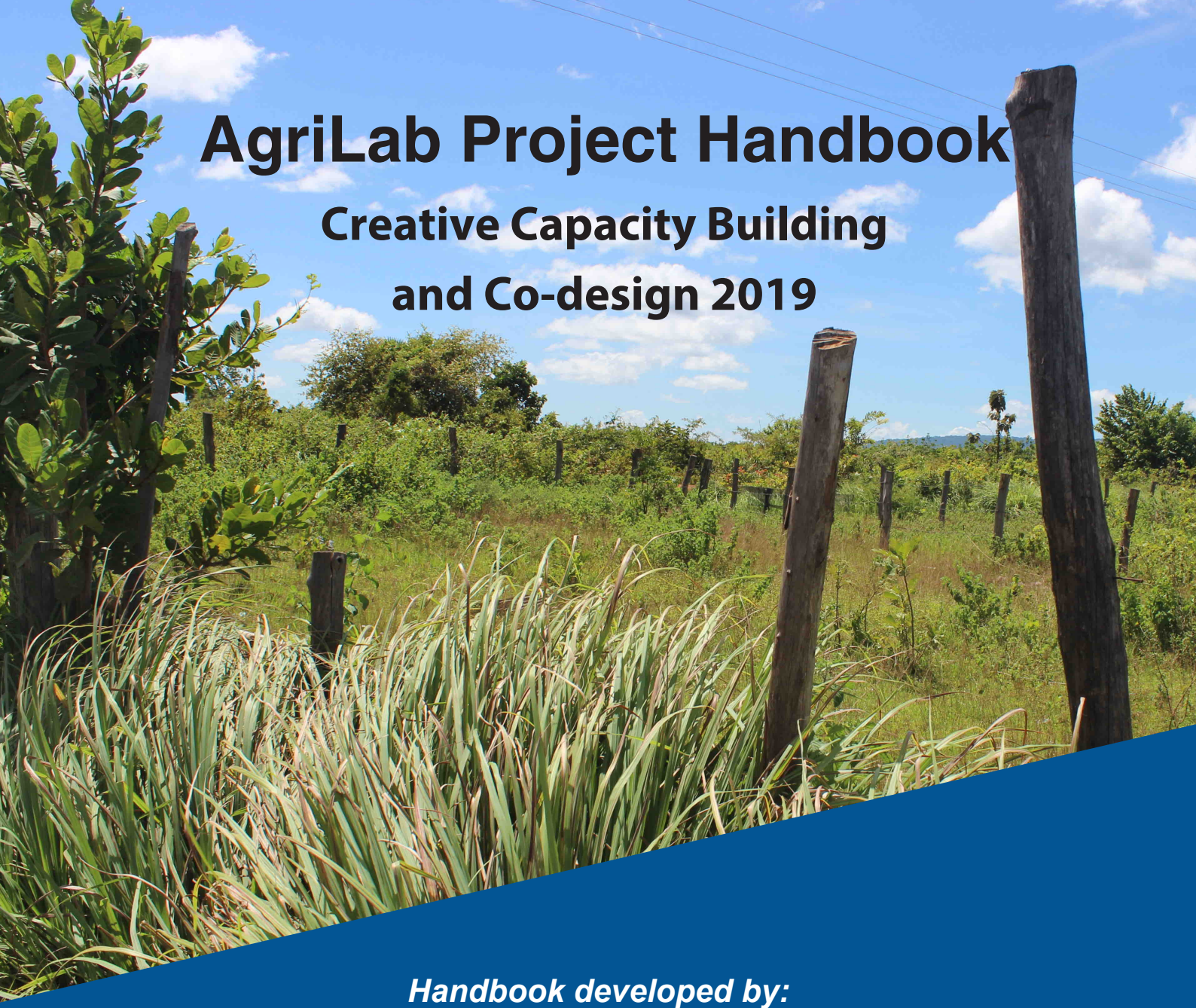

AgriLab Project Handbook

Creative Capacity Building and Co-design 2019

Handbook developed by:

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People's Action for Inclusive Development (PAfID)
Formerly LFTW

The co-design of assistive farming technologies with people with disability in South East Asia

engineers without borders australia

LIGHT FOR THE WORLD
DISABILITY INCLUSION LAB

PAfID
People's Action for Inclusive Development

AgriLab Project Handbook

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AgriLab Handbook Authors

PEOPLE'S ACTION FOR INCLUSIVE DEVELOPMENT (PAfID) is an non-government organization harnessing local knowledge for local solutions. PAfID's vision is an inclusive society where opportunities to participate in the cultural, social and economic environment are open for all. PAfID's desire is to contribute to a world in which all persons live in dignity and fully exercise their rights to reach their potential. **https://www.facebook.com/PAfID.org**

LIGHT FOR THE WORLD promotes the inclusion of people with disability in education, in the labour market, health and in all other aspects of society, with a focus on developing countries. We work to create innovative solutions that empower people with disability to engage in wider society and have the opportunity for a meaningful life. **www.lightfortheworld.nl**

ENGINEERS WITHOUT BORDERS AUSTRALIA is a member-based, community organisation that social value through humanitarian engineering. Through partnership and collaboration, we've focused on developing skills, knowledge and appropriate engineering solutions for over 13 years. Our contribution was supported by the Australian Government through the Australian NGO Cooperation Program (ANCP). **www.ewb.org.au**

Partners and Supporters

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Activity Quick Reference

Activity Quick Reference

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Introduction

This handbook came about in response to real identified needs. As people become older or have increased functional impairments, tasks in the agricultural sector, such as planting, weeding, harvesting, transport and marketing can become more challenging. This combined with rural to urban migration of the youth often results in severe livelihood challenges for poor and vulnerable groups. This handbook presents a process to develop assistive technologies to help the productivity of such rural farmers. It was developed for use in the AgriLab Project 2019; undertaken by Engineers Without Borders Australia, Light for the World, DDSP, CDMD and PRY. It is intended to be used as a reference to assist facilitators in undertaking participatory design with people with disability.

Guiding Principles

Below are a list of principles that will be used to guide planning, project work and decision making. The principles explain how we should engage with the community of participants and how we should make important decision.

Equalizing power relations

Facilitators and participants must be comfortable to speak their mind while enabling all others to also share their thoughts. It is important that facilitators show respect and do not speak down to the participants or act in a way that may make them feel excluded, demoralized or belittled.

Democratic practices

All decisions that are made during the project need to be done so in a democratic manner, with all individuals involved contributing to the decision. This can be ensured through using systematic selection activities and facilitating group decisions. When an engineering decision is required, the outcome should be discussed with all individuals to ensure there is agreement. Any disagreement will be handled on a case-by-case basis. Weigh will be given to individuals that will be directly affected by the decision or have critical expert input.

Situation-based actions

While facilitators can use knowledge from previous projects, it is important that decisions are made based on the current community and environment. This may mean adapting activities to better suit the individual's involvement or challenging our assumptions about aspects of community life. Facilitators should strive to resist reverting to previous experiences.

Mutual learning

It is important that facilitators provide opportunities to both teach the participants and also learn from them. Facilitators will have some activities where they present information and some where they aim to learn about the community. Facilitators need to ensure they are valuing that learning, and allowing the participants to provide meaningful knowledge about themselves, the environment and potential designs.

Guiding Principles continued

Empathy

Facilitators will be working with a range of individuals, some male, some female, some able-bodied, some with impairments. It is important that they try to understand the lives of all participants and the challenges they may face. Facilitators can do this through formal activities as well as ensuring their mindset is focused on building warm relationships and learning from everyone involved.

Inclusion of all participants

It is important that facilitators prioritize inclusion very highly and are prepared to adapt or change an activity to ensure everyone is able to engage in a meaningful way. Facilitators need to encourage this as much as possible to ensure maximum participation and that no-one is left behind.

Person centered not technology centered

Ensure that the technology being created is useful and appropriate for the specific participant that is involved in the project. Be careful not to get carried away with a technology without clearly linking it to a need in the community

Safety

This project will require hands-on work using tools and materials. It is important that we do not place anyone in a dangerous situation, such as using a power-tool without proper training or safety equipment. Facilitators need to be sure that all participants are comfortable, and able to perform their allocated tasks before they begin any activity. This may require changing the activity or providing training.

Social Empowerment

Facilitators should strive to provide all participants the same opportunities throughout the project experience. Some, such as people with disability, elderly or women, might traditionally find themselves left out of such processes. Facilitators must ensure opportunities for all to demonstrate their skills and empower them to contribute, and lead aspects of the project. This may mean that they do not do something for a participant, but instead spend time working with them to complete a task.

Participatory Design Stages

The design process stages are used to guide the project as it progresses through identification of a problem/opportunity, development of potential solutions, testing and selection of a final solution and implementation. This handbook will utilize four stage 'making' framework, developed by Sanders & Stappers (2014). It will also use a design capacity building stage at the beginning of the project.

Creative Capacity Building (page 9)

This stage occurs before the start of the participatory design and focuses on introducing a range of design-related concepts to the participants. This stage centres on the presentation of the design process and small practice exercises to contextualize the process.

Pre Design (page 25)

The first stage in the participatory design process traditionally involves the use of activities which probe for information and insights about the user, their environment and potential problems to address. The goal of this stage is to collaboratively formulate the opportunities which the project will address, to ensure buy-in from the involved community and to gain insights to help inform the rest of the project.

Generative Design (page 37)

The second stage of the participatory design process is focused on generating concepts that address the opportunities identified in the pre-design stage. This can be done through investigating existing solutions, both locally and internationally, understanding participant aspirations and working with participants to generate ideas, create small prototypes to experiment and combine ideas to form new more detailed concepts.

Evaluative Design (page 45)

The third stage of the participatory design process is focused on testing ideas, getting feedback about prototypes and selecting the concepts that seem to best meet the needs of the community. This can be done through co-constructive prototyping, testing and evaluation.

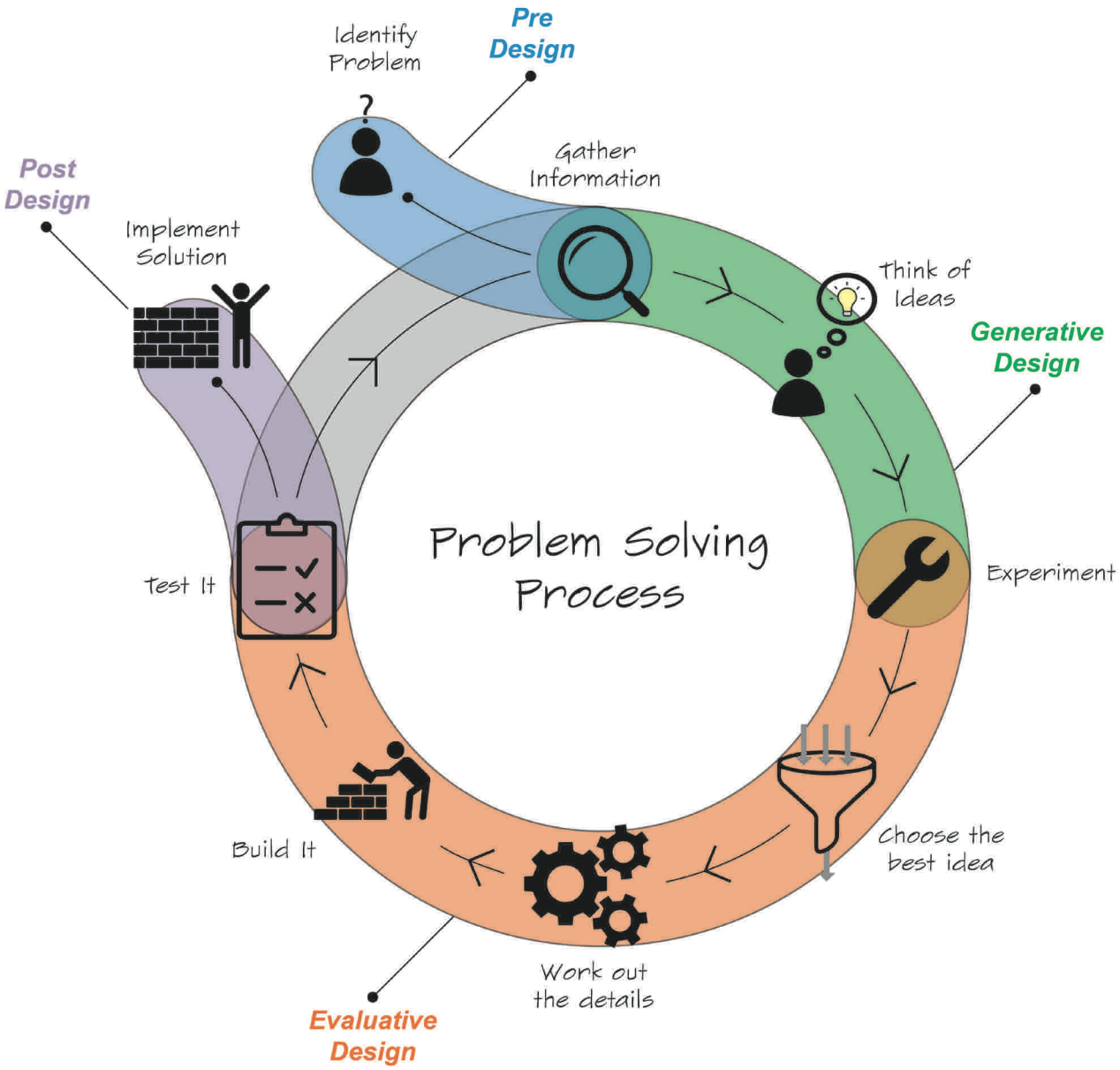
Post Design (page 53)

