativity and critical thinking skills

ABOUT

Artistic huts are the small huts that will be built for storing different creative designed work of students. Under the guidance of their teachers, students will be allowed to design any creative work; this can be tools, apparatus, toys, or anything else. They will use simple materials such as boxes and other available materials.

Education is the Key for Success

School: Mchinga 1

CHALLENGE IDENTIFIED

Struggling with mastering basic reading, writing and arithmetic (3Rs) skills

ABOUT

"This solution seeks to improve the cooperation between parents and teachers. In cases where parents do not follow up on the progress of their children, their ability to achieve critical learning milestones is compromised. For example, some parents record poor to no attendance to PTA meetings and miss the opportunity to contribute to important decisions about their children's lives. The team prototyped sending a letter with the children to inform their parents about these meetings."

Secondary

Special Classroom to Learn English Language Skills

School: Rutamba

CHALLENGE IDENTIFIED

Lack of confidence for students in using English fluently

ABOUT

In ensuring that Form Two students have a good language foundation and confidence in using language in the four language fields, namely, speaking, listening, reading, and writing, the only solution is to establish a particular language class in which students will learn a language in more detail. There will be various games, drama, debates, etc., to make students learn and understand the language more fluently.

Mathematics Lab

School: Kijichi

CHALLENGE IDENTIFIED

Lack of problem- solving skills

ABOUT

This solution intends to improve problem-solving skills and increase the level of creativity among form two students through mathematics lab solutions. Teachers believe that the equipped mathematics lab room will attract students to love mathematics and seeding problem-solving skills as the room is full of mathematical tools, theories, and exercise books.

Critical Thinking Book

School: Nzasa

CHALLENGE IDENTIFIED

Lack of critical thinking

ABOUT

The solution aimed at improving critical thinking among students through critical thinking books. This will also increase brainstorming capacity where different types of books will be given to students to discuss the content and answer questions. The session will be conducted every Wednesday of a week on the critical thinker's club.

Civil Society Organisations

Integrated Vocational Clinic

Site: Lindi Women Paralegal Aid Centre - LIWOPAC

CHALLENGE IDENTIFIED

Lack of life skills to youth

ABOUT

"Vocational Clinic is a designed thinking solution that intends to help youths aged 18-25 years by giving integrated vocational training practical skills through local mentors available in the localities of Lindi municipal. LIWOPAC will identify several vocational clinics from which a total of 30 mapped beneficiaries will be bridged to mentors near their home steady. Selected beneficiaries will undertake comprehensive practical training for 180 days and will be assessed their competency concerning NTA . To formalise their qualifications, LIWOPAC will sign I MoU with technical colleges and task them to provide practical certificates for course attendance.

Raising Awareness on National Policy

Site: Makangarawe Youth Information and Development Centre (MYIDC)

CHALLENGE IDENTIFIED

Lack of awareness on National policy for youth development and entrepreneurship education

ABOUT

Aiming to reach out to school youth from 15-25 by raising awareness on the national youth development policy and entrepreneurship skills. Implementing the program will create five groups of young people, each group having ten young people. The entrepreneur's mobile learning kit will increase their awareness of how they will benefit from the learning (the kit will comprise of three types of materials, including books, pamphlets, and brochures.Books will be of two types: - A book for the national youth development policy where young people will find the various guidelines in the policy that will help them identify opportunities and apply them and the entrepreneurship book that will outline practical entrepreneurship (livestock, agriculture, catering, manufacturing, and business in general Handouts and pamphlets.

ETMS - Entrepreneurs Text Message Sharing)

Site: MAARIFA-SU

CHALLENGE IDENTIFIED

Youth fail to manage their business and achieve their goals

ABOUT

Entrepreneurship Text Message Sharing Club (ETMS), for 400 participants in Mtama District Council, shared on Monday, Wednesday and Friday will support out of school youth through simplified sharing text message contents on Entrepreneurship Skills Development based on how to start a business, ways to raise capital, techniques to run business, how to initiate a second business/project and how to recognise customer needs. Entrepreneurship Shared text messages will be shared and read among small entrepreneurs while conducting their daily activities at home and in their work business.

Solutions Repository Overview

This repository documents the titles of all solutions that were developed during this year's HCD process for each of the cohort groups (Pre-primary, Primary, Secondary, and NGO Partners).