The final stage of the participatory design process is focused on implementation of developed solutions, support and fine-tuning after implementation and monitoring of long-term adoption and effectiveness. Post-design is not a focus of this handbook.

The Design Process

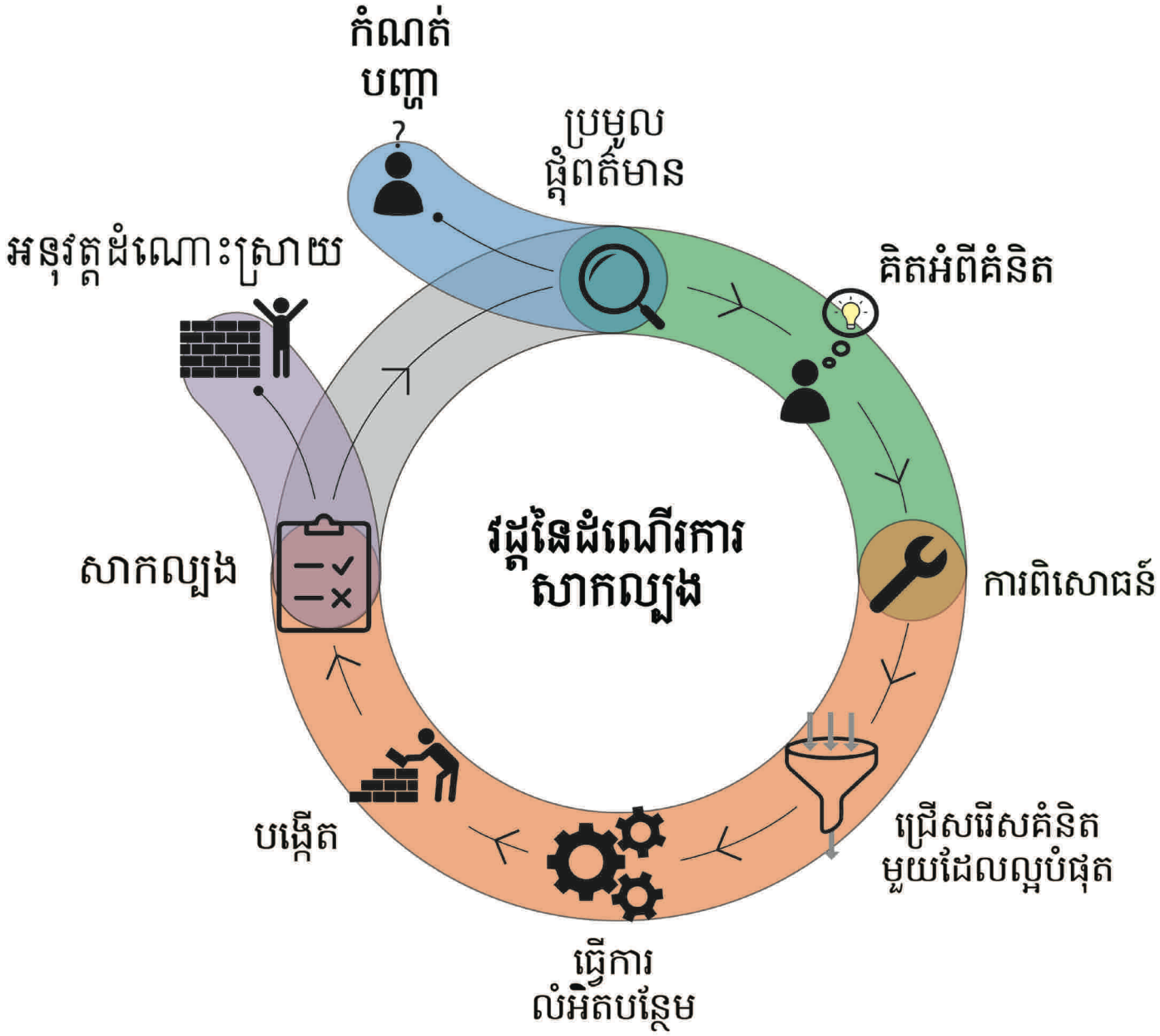
A more descriptive design process will be used for communicating progress to the participants. This process is adapted from Taha (2011) and the 'Creative Capacity Building' work undertaken in Uganda. The design process, along with the participatory design stages are shown on the following page.

Design Process - Participatory Design Diagram



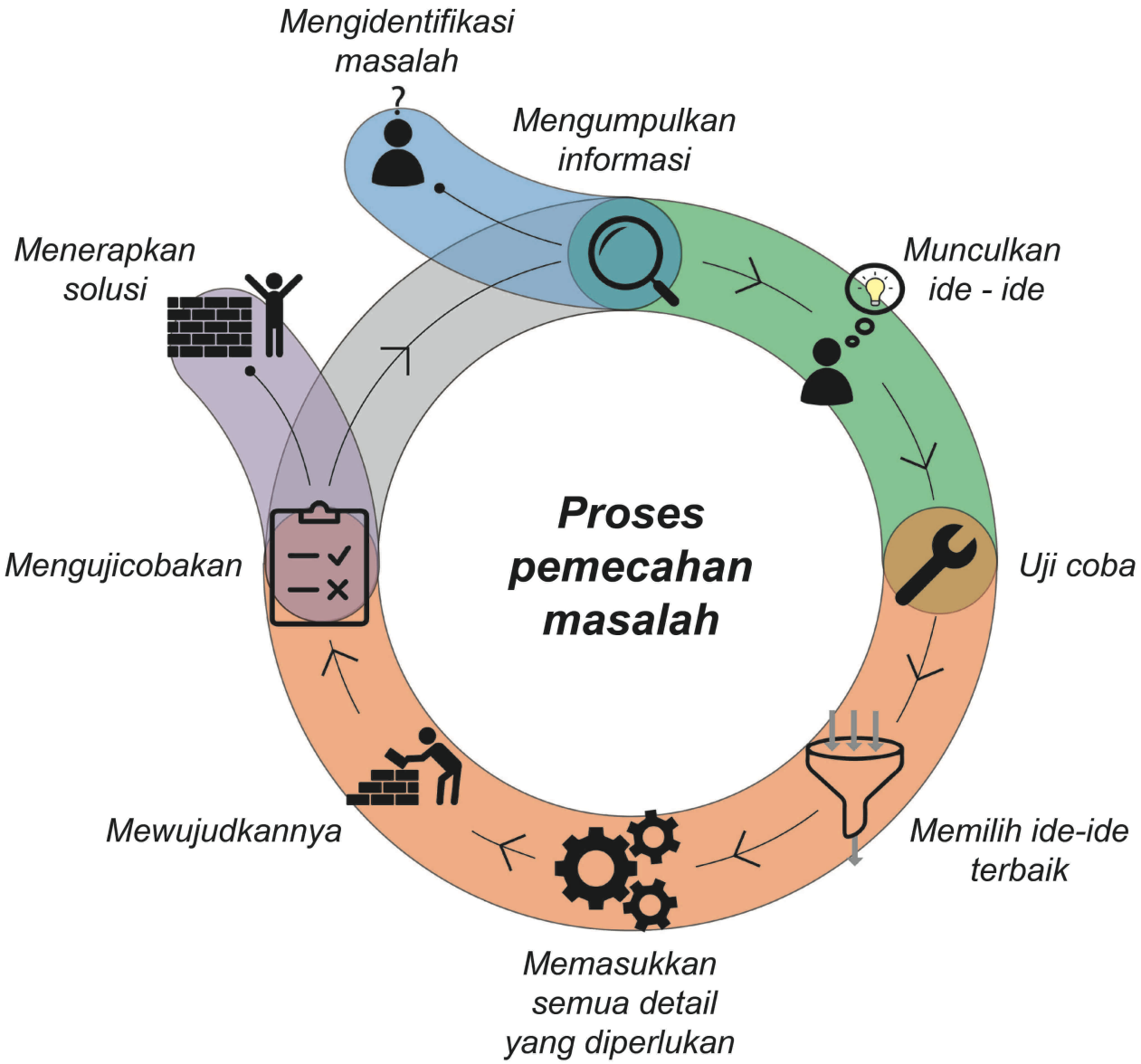
Modified version of the 'Making' Framework (Sanders & Stappers, 2014) and the Creative Capacity Building Design Process (Taha, 2011)

Design Process - Participatory Design Diagram - KHMER



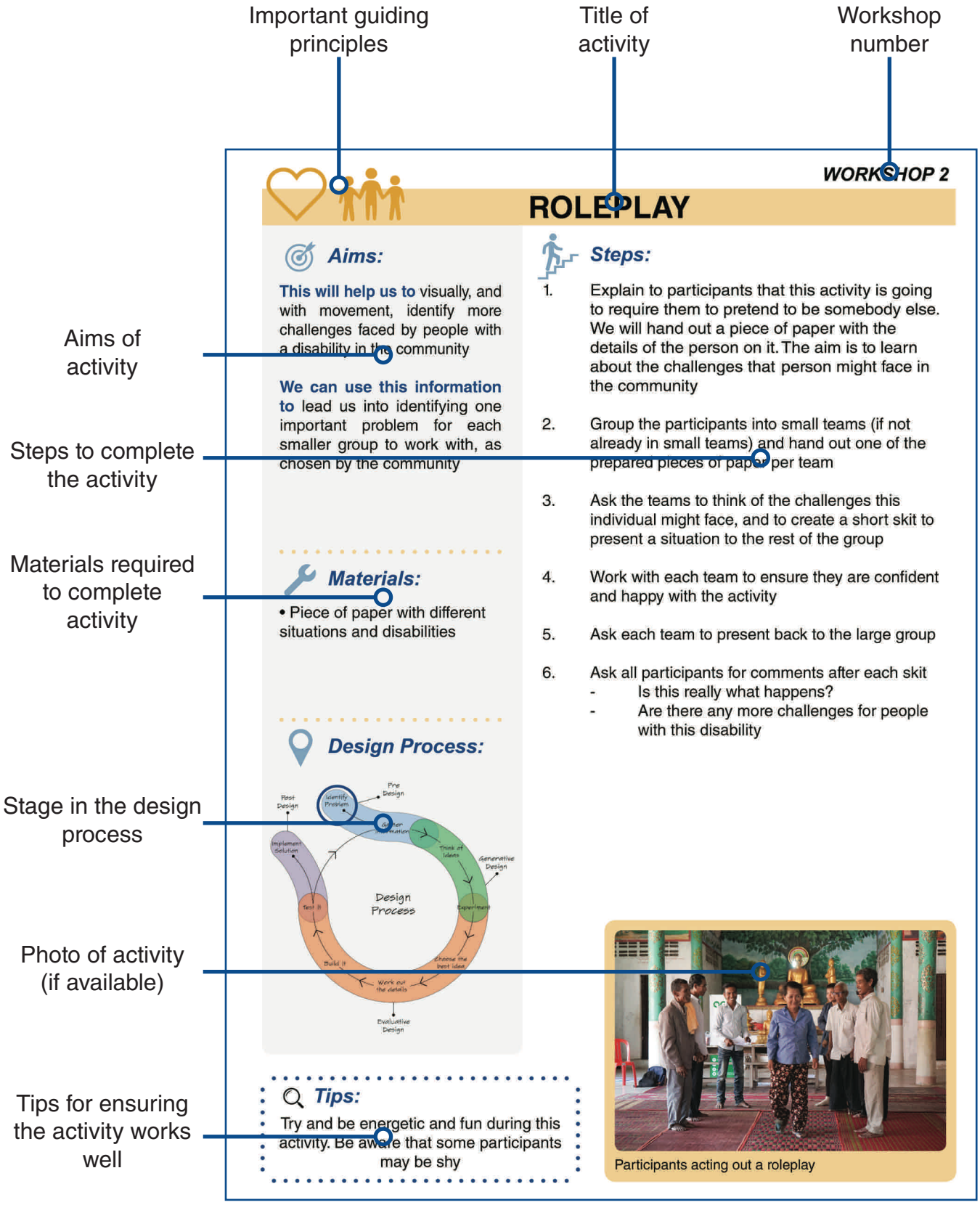
Modified version of the Creative Capacity Building Design Process (Taha, 2011)

Design Process - Participatory Design Diagram - INDONESIA



Modified version of the Creative Capacity Building Design Process (Taha, 2011)

Explanation of Activity Page Layout



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Creative Capacity Building

This section will provide an overview of the Creative Capacity Building session and required teaching plans

SESSION 1 - WHAT IS DESIGN?

Aims:

Build relationship with community, present overall project plan, introduce the concept of 'design' & connect 'design' to community practices

Materials:

- Poster of schedule
- Pens and paper for participants to take notes
- Item for 'what is this' activity

Steps:

1. Greetings and welcome (allow all participants to introduce themselves if appropriate)

2. Introduction to the full design project. Highlight the overall objectives, the workshops required for the project and role of creative capacity building. Ensure the timeframe is understood and expectations are well managed
   - *This project aims to work with you to design new, easier ways of growing and harvesting vegetables. We hope that we can help you by teaching you about the problem solving process and then work with you as we go through the process and make new solutions which will help you meet your goals*
3. Introduce icebreaker activity
   - *Before we get started we would like to get to know you and to introduce ourselves to you. Let us go around the group and introduce our name and where we are from.*
   - *Facilitators introduce themselves first*

4. Introduce the 'what is this?' activity
   - *In order to create new solutions for you we will all need to be creative and think about things in many different ways. To practice this we are going to play a game called 'what is this?'. I will pass this item around the group and each person will need to think of a new use for the item. The use can be serious or silly, it is up to you.*
   - *Facilitators discuss their uses first*
   - *Facilitator explains the actual use of the product*

5. Begin discussion about 'what is design'. If no answer then ask one of the following:
   - *Has anyone heard of the term design before? What do you think it means?*
   - *Design is essentially the process of identifying problems and creating solutions, for example:*
     - *Have you ever made a tool to use on the farm*
     - *What is your most important tool and why?*
     - *Have you ever fixed anything before?*
     - *Have you ever thought that something could be done better?*
   - *The important concept was the idea of 'identifying a problem' and 'trying to solve it'.*

SESSION 1 - WHAT IS DESIGN?

Steps:

6. Explain that when you have lots of problems you need to use a process to solve them quickly and effectively, this is the problem solving process!
   - *When you have one problem and you know the answer sometimes you can just come up with a solution straight away. However, most of the time there will be many problems and many solutions to choose from. To help you with this you can use a process called the problem solving process. This is a set of steps that you can follow each time you start a project. We will cover this in detail in the next session along with an example of how to use the process.*

7. Present two examples of design from other contexts
   - *Water Wheel*
     - *Problem: It is hard to carry water over long distances*
     - *Solution: A rolling water tank with a handle*
   - *Building Ramp*
     - *Problem: It is hard for wheelchair users to climb up stairs*
     - *Solution: A ramp that allows wheelchair users to enter the building*

8. Close the session and outline the next session which will provide a detailed example of the problem solving process from the stage 'identify problem' to 'choose the best idea'.
   - *Thank you for attending this session. We have 3 more sessions before we begin the main project. The hope is that we can all learn about each other and about the problem solving process and then use it help solve some of your problems*

Teaching Notes:

- Make sure people are committed to attend all five of the workshops and understand the length of the project. There will be a gap between each workshop
- Try to generate as much discussion as possible in this session. Do not rush through the questions

SESSION 2 - THE PROCESS

Aims:

This will help us to introduce the problem solving process and allow the participants to practice a small example project

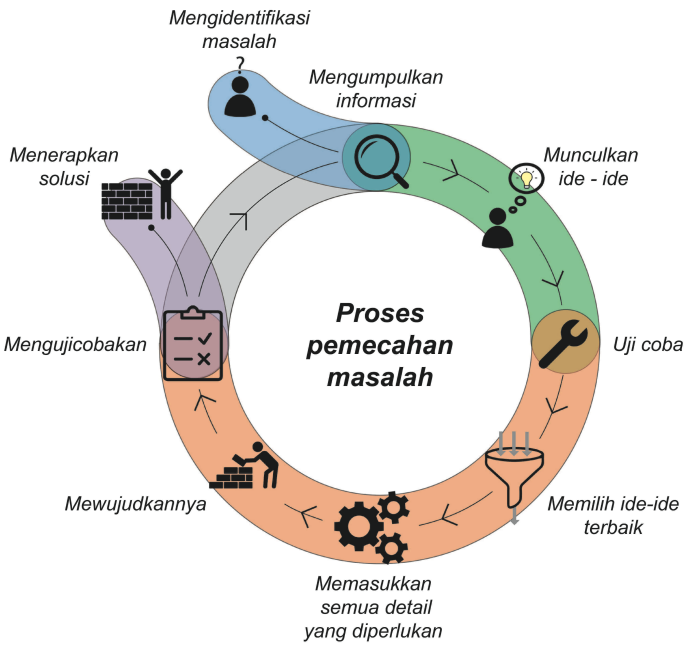
Materials:

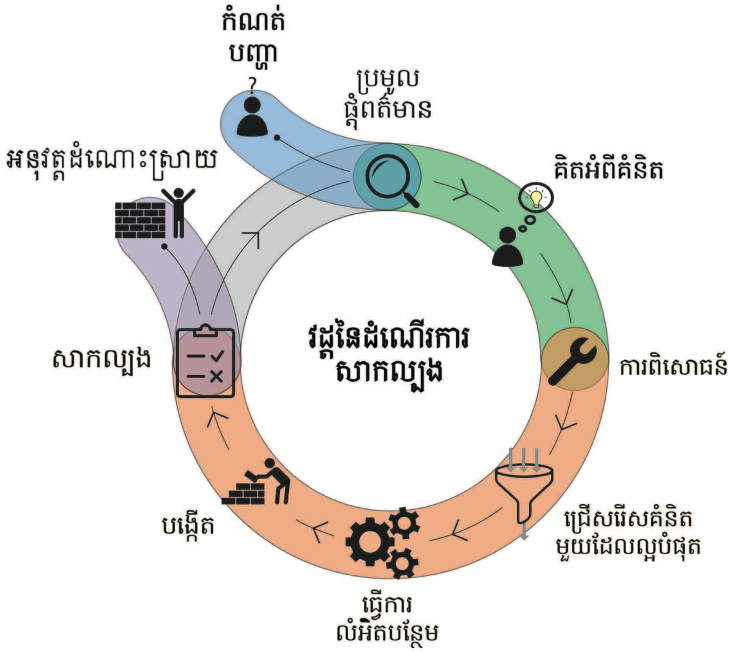
- Poster of problem solving process
- Paper (approximately 12 sheets per group; 10 white, 2 coloured)
- Pens
- Lots of bananas or equivalent

Steps:

1. Greet participants and explain the purpose of this session
   - *The purpose of this session is to introduce you all to the problem solving process. This is a number of steps you should follow to try and find the best solution for a problem you have. It is made up of steps and sometimes you need to go through the process more than once. The reason we use the process is to help remind us what we should do next so we don't miss anything.*

2. Introduce each stage of the problem solving process using poster
   - *Identify problem, gather information, think of ideas to solve problem, experiment, choose the best idea, work out the details, build it, test it, get feedback and repeat*





3. Start by introducing the 'Identify Problem' stage
   - *At the beginning of the process you will need to find a problem you want to solve. You should look for lots of problems and then decide as a group which problem is the best to solve first. This should be based on your ability to solve the problem and the impact that the solution will have on the community*

SESSION 2 - THE PROCESS

Steps:

4. ‘Gather information’
   - *Next you will need to gather information about your problem. This information will help to make your solutions more effective and more likely to succeed. You should ask questions like:*
     - *How long has this problem been happening?*
     - *Are there any current solutions? If so, why aren’t they working?*
     - *Who has to deal with the problem at the moment?*
     - *When does the problem occur? (yearly, monthly, daily?)*
     - *Why does the problem happen?*

5. ‘Think of ideas’
   - *Once you have gathered information, you will need to come up with lots of ideas that could solve the problem. It can help to look at what has already been done in other places or at similar types of solution in your village that could be helpful. You should talk about ideas, write them down and draw them so you can record all the ideas you think of.*

6. ‘Experiment’
   - *Once you have lots of ideas you should choose the best few ideas to make. You should choose the ideas by discussing exactly what the solution needs to do and what will be easiest to make and implement. Do not choose too many ideas, usually 3 ideas will be enough. You should then try and make prototypes of the ideas and test them out. You can use this time to make changes to the ideas and learn more about whether they will work or if something needs to be changed.*

7. ‘Choose the best idea’
   - *Next, you should use the testing you have done to decide which idea is the best one. To do this you should discussion the good and bad parts of each idea and how the idea will benefit the community. Think about how expensive each idea will be to make and how long it will last for. Also, think about how safe the idea is and whether it could hurt someone accidentally.*

Left - Participants planning their designs,

Right - Participants experimenting with different ideas

SESSION 2 - THE PROCESS

Steps:

8. 'Work out the details'
   - *Now you have the final idea chosen you will need to decide on all the details. How big does it need to be? What should it be made from? Who will make it? How heavy should it be? How fast should it work? Does it need to be maintained? How expensive can it be? You should think carefully and make any changes needed. You can try and make some more prototypes or drawings if needed.*

9. 'Build it'
   - *You will now need to build the final design, based on the idea you came up with and the details you have decided on. You may be able to make this yourself out of materials in the community, or you may need to ask someone to make it for you.*

10. 'Test it'
    - *If you have not tested the idea at all you should now try and test it out. This could be testing small parts of the solution or trialling the whole solution with one person before implementing it in the community. There will definitely be things that can be improved! Try and use it in as many ways as possible like with different users, in different weather conditions, at different times of day and for long and short periods of time. If it is not perfect that is okay, you can make changes in the future.*

11. Start again!
    - *Now it is time to use the information gathered from testing to improve the solution. You should ask the questions: what worked well during testing? What did not work well? What could be improved? By going through this process many times you can create great solutions to problems and improve your community in the ways you want to.*