> For more information on each of the solutions, click on the link https://docs.google.com/spreadsheets/d/1IvURKa1-GH1vptM_c93_eWsjGymLXFKv/edit#gid=1371946145

Solutions Repository

Classroom Housing

Mitanga   Lindi Rural - Mtama 📍

Training in Sign Language

Nyangao   Temeke - Dar es Salaam 📍

Room equipped with health and nutrition learning goods and materials

Tulieni   Lindi MC 📍

Wonderful Learning Bag

Mtanda   Lindi MC 📍

Self-teaching Class

Wailes   Lindi MC 📍

Letter and Number Wheel

Likong'o   Lindi MC 📍

The Swing of Knowledge

Mbande   Lindi Rural - Mtama 📍

The Tree of Words and Numbers and a T-Shirt of Letters

Madangwa   Lindi Rural - Mtama 📍

Speaking Giant Dol

Mnolela   Lindi Rural - Mtama 📍

Vowels and Consonants Mat

Namangale   Lindi Rural - Mtama 📍

My Hand Palm

Nyangamara   Lindi Rural - Mtama 📍

Room of My Letters

Luwale   Lindi Rural - Mtama 📍

Fruits Book and Games

Linoha   Lindi Rural - Mtama 📍

'I Begin to Learn' Book

Namupa   Lindi Rural - Mtama 📍

Vowels, Numbers, and Pictures Class

Mtama   Lindi Rural - Mtama 📍

Solutions Repository

A Tire of Learning Tools

Mahumbika	Lindi Rural - Mtama 📍

A Learning Mountain

Nachunyu	Temeke - Dar es Salaam 📍

Frequently Mixed Card Collection Solution

Chiuta	Lindi Rural - Mtama 📍

Workshop Enriched with Tools

Kineg'ene	Lindi MC 📍

We are Improving 3Rs Skills

Mchinga 1	Lindi MC 📍

Improving Teaching and Learning Environment for Pre-School

Chilala	Lindi MC 📍

3Rs Pool Table

Jangwani	Lindi MC 📍

Voice in a Building

Kitomanga	Lindi MC 📍

I am Learning Hats

Mpilipili	Lindi MC 📍

Taking Field

Muungano	Lindi MC 📍

Learning Rings

Nyangamara	Lindi Rural - Mtama 📍

Garden of Words and Numbers

Luwale	Temeke - Dar es Salaam 📍

Number Map

Linoha	Temeke - Dar es Salaam 📍

3Rs Local Market

Namupa	Temeke - Dar es Salaam 📍

Letter and Number Board (T-Learning)

Mtama	Temeke - Dar es Salaam 📍

Solutions Repository

Simple Mathematics for All (Math kits)

Madangwa	Lindi Rural - Mtama 📍

Sports for Adademics

Mnolela	Lindi Rural - Mtama 📍

Language Laboratory

Namangale	Lindi Rural - Mtama 📍

Simplified Classroom

Nyangamara	Lindi Rural - Mtama 📍

Supportive Learning Classroom

Luwale	Lindi Rural - Mtama 📍

A Learning Bush

Linoha	Lindi Rural - Mtama 📍

Friendly Maths for Students & Parents

Namupa	Lindi Rural - Mtama 📍

Library Nursery and Open Writing

Mitanga	Lindi Rural - Mtama 📍

Learning Machine

Nyangao	Lindi Rural - Mtama 📍

Vocabulary Bucket, Tree of Numbers and Mancala Game

Mtama	Lindi Rural - Mtama 📍

Storybook

Mahumbika	Lindi Rural - Mtama 📍

Artistic Huts

Nachunyu	Lindi Rural - Mtama 📍

Participatory Storytelling Technique

Chiuta	Lindi Rural - Mtama 📍

Tent of Tools for Teaching and Learning Materials

Kineng'ene	Lindi MC 📍

Basket of Vocabularies

Mchinga 1	Lindi MC 📍

Solutions Repository

Competitive Learning Room

Tulieni   Lindi MC 📍

Tree of Learning

Chilala   Lindi MC 📍

Mancala of Division

Jangwani   Lindi MC 📍

Participatory Tools and Learning Techniques to Balance Learning

Kitomanga   Lindi MC 📍

Learning through Sport

Mtanda   Lindi MC 📍

Learning Wheel

Mpilipili   Lindi MC 📍

Participatory Class

Muungano   Lindi MC 📍

Numerical Competency Box

Mkupama   Lindi MC 📍

The Radio of Number

Likong'o   Lindi MC 📍

Technology and Education

Wailes   Lindi MC 📍

Magic Mathmatics Wood

Maendeleo   Temeke - Dar es Salaam 📍

('Darasa Maarifa') Knowledge class

Majimatitu   Temeke - Dar es Salaam 📍

The Knowledge Mountain ('Mlima Maarifa')