12. Implement Solution
    - *Once you have been through the process a few times and believe your solution is as good as it can be you will now need to implement the solution into the community. This will involve working with other people to build a full sized version of your solution.*

13. Introduce example activity (Banana Boost)
    - *To learn about this process, we will work in small teams to solve a problem*
    - *The problem is that in some communities there is flooding during wet seasons. This can make your vegetables wet and go bad. To avoid this, you need to find a way to raise your food 10cm off the ground; that is the height of this pen.*
    - *To solve this problem, you will work in teams to make a small platform to hold bananas off the ground. The platform will be made out of paper and will need to hold as many bananas as possible 10cm off the ground. You will have time to think of ideas, experiment using paper and then decide on your best idea. You are only allowed to use 1 piece of paper per design, but you can cut it into smaller pieces if needed. Try to hold as many bananas as you can!*

SESSION 2 - THE PROCESS

Steps:

14. Instructions:
    - *Recall the problem solving process, the starting point is to identify a problem. In this example it is that floodwater is destroying your food. To stop this the food needs to be raised to 10cm off the ground*
    - *Start by thinking of ideas. You can talk about ideas or even draw them on the paper*
    - *Next, you have 10 sheets of paper to practice and experiment with; think of as many different ideas as you can and try some of them out*
    - *As a group, look at the different ideas you have come up with and choose the best one. Discuss how you will build it*
    - *Then we will give you more paper (possibly coloured to differentiate it from the practice sheets) and you will build your device*
    - *Time to test!*
    - *You can then discuss what could be improved and make one more version of your design*

15. Give each team ten sheets of paper and allow them to brainstorm ideas (10 minutes)

16. Next allow teams to choose a few of their favourite designs and start experimenting by creating prototypes and testing them (10 minutes)

17. Call the group together and tell them to choose their best idea and make it out of the coloured paper (10 minutes)

18. Call the teams together to present their design. See which design can hold the most food

19. Comment on what was good about the designs, and what could be improved. Generate discussion around why one design worked better than the other

Participants presenting their final ideas and testing how many bananas they could hold

SESSION 2 - THE PROCESS

Steps:

20. Review the problem solving process and how it was used in this activity
    - *Highlight that we went through:*
        - *Identify the problem – Flood water spoiling your food*
        - *Gather information – We knew that raising the food 10cm off the ground would solve the problem*
        - *Think of ideas – We thought of lots of different ideas, some worked and some didn't*
        - *Experiment – We made little models out of paper to test our ideas and change them to be better*
        - *Choose the best idea – We decided on our best idea as a team*

21. Highlight the importance of three steps:
    - *Coming up with many ideas*
    - *Experimenting and choosing the best idea*
    - *Going through the cycle many times*

22. Present the examples of full-sized structures that are similar to what they have created
    - *Food storage in North America – raised to stop animals from eating the food*
    - *Grain storage in Africa – raised to stop animals and water*

23. Ask if there are any questions

24. Ask some reflective questions
    - *How did you find this session? Was it enjoyable?*
    - *What did you learn? Is anything confusing?*

25. Introduce next session – small scale design exercise

Teaching Notes:

- Do not rush through the stages; allow as much open discussion as possible
- Try and have fun testing each design at the end of the session

SESSION 3 - SMALL SCALE DESIGN

Aims:

Practice working together, practice the generative stages of the problem solving process, show the value of prototyping, testing and iteration

Materials:

- Poster of problem solving process
- Pens and paper
- Example material (photos of problem or sketches)
- Prototyping materials (for mango picker)
- Lots of bananas or equivalent

Steps:

1. Greet participants and explain the purpose of this session
   - *To start with let's think about the stages of the problem solving process:*
     - *Can you remember what we covered in the last session?*
     - *Can you remember any of the steps of the problem solving process?*
     - *Why is it important to come up with more than one idea?*
     - *Why is it important to make prototypes to test your ideas?*
     - *Why is it important to go through the process multiple times?*

2. Recap previous session – generate discussion about the stages used
   - *Identify problem*
   - *Gather information*
   - *Come up with ideas*
   - *Experiment*
   - *Choose the best idea*
   - *Work out the details*
   - *Build it*
   - *Test it*
   - *Implementation of solution*

3. Introduce the small scale design exercise - (Mango Picker)
   - *To help you understand the process we will now work on a new design project*
   - *The project will focus on something you can use in your community*

4. 'Identify Problem'
   - *Generate Discussion: What is the problem with getting mangos off the tree?*
   - *It is hard because the mangos can be high up in the tree. This means it can be difficult and slow to get them down.*
   - *The problem is 'It is difficult to get mangos off the tree'*

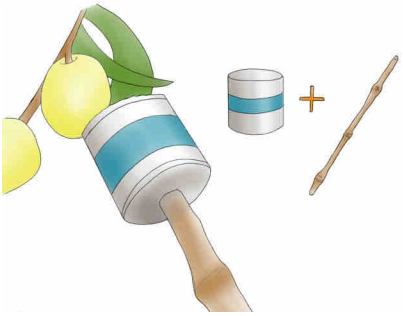
5. 'Gather information'
   - *What information do you think you should learn?*
     - *Size of tree*
     - *Size of mango*
     - *Number of mangos needed each day*
     - *Location of trees*

6. 'Think of ideas'
   - *Can you think of any ways of getting the mangoes out of the tree?*
   - *Have you used any tools to help get the mangos?*

SESSION 3 - SMALL SCALE DESIGN

Steps:

- *Ask participants to form groups of around 5 people*
- *Ask them to talk and try and think of ideas for getting mangoes out of trees*
- *Show each of the ideas on the cards and explain each one briefly*



Participants generating ideas in small groups

SESSION 3 - SMALL SCALE DESIGN

Steps:

7. Explain that the group now needs to select their best two ideas for prototyping and testing
   - *The selection of these ideas can be done through group discussion*

8. 'Experiment'
   - *Get each group to build their two prototypes*
   - *Get each group to try each of their two prototypes and give feedback. If possible, use a mango tree to test the ideas. Otherwise just ask participants to pretend to use it. Allow participants to modify their design if they would like to*

9. 'Choose the best idea'
   - *As a large group, generate a discussion about which prototype is the best*
     - *Which one is the easiest to use?*
     - *Which one would be the easiest to make?*
     - *Which one will last the longest?*
     - *Which one is the fastest to use?*
     - *Which one is the safest?*
     - *Which one should be chosen?*
   - *Ask the participants to decide which prototype will be chosen for the next activity*
   - *Explain that in the next session we will be developing the best idea through the 'work out the details' stage*

10. Highlight the importance of two steps:
    - *Coming up with many ideas*
    - *Experimenting and choosing the best idea*

11. Ask if there are any questions

12. Ask some reflective questions
    - *How did you find this session? Was it enjoyable?*
    - *What did you learn? Is anything confusing?*

A range of participants testing the designs to ensure they are usable by everyone

SESSION 3 - SMALL SCALE DESIGN

Steps:

13. Introduce next session – Work out the details (mango picker)

Teaching Notes:

- Try and spread out the teams to ensure they do not copy each other
- Be flexible with timing and allow teams more time if needed. Teams may also naturally transition from idea brainstorming to experimentation
- Some teams will struggle to write down their ideas, be aware that this may be due to poor writing skills, and not a lack of creativity. Allow teams to prototype whenever they are ready

Left - Participants testing their designs

Right - Participants modifying their designs based on feedback

SESSION 4 - WORK OUT THE DETAILS

Aims:

Practice working together, practice the evaluative stages of the design process, show the process of working out the final details for a solution

Materials:

- Poster of design process
- Pen and paper
- Prototypes from Session 3

Steps:

1. Greet participants and explain the purpose of this session
   - *The purpose of this session is to think about the idea we chose in the last session, for picking mangoes, and try and improve the idea so we can make it better and can implement it in the community*
   - *In this session we will discuss the problem, the idea we chose and how we can improve it and implement it*
   - *This is a practice activity, so we can learn about implementing ideas. We will implement ideas during the main projects*

2. Recap previous session – generate discussion about the stages used
   - *To start with let's think about the stages of the design process:*
     - *Can you remember what we did in the last session?*
     - *Can you remember any of the steps of the design process?*
     - *Why is it important to come up with more than one idea?*
     - *Why is it important to make prototypes to test your ideas?*
     - *Why is it important to go through the process multiple times?*

3. 'Work out the details'
   - *Now that the final idea is chosen we will need to work out the details so that it can be improved and will work well when we build it. Generate discussion about:*
     - *What parts of the idea need to be improved? Write these down*
   - *After participants have discussed, ask the following questions:*
     - *How long should the pole be? How can we figure it out?*
     - *How large should the basket be? How can we figure it out?*
     - *What should the pole be made from? What should the basket be made from?*
     - *How should we join the pole and the basket?*
   - *Now we need to create a plan so we can build the final product. To do this we need to know what materials are available and what skills we have to work with.*
   - *Ask participants to get back into their groups and answer the following questions:*
   - *What materials do you think you can find locally, that could be used to make the mango picker?*
     - *Are they cheap enough to use?*
     - *Are they strong enough to use?*
     - *Are they light enough to use?*

SESSION 4 - WORK OUT THE DETAILS

Steps:

- *What skills do we have in the group that could be used to make the mango picker?*
  - *Are there some skills we need but do not have?*
  - *Can someone nearby help us to do this?*
  - *Do we need to be trained to do something?*
- *What steps should we go through to build the mango picker?*
  - *What should be made first?*
  - *How will each piece be joined together?*

4. 'Build it'
   - *In the problem-solving process we would now build the final product using your ideas. However, as we are just practicing now we won't build the product now*

5. 'Test it'
   - *In the problem-solving process we would now test the final product to ensure it works properly and everyone is happy. However, as we are just practicing now we won't test the product now*

6. 'Implement solution'
   - *In the problem-solving process we would now implement the product into the community. To do this we need to create a plan for exactly how we will implement the mango picker. For example, who will build it, who will pay for it, who will fix it if it is broken, who will collect feedback, so we can improve the design*
   - *To do this, we use a document called an Implementation Map. This document requires us to think about the following information*
     - *What improvements still need to be made*
     - *What steps will you go through to implement in your community*
     - *After 1 month, what will you have done and what support do you need from the NGO*
     - *After 6 months, what will you have done and what support do you need from the NGO*
   - *Together, lets try to complete an Implementation Map for the mango picker*

7. Complete Implementation Map as a large group (page X)
   - *Show example Implementation Map if needed*

8. Explain that it is important to go through the process again and again to continue to improve
   - *Once you have completed the cycle you will have a solution that might work well. Even if it works well it is important to think about how it could be improved in the future. That could be through using it for a while and recording any problems you have had. Or running some testing to see if it works as well as a previous design you have used. This is how your communities can get better and better at creating technology by yourselves*

SESSION 4 - WORK OUT THE DETAILS

Steps:

9. Discuss schedule for next visit

10. Recap the design process:
    - *Identify problem*
    - *Gather information*
    - *Come up with ideas*
    - *Experiment*
    - *Choose the best idea*
    - *Work out the details*
    - *Build it*
    - *Test it*

11. Thanks and farewells

Teaching Notes:

- This session may take more than one hour due to the amount of group discussion planned. Be flexible to the needs of each group and allow more time if needed
- If it is possible to build the final design then this can be done. However, if it is not possible then this is okay as it is not the priority of the session.
- It is useful to also discuss inclusion; e.g. who will be able to use the product? Will anyone be excluded? Has accessibility been thought about?

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Pre Design

This section will provide an overview of the Pre-design stage of the project and all associated activities

GROUP DISCUSSION

Aims:

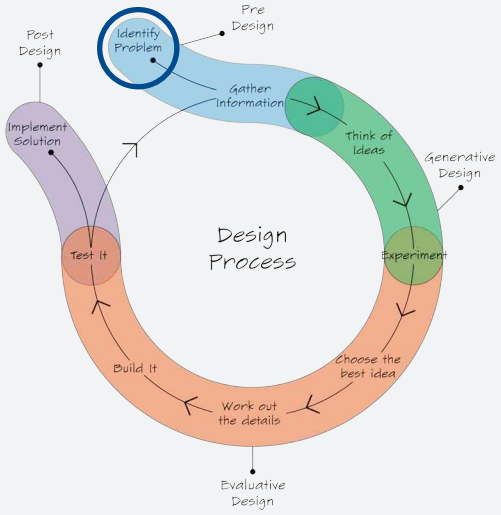
This will help us to learn about specific challenges faced by the participants and how many people experience the same challenges

We can use this information to lead us into identifying one important problem for each smaller group to work with, as chosen by the community

Materials:

- Paper
- Pen or pencil

Design Process:



Steps:

1. Explain to the group that we are here to identify challenges that the community has performing agricultural tasks and try to find solutions to these challenges. To help with this we want to have a discussion, and write down all of the challenges the participants face

2. Ask the whole group to say the challenges they face and write them down. Give plenty of time for this as the participants may be shy to begin with

3. Divide the large group up into smaller teams and continue this discussion, writing down any challenges that are identified

4. Next, focus the discussion around agriculture in the community.
   - *From the beginning of starting a field, think about all the jobs you have to do; some might be once a day, some once a year. Can you think of any challenges associated with these jobs?*

5. Explain to the group that we will now move onto another activity, but will return to this list at the end of the workshop to try and identify the particular challenges we will focus on for the project

Tips:

Include all participants in the discussion by directing questions to quiet people and checking that everyone can hear

Group discussion about community challenges

ROLEPLAY

Aims:

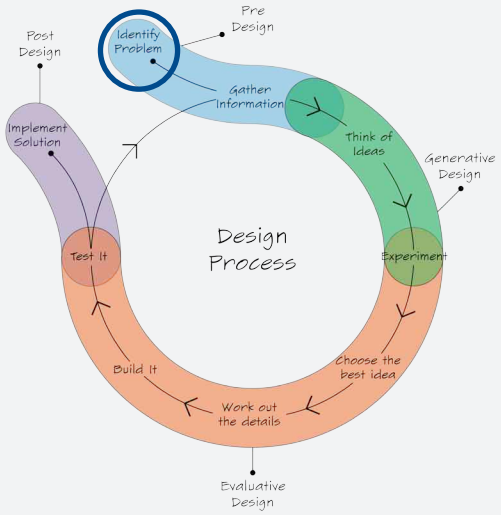
This will help us to visually, and with movement, identify more challenges faced by people with a disability in the community

We can use this information to lead us into identifying one important problem for each smaller group to work with, as chosen by the community

Materials:

• Piece of paper with different situations and disabilities

Design Process:



Steps:

1. Explain to participants that this activity is going to require them to pretend to be somebody else. We will hand out a piece of paper with the details of the person on it. The aim is to learn about the challenges that person might face in the community

2. Group the participants into small teams (if not already in small teams) and hand out one of the prepared pieces of paper per team

3. Ask the teams to think of the challenges this individual might face, and to create a short skit to present a situation to the rest of the group

4. Work with each team to ensure they are confident and happy with the activity

5. Ask each team to present back to the large group

6. Ask all participants for comments after each skit
   - Is this really what happens?
   - Are there any more challenges for people with this disability

7. Add any new challenges to the group list of challenges/opportunities

Tips:

Try and be energetic and fun during this activity. Be aware that some participants may be shy

Participants acting out a roleplay

RESOURCE FLOW

Aims:

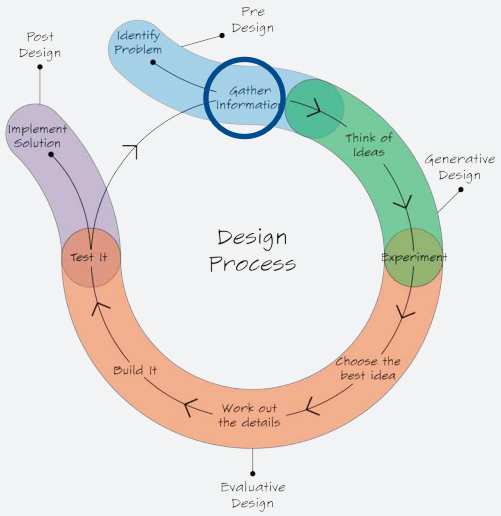
This will help us to learn about the ways the community spend and make money

We can use this information to understand any expenses or income that people may have; as a part of gathering information about the problem. This may impact an ability to invest in a solution

Materials:

- Resource Flow template
- Pen or pencil

Design Process:



Steps:

1. Explain that the aim of the activity is to identify all of the things that earn money for your family and all of the things that you have to spend money on

2. Ask the group to list all of the things that earn money for their family. This could include selling vegetables or animals, or other work they do, or government and NGO grants or something else

3. Ask the group to list all of the things that they need to spend money on. This could include school fees, transportation, medical bills, farming equipment, labour or something else

4. Ask the group if these things happen all the time or only at certain times of the year. Use the Calendars and Daily Activities templates to remind participants of the things they do during the year

Tips:

Use the daily activities template as a reference if participants need some guidance

Example of completed activity

RESOURCE FLOW

How does your family make money?

What do you spend money on?

DAILY ACTIVITIES

Aims:

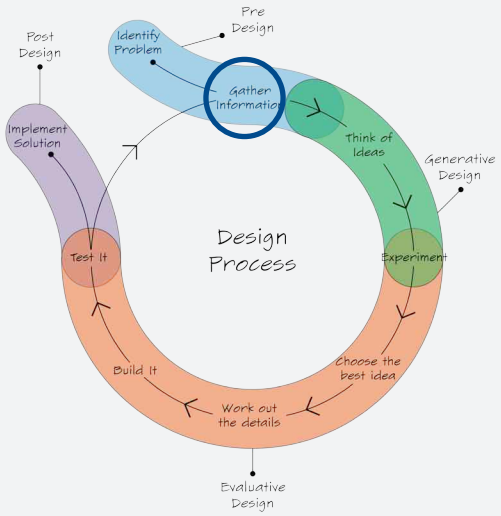
This will help us to understand more about the participants as well as similarities and differences in how they spend their time. This might lead to groups identifying more challenges

We can use this information to develop a deeper understanding of the participants challenges and lead us into identifying one important problem for each group to focus on

Materials:

- Daily Activities template
- Pen or pencil

Design Process:



Steps:

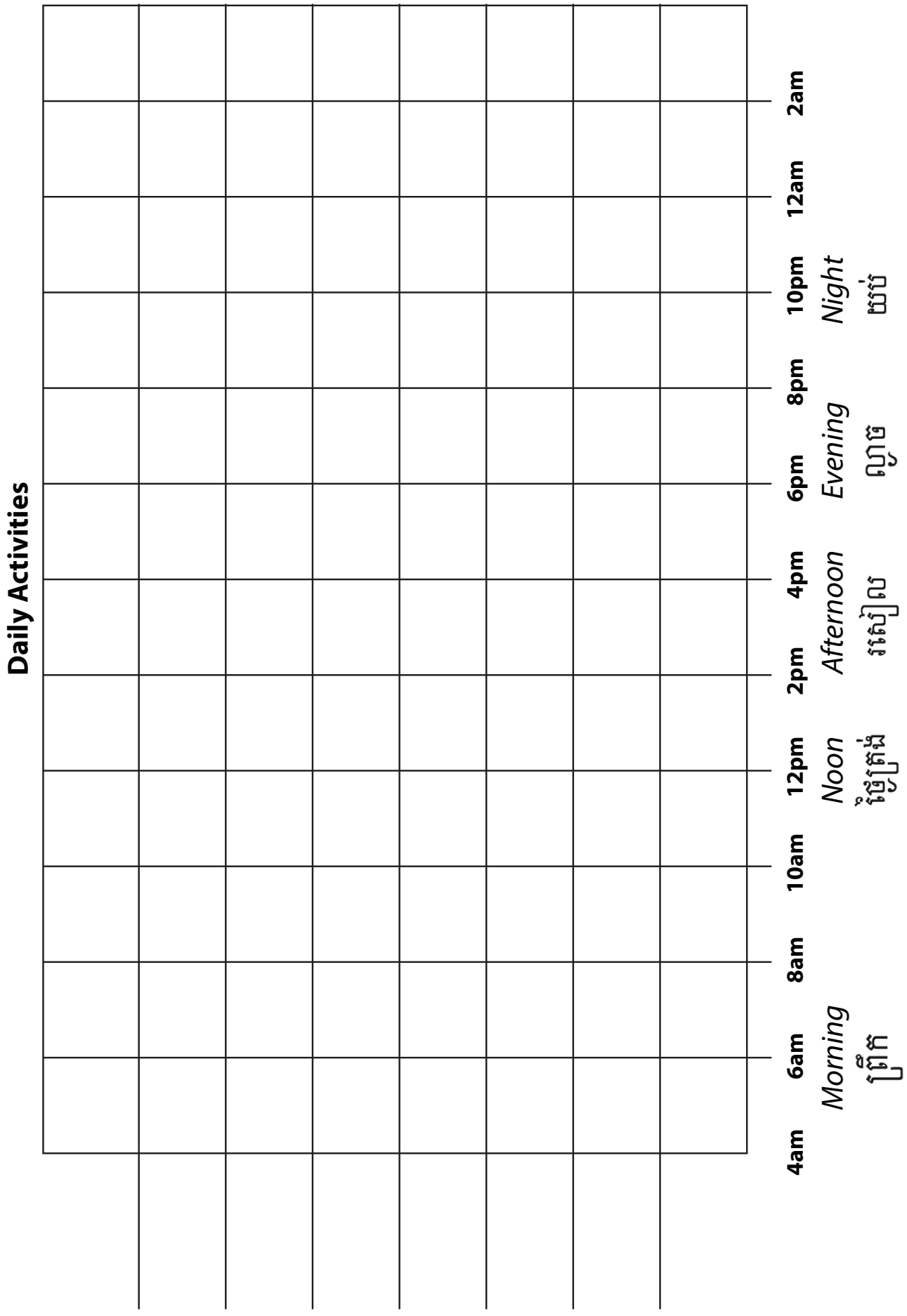
1. Show participants the daily activities template and ask them to think about a typical day in their life
2. Start from when they wake up in the morning and document all the events and activities that occur throughout that day.
3. If there are different daily schedules at different times of the week/year (such as weekends, holidays or wet season) complete multiple templates. Start with the current schedule
4. Ask participants if they think any particular activities, or parts of the day would be different for able people, or for people with different disabilities
5. Explain we will use this information to try and identify more challenges at the end of the workshop. We will also try to identify challenges that multiple people have because they share the same schedules
6. Add any new challenges to the group list of challenges/opportunities

Tips:

Focus the activity on identifying the differences and similarities between different daily schedules

Participants working in groups to complete activity

DAILY ACTIVITIES



REVISIT CHALLENGES

Aims:

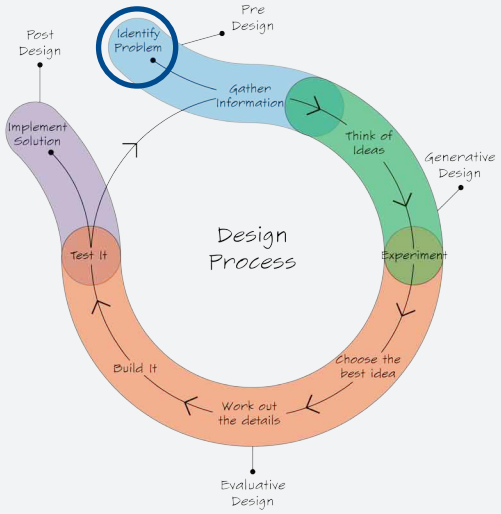
This will help us to add to our list of specific challenges faced by the participants from previous activities