Mbande   Temeke - Dar es Salaam 📍

Supportive Library 'Maktaba Wezeshi'

Nzasa   Temeke - Dar es Salaam 📍

Mathematical Draft Board (Shubaka la Namba)

Toangoma   Temeke - Dar es Salaam 📍

Solutions Repository

Advertisement Board

Nyegedi	Lindi Rural - Mtama 📍

English Trees

Mbawe	Lindi Rural - Mtama 📍

The Country of Talents

Madangwa	Lindi Rural - Mtama 📍

Speaking Dolls

Namupa	Lindi Rural - Mtama 📍

A Speaking Room

Kiwalala	Lindi Rural - Mtama 📍

English Village

Mahiwa	Lindi Rural - Mtama 📍

Mathematics Solution Ground

Mnolela	Lindi Rural - Mtama 📍

Scientific Models and Games

Namangale	Lindi Rural - Mtama 📍

Animation Room

Mnara	Lindi Rural - Mtama 📍

Learning Garden

Mkopwe	Lindi Rural - Mtama 📍

Uraia Plus

Chiuta	Lindi Rural - Mtama 📍

Teaching Cards

Mtama	Lindi Rural - Mtama 📍

English Hour

Nashukahuka	Lindi Rural - Mtama 📍

Language Fortress

Chikonji	Lindi MC 📍

Genge Science

Kineng'ene	Lindi MC 📍

Solutions Repository

Freedom of English Speaking through Work, Games, and Arts
Kitomanga   **Lindi MC** 📍

15 Minutes for Learning
Mingoyo   **Lindi MC** 📍

Special Classroom to Learn English Language Skills
Rutamba   **Lindi MC** 📍

Motion Wheel
Ng'apa   **Lindi MC** 📍

Garden of Science
Angaza   **Lindi MC** 📍

Wake up with Science
Mchinga   **Lindi MC** 📍

Subjects, Translation, and Practice with Locally Available Resources
Mitwero   **Lindi MC** 📍

Open Libraries
Lindi Sec   **Lindi MC** 📍

Wheel of Mathematical Operations
Mkonge   **Lindi MC** 📍

Friendly Family
Ngongo   **Lindi MC** 📍

Mathematics Lab
Kijichi   **Temeke - Dar es Salaam** 📍

Critical Thinking Book
Nzasa   **Temeke - Dar es Salaam** 📍

Nurturing Students' Talents (Darasa Kiwanda)
Mbande   **Temeke - Dar es Salaam** 📍

Laboratory of Teaching and Learning
Charambe   **Temeke - Dar es Salaam** 📍

Learn by Doing
Toangoma   **Temeke - Dar es Salaam** 📍

Solutions Repository

Developing a Youth Friendly Community Based Magazine for Sexual Reproductive Health

Community Servers Tanzania (COSETA)   Dar es Salaam

. . . .

Special course program

Lindi Association Of NGO's (LANGO)   Lindi

. . . .

To establish a non- formal learning programme for youth to build entrepreneurship, creativity, problem- solving, and improving their health status

Lindi Support Agency for Welfare (LISAWE)   Lindi

. . . .

Integrated Vocational Clinic

Lindi Women Paralegal Aid Centre - LIWOPAC   Lindi

ETMS (entrepreneurs text message sharing)

Mchinga   Lindi

. . . .

Raising awareness on National policy for youth development and entrepreneurship education

Makangarawe youth Information and Development Centre (MYIDC)   Dar es Salaam

. . . .

An independent digital system for the Qualifying Test (QT) education system

Rondo Women's Development Organisation (ROWODO)   Lindi

. . . .

### Establishment of Recreation and Learning Platforms Program

Sports Development Aid (SDA)   Lindi

Life Skills and Entrepreneurship "Evening Class''

Temeke Youth Development Network (TEYODEN)   Dar es Salaam

. . . .

Advocacy for Mental Health awareness to youth and community by organizing Pecha Kucha presentation

Tanzania Youth Coalition (TYC)   Dar es Salaam