We can use this information to finalise the total list of challenges. This list will be used to find the most important challenges for participants

Materials:

- Paper
- Pen or pencil

Design Process:



Steps:

1. Explain to the group that we now want to revisit the list of challenges from the beginning of the workshop and add more if possible
   - *Use the sentence "we find it difficult to do _____ (action/activity) at _____ (location)"*

2. Use the Calendars, Daily Activities, Resource Flow and Asset Mapping templates for inspiration and try to probe in areas you think may create insights

3. Allow the discussion to continue for as long as possible. Some participants may be thinking slowly or too shy to talk at first

4. Explain to the group that we will now move onto another activity, in which we will select the challenge we want to focus our project on.
   - *Each of the small teams will select a project and then participants will be allowed to pick the project they think is the most helpful to them*

Tips:

This is similar to group discussion about challenges but aims to build upon the list of challenges and identify more

Small group discussions about challenges

GUIDED TOUR

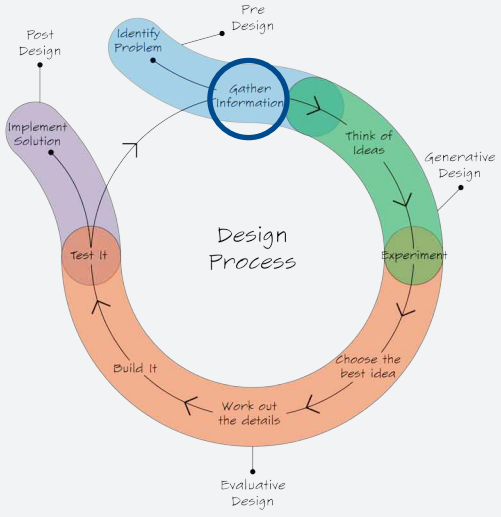
Aims:

This will help us to ensure that we fully understand the challenges being suggested by the participants

We can use this information to begin to compare severity and importance of challenges faced, leading to identifying an important problem for each group

Materials:

Design Process:



Steps:

1. Ask the participants if it is possible to travel to one of their houses or farms.
   - *This may need to be planned in advance or scheduled for the end of the day*
   - *If multiple people recommend their house, decide whether it is possible to view more than one house*

2. Travel to the participant's house or farm. If appropriate, take several other participants with you.
   - *If possible, each small team could visit a separate house with a facilitator*

3. Ask the participant to take you on a tour of the property. Ask them to show you the following:
   - *Places where they do work*
   - *Places where they have problems*
   - *Places they really like*
   - *Places they think are important for the project*

4. Ask the other participants to think about the challenges that were already identified in the group discussion and to show you the details about each challenge

5. Use this new knowledge to add detail to the identified challenges, or add/remove challenges as required

Tips:

Use the tour to investigate problems already identified and try to find the underlying cause of the problem

Participant showing a facilitator how to prepare a field

SELECT PROJECT

Aims:

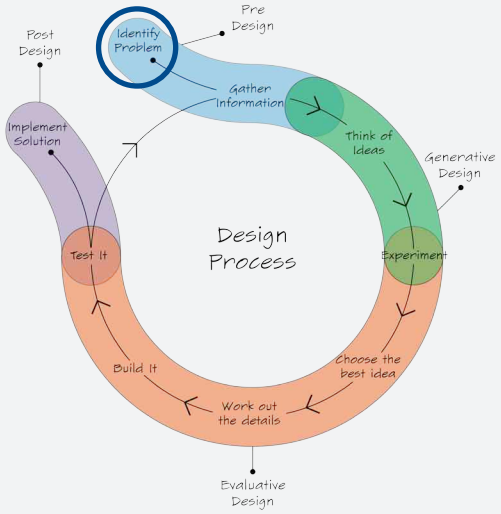
This will help us to Identify the Problem to be used in the Problem Solving Process

We can use this information to maintain the groups direction, and focus, as they move through the activities in the workshops

Materials:

- Paper
- Pen or pencil

Design Process:



Steps:

1. Explain to the group that we now need to select one challenge to try to address in this project.
   - *Each small group will select one challenge, they will then be presented to the participants at the next workshop and participants can choose which one they want to work on*
2. Ask the group if there are any challenges they believe are very important. Allow the group to discuss this openly, and place a tick next to any important challenges
3. Place ticks next to any challenges you believe are important as well
4. Allow the participants to have a break. In this time, review the list of important challenges and decide if any DO NOT align well with the capabilities of the partner organizations or aims of the project. Place crosses next to these challenges
5. Once the group has reformed, explain to them that they need to choose one of the remaining challenges to work on over the rest of the project. Allow open discussion and slowly remove challenges when the team decides they are not the most important
6. If no consensus can be met, consider the following options:
   - *Use a voting system, the challenge with the most votes is chosen*
   - *Select 2 challenges and create 2 separate teams*
   - *Rank the challenges from most important to least important*
   - *Allow the discussion to finish and begin*

Tips:

Check whether the problem applies to most people in the group and consider allowing people to change groups once the problems have all been identified. This ensures people remain engaged and the workshops remain relevant.

LOCAL ACTIVITIES

Aims:

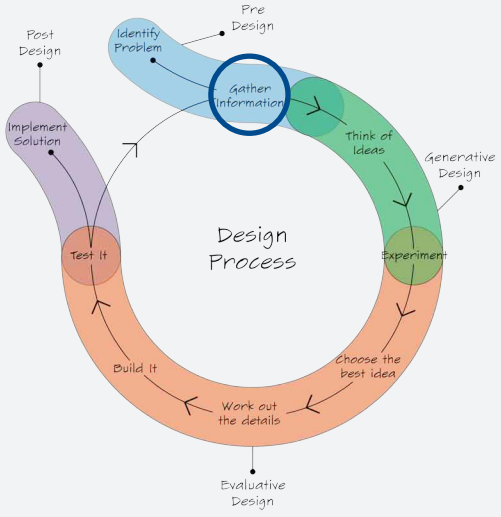
This will help us to understand how particular activities are undertaken in the community, in particular, any differences in the way that people in the group do the same activity

We can use this information to learn about the specific challenge and ensure the solution will suit all group members and address the problem

Materials:

- Paper
- Pen or pencil

Design Process:



Steps:

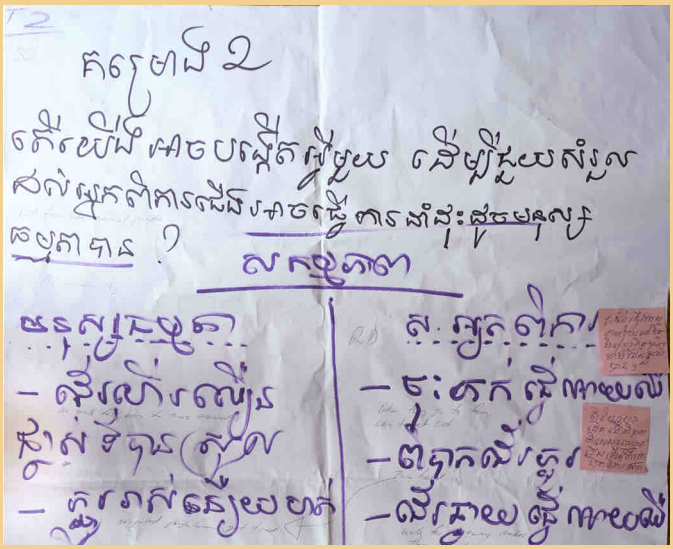
1. Explain to the group that this activity aims to learn about exactly how they do the activities can relate to the identified challenge and how the activities might be done differently by different people (e.g. able people and people with disability)
   - *For example, ploughing the field*

2. As a group, decide on a particular activity that is relevant to your project brief. If there are multiple important activities, complete this activity for each one

3. Ask the group to go through the chosen activity step by step, explaining how a particular person might complete it. Draw a line vertically down the middle of a piece of paper. Write these steps down in the left column (Person 1)

4. Ask the group to go through the chosen activity step by step, explaining how different people might complete it. Write these steps down in the right column
   - *If different people would result in different steps, write each type down and highlight the differences*

5. Ask the group to identify the differences between the people discussed and to explain why they think there is a difference



Example of local precedents worksheet

Tips:

If possible, go and watch the activity being performed, this will allow for much more detail to be observed

MATERIALS & CONSTRUCTION

Aims:

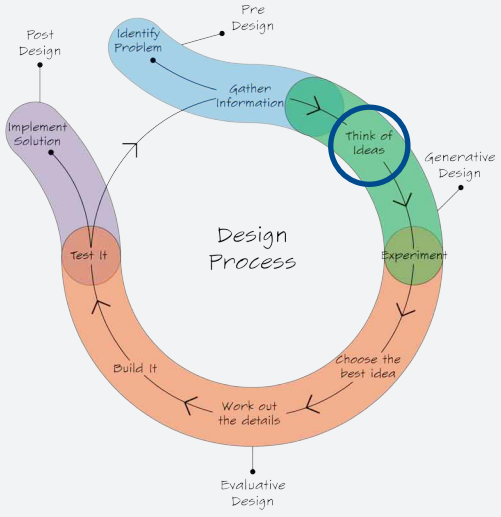
This will help us to understand what physical materials are available locally

We can use this information to guide idea generation and prototyping and ensure the final solutions are able to be made and maintained locally

Materials:

- Paper
- Pen or pencil
- Materials cards
- Post-it notes

Design Process:



Steps:

1. Explain to the group that this activity aims to learn about what materials are available locally and what they cannot get. This is important as we want to design a solution that the community can build and maintain by themselves

2. On a large piece of paper draw two vertical lines, to create three columns (see below). Write the titles 'I have this', 'I can get this', 'I cannot get this' in each of the columns

3. Go through each of the materials cards doing the following:
   - *Show card to the group*
   - *Ask the group to explain what it is, write this on the back of the card for clarity*
   - *Ask the group if they have it, can get it or cannot get it*
   - *Place the card in the appropriate column*
   - *If they have or can get it, ask how much it would cost*
   - *If they cannot get it, ask why not*

4. Once all cards are placed on the page, ask the group if they can think of any more materials that should be noted on the page. Write these on post-it notes and stick them in the appropriate column

Example of a completed Materials activity

Tips:

You can also write information on the back such as, a tally of how many people in the group have it

Generative Design

This section will provide an overview of the Generative Design stage and all associated design activities

BRAINSTORMING

Aims:

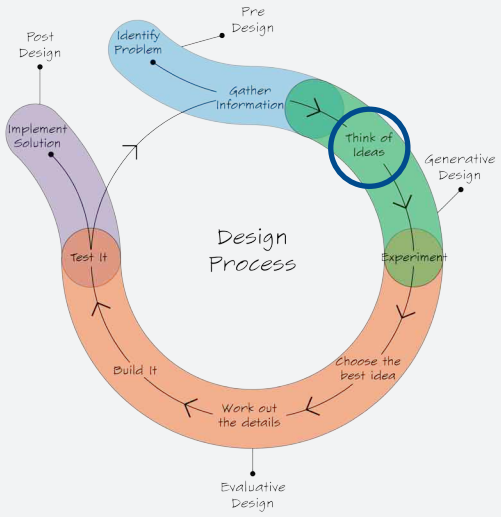
This will help us to think of a range of ideas that may solve the community challenge

We can use this information to make sure that we have looked at all the different possibilities leading to the best solution

Materials:

- Paper
- Pen or pencil

Design Process:



Steps:

1. Explain to the group that this activity aims to think of as many solutions as possible. We want to write down lots of ways of solving the problem, not just one way. This will allow us to discuss, make and test a few ideas and then select the best one

2. Explain that the rules of this activity are:
   - *Do not criticism other peoples ideas, all ideas are good!*
   - *Try and think of really wild ideas as well as more realistic ones*
   - *Try to use someone else's idea and add to it*

3. Ask the group if they have any ideas for solutions. Allow a lot of time for this and be patient. People may be shy, or may take a while to think of ideas.

4. When an idea is mentioned, write it on the paper and if possible draw a small sketch to represent the idea.

5. Continue with this activity until no more ideas are created

6. Explain that we will revisit this activity later in the workshop

Tips:

Try and think of a few potential ideas before the activity, that way you can use these for inspiration if required

Example of a page of brainstorming

MODEL MAKING

Aims:

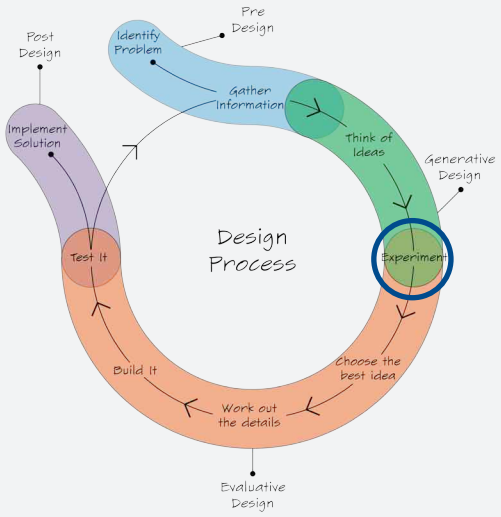
This will help us to think of more ideas and work out some of the details of potential solutions

We can use this information to help us develop ideas or think of new ideas that we might not have thought of. It might be easier for people to make something than to explain or draw it

Materials:

• Materials for model making (sticks, post notes, straws, plaster, bottles, etc.)

Design Process:



Steps:

1. Explain to the group that this activity aims to create a small model of one idea that can be presented to the group and discussed
2. Ask the group to select their favourite idea from the brainstorm activity that they want to make
3. Ask the group to think about how this will look and how it will be made
4. Ask the group to make this idea out of the materials we have provided. It will be much smaller and simpler than the final prototype, but making it now will give us more ideas and knowledge about the problem
5. Allow a lot of time for this activity, watch the group and provide assistance as required
6. Once the models are complete, ask the group to present it back to the others. Ask if the others like the idea and if they have any ways to make it better

Tips:

Ensure all participants are included in the activity. If needed, provide guidance to the team about ways of including all

Group making a model of a chicken coop

EXISTING SOLUTIONS

Aims:

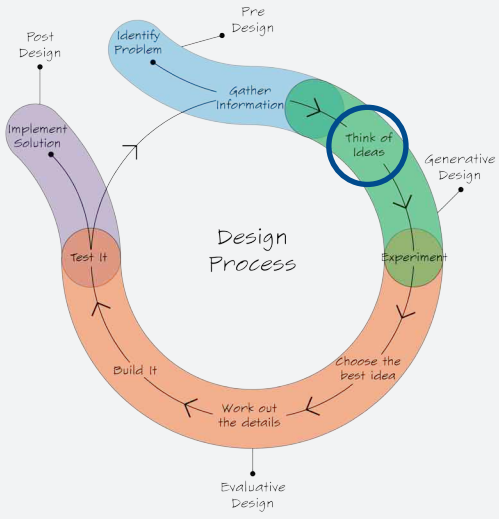
This will help us to think of more ideas and learn about the good and bad aspects of each idea

We can use this information to ensure we have a large variety of ideas to choose from when choosing the final idea

Materials:

- Paper
- Pen or pencil
- Existing solution cards

Design Process:



Steps:

1. Explain to the group that this activity aims to review existing solutions from other places and decide if they could be good in the community

2. On a large piece of paper draw a vertical line, to create two columns (see below). Write the titles 'Good parts' and 'Bad parts' in each of the columns

3. Go through each of the Existing Solution cards doing the following:
   - *Show card to the group*
   - *Ask the group to explain what it is, write this on the back of the card for clarity*
   - *Ask the group what they like about this solution. Write any good aspects in the 'good parts' column*
   - *Ask the group what do not like about this solution. Write any bad aspects in the 'bad parts' column*
   - *Ask the group why the product doesn't exist in their community?*
   - *Ask the group what they would change about this solution to make it better for their community*

Tips:

If required, explain how the solution is used step-by-step

Example of rice seeding existing solutions

REVISIT BRAINSTORMING

Aims:

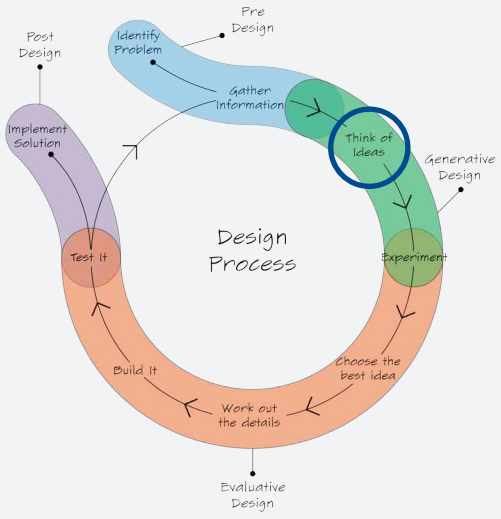
This will help us to think of a range of ideas that may solve the community challenge

We can use this information to discuss the appropriateness of each idea, screen, prototype and test

Materials:

- Paper
- Pen or pencil

Design Process:



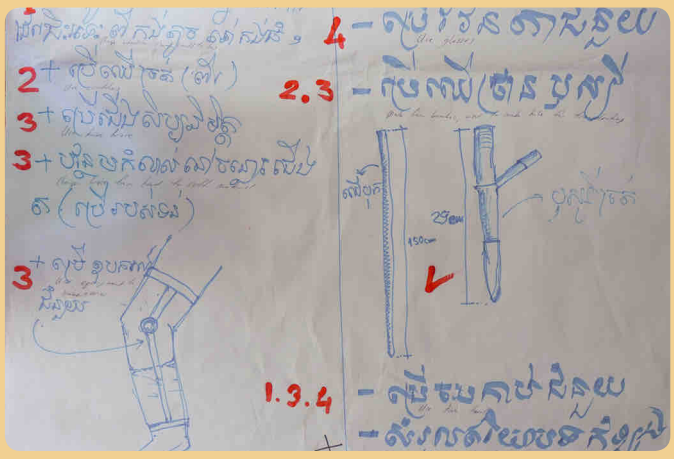
Steps:

1. Return to the brainstorm created earlier in the session

2. Use the good and bad ideas from the Existing Solutions activity as inspiration for more ideas
   - *Try to think of all the ways the bad ideas could be made better, for this community*
   - *Try to think about how the good ideas could be made and implemented in this community*

Tips:

Try to link the comments in the Existing Solutions activity to new ideas in this activity



Example of a page of brainstorming

SCREENING IDEAS

Aims:

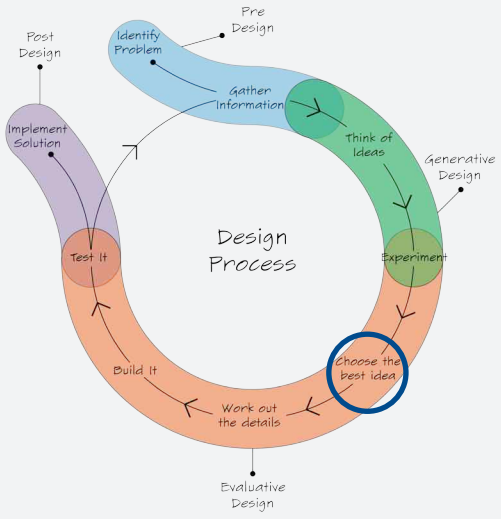
This will help us to choose the best ideas to continue forward this in the project

We can use this information to ensure that the solution is relevant for the community and the specific problem throughout the project

Materials:

- Pen or pencil
- Screening template

Design Process:



Steps:

1. Explain to the group that this activity aims to select one or more ideas to continue with and remove the rest of the ideas from the project

2. Explain each of the criteria that will be used to compare each of the ideas

3. Firstly, ask the group to pick their favourite 5 ideas by discussion. Do not use the screening template yet. Instead, just have a discussion and select 5 ideas to use the screening template for

4. Explain that the group needs to decide on whether the idea is bad, average, or good in each criteria
   - *For example, is the idea 'easy to build'?*
   - *Show one of the ideas and go through the criteria placing a :-(, :-| or :-) as appropriate*
   - *Repeat this for each of the ideas*
   - *Tally each ideas score with :-(=1, :-|=2 or :-)=3*
   - *Discuss the scores with the group and decide if the top ranked idea is the best idea or not. Be prepared to choose a different idea if the group decides it is better*

5. Explain that the design team will spend time before the next workshop, thinking about the design and processes needed to make the products. At the next workshop the design team will share our skills so everyone can be a part of building the prototype

Participants working through the screening activity

Tips:

If required, make small prototypes of multiple ideas to investigate a screening criteria

Criteria	**Project name:** **1: ☹, 2: 😐, 3: ☺** **Description**	*Idea name:* *1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Design requirements											
Critical component availability	*Are there particular components which are important? Can you get them?*										
Easy to build	*Can it be made locally? Are any special skills required?*										
Easy to use	*Can it be used by most people? Can it operate at different speeds? Is it comfortable to use?*										
Easy to understand	*Can people understand how to use and maintain it?*										
Price to make	*How much money will it cost to build?* *3 - $10 or less, 2 - $100 or less, 1 - $1000 or less*										
Does it solve the problem?	*Does it help people with disability look after/catch/weigh chickens?*										
Impairment suitability											
Vision	*Can it be used by the vision-impaired?*										
Hearing	*Can it be used by the hearing-impaired?*										
Mental	*Can it be used by the mentality-impaired?*										
Mobility	*Can it be used by the mobility-impaired?*										
Dexterity	*Can it be used by the dexterity-impaired?*										
TOTAL											

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Evaluative Design

This section will provide an overview of the Evaluative Design stage and all associated design activities

TECHNICAL TRAINING

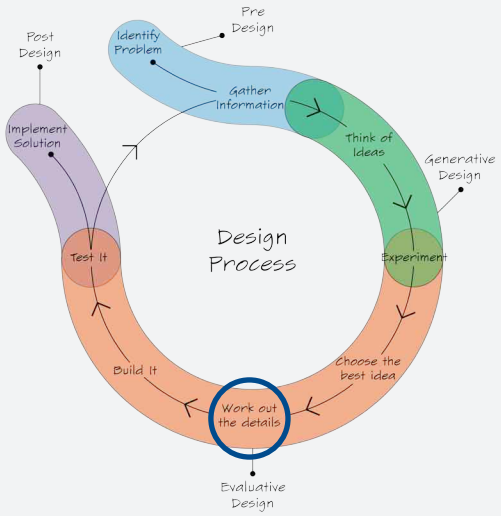
Aims:

This will help us to ensure the participants are able to lead the 'build it' stage and remain safe when using tools

Materials:

- Tools as required

Design Process:



Steps:

1. Before the session begins, decide on the particular skills that need to be developed. These could come from observations, conversations with the community or partner organizations or from the skills and construction techniques activities

2. Decide on the best way of presenting and practicing these skills. Some skills may be quite simple and quick to explain (such as using a spanner) while others may be more complex (such as using a drop-saw)

3. Demonstrate the technical skill first and explain the important steps and safety concerns

4. Ask for a group member who is confident with the equipment, perhaps someone who has used it before, to demonstrate the equipment as well

5. Ask the group members if they would like to practice with the equipment. Ensure that only individuals that are interested, and comfortable, are using the equipment.
   - *Others can be worked with individually to ensure they are not forced into a dangerous situation*
   - *Make sure the tools are setup far away from each other, so people do not swap groups halfway through. This way people will also not get distracted by watching other groups.*

6. Repeat this process for all technical skills that are required. Once one skill is presented, allow participants to continue to practice that skill while others practice new skills.

Participant learning how to use a power drill

Tips:

Ensure female participants are given a chance to learn about the tools. It is common for males to dominate this work

PROCESS MAPPING

Aims:

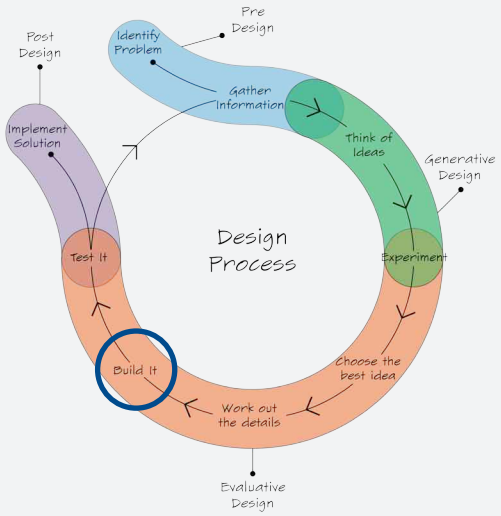
This will help us to plan the steps that need to be completed to create the final product

We can use this information to build the final solution and communicate an appropriate plan to others

Materials:

- Paper
- Pen or pencil
- Prototypes from workshops
- Materials poster
- Construction techniques poster

Design Process:



Steps:

1. Explain to the group that this activity is for planning the steps required when building the final product. By thinking about these steps and planning them we can make the product more quickly and everyone can be involved

2. Lead a discussion about the construction of the product and write down each step required. Try to identify:
   - *Steps that must be done in a particular order*
   - *Steps that can be done in any order*
   - *Steps that can be done at the same time*
   - *Steps that require expert skill*
   - *Steps that have multiple ways of doing them*

3. Discuss these steps with the group and decide on a process to build the product

4. Allocate each group member with a task or set of tasks to complete as part of this process. Try to include all participants and ensure that everyone is happy with the tasks they have been assigned

5. Utilize this process map during the next construction activity

Tips:

Identify any materials or tools that participants can bring after lunch or the next day

Participants discussing how to build a prototype

PROTOTYPING

Aims:

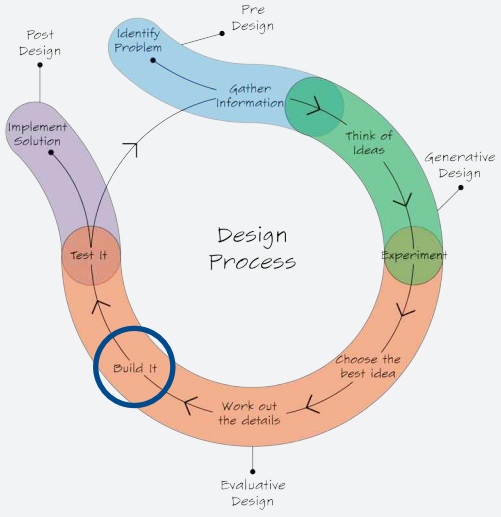
This will help us to build and test the ideas that have been created by the community

We can use this information to improve the ideas and make them more appropriate for the community

Materials:

- Prototyping materials as required
- Posters with each project on them
- Tools as required

Design Process:



Steps:

1. Explain to the group that this activity aims to build a full-sized working prototype.
   - *It will not work perfectly, and may not be made in the exact way that the final solution will be, but it will help us to learn about the idea, and what needs to be improved*
   - *We can also learn about the processes and materials needed, and the size and use of the prototype*
   - *This is an important part of the design process*

2. Allow the group to lead this process, it is likely that the group will excel at this and will not require much guidance. Avoid interfering too much with the design, there will be time during the next iteration to refine the design and re-build it

3. Ensure the group has the required materials and tools. Be prepared to send someone to the local market to buy more resources as required

4. During the building process, ask the group why they are doing things the way they are. Some areas of interest are:
   - *Local construction techniques*
   - *Assumptions about engineering design and materials*
   - *Confusion about aspects of the design*
   - *Materials that were brought from home*
   - *Disagreements between group members*

5. After the prototype is completed, have each team present their designs to the rest of the large group. Ask the large group if they have any questions about the design


Participants working in groups to make a prototype

Tips:

Encourage participants to bring their own tools and materials so they feel like they have ownership and control of the product

TESTING

Aims:

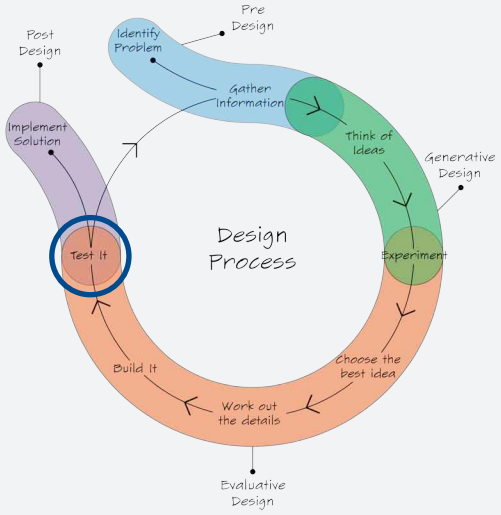
This will help us to test the ideas that have been created by the community

We can use this information to improve the ideas and make them more appropriate for the community

Materials:

• Prototypes

Design Process:



Steps:

1. This activity may naturally begin once the prototype is created. If this is the case then do not try to intervene, instead, just observe the ways the group test the prototype

2. Allow the group to lead this process, it is likely that the group will know the exact use-situation for the prototype and will locate themselves in an appropriate area. Encourage the team to stay close to the venue unless there is a good reason to leave (such as testing the prototype at a farm)

3. During the testing process, ask the group why they are doing things the way they are. Some areas of interest are:
   - *When will this be used?*
   - *Where will this be used?*
   - *Who will use this?*
   - *Why will this be used?*

4. Allow a long time for testing as this is the stage which provides the most insights. Write down all of the new ideas and insights that have been mentioned

Tips:

Think about the locations for testing prior to the workshop. This may have an impact on how accurate the test will be

Participants testing a prototype at a local farm

FEEDBACK & ITERATE

Aims:

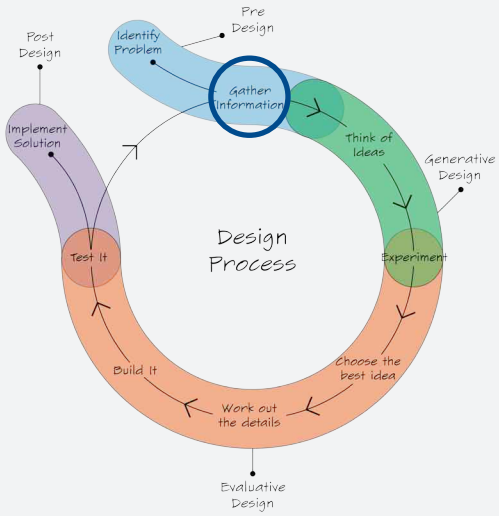
This will help us to learn from the first prototype and improve the design

We can use this information to improve the ideas and make them more appropriate for the community

Materials:

- Paper
- Pen or pencil
- Prototypes

Design Process:



Steps:

1. This activity may naturally begin once the prototype is tested. Teams should reform and sit together with the prototype

2. During the discussion, ask the group for feedback about the construction and testing of the prototype. Some areas of interest are:
   - *What is good about the prototype?*
   - *What is bad about the prototype?*
   - *Does the prototype work as you expected?*
   - *What is different about this prototype than what you originally designed?*
   - *What did you learn from testing?*
   - *What should be changed?*

3. Write down all insights and suggestions. After this, try to decide on specific things that will be changed and create a plan for any other testing that needs to be completed to answer remaining questions
   - *You can use the materials poster, the construction techniques poster and the brainstorming poster to look at some different ways to solve a problem*

Tips:

Use your own experience as well as the participants' experience. Ensure all participants give feedback

Participants discussing improvements to a prototype

DESIGN REVIEW

Aims:

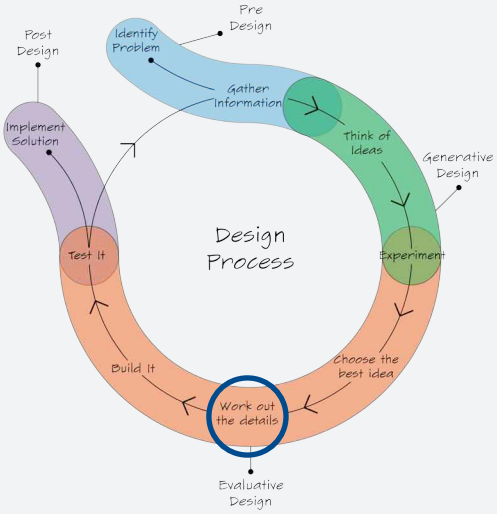
This will help us to ensure the ideas that have been chosen are appropriate and find out if the community have new insights to add

We can use this information to improve the ideas and make them more appropriate for the community

Materials:

- Posters with each project brief on them
- Prototype or model if appropriate

Design Process:



Steps:

1. Explain to the large group that since the last workshop we have taken their ideas and begun to develop them into solutions that are more detailed. We would now like to get feedback about the designs so we can improve them to be best for your community

2. Show each of the designs one by one and explain what changes have been made and why since the last workshop

3. Ask for feedback about them from the group. Note any feedback on a piece of paper to discuss later

4. Reform the smaller design teams and focus on that groups particular design project. Ask for more feedback, such as:
   - *Do you think it solves the problem?*
   - *How do you think we could make this?*
   - *Do you think it is easy to use?*
   - *Do you think everyone could use this?*
   - *How could we make this better?*

5. If any changes are suggested, work with the group to refine this into the design. The idea should be ready to prototype at the end of this activity

Tips:

Slowly present the design and ensure everyone understands. Let participants describe the design if they understand it

Participants working in groups to review a design

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Post Design

This section will provide an overview of the Evaluative & Post Design stage and all associated design activities

IMPLEMENTATION PLAN

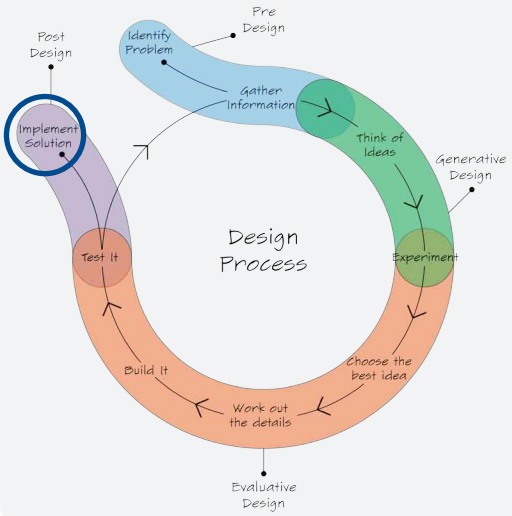
Aims:

This will help us to ensure the project will be continued and actually provide impact to the community

We can use this activity to decide what the next steps of the project need to be

Materials:

Design Process:



Steps:

1. Ask participants to sit in a small group
   - *This could be completed as a large group if needed*

2. Explain to the participants that this is the last workshop and that the participants now need to continue with the project by themselves. To do this they need to decide the following:
   - *Who will keep the product?*
   - *Who will help to improve and product once it has been tested?*
   - *What needs to be done to improve the product and make it good for the community?*
   - *What help do you think you will need to do this?*

3. By the end of this discussion the following should be decided:
   - *Who will keep the product*
   - *Plan for testing and improving the design*
   - *Complete the Implementation Plan Poster*

4. End the workshop by explaining what the participants can expect from the design team after the workshop. For example:

   - *We will think of some different ways to solve these problems and make the changes then give the products back*
   - *We will come back in 3 weeks and ask the community what they need to fix the problems*
   - *We will have one more workshop with the people who have more ideas*
   - *We will come back and interview you about how useful you have found these workshops*

Tips:

Try to guide the participants towards decisions that benefit the most people, not just the individual most interested

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IMPLEMENTATION PLAN

What is your product?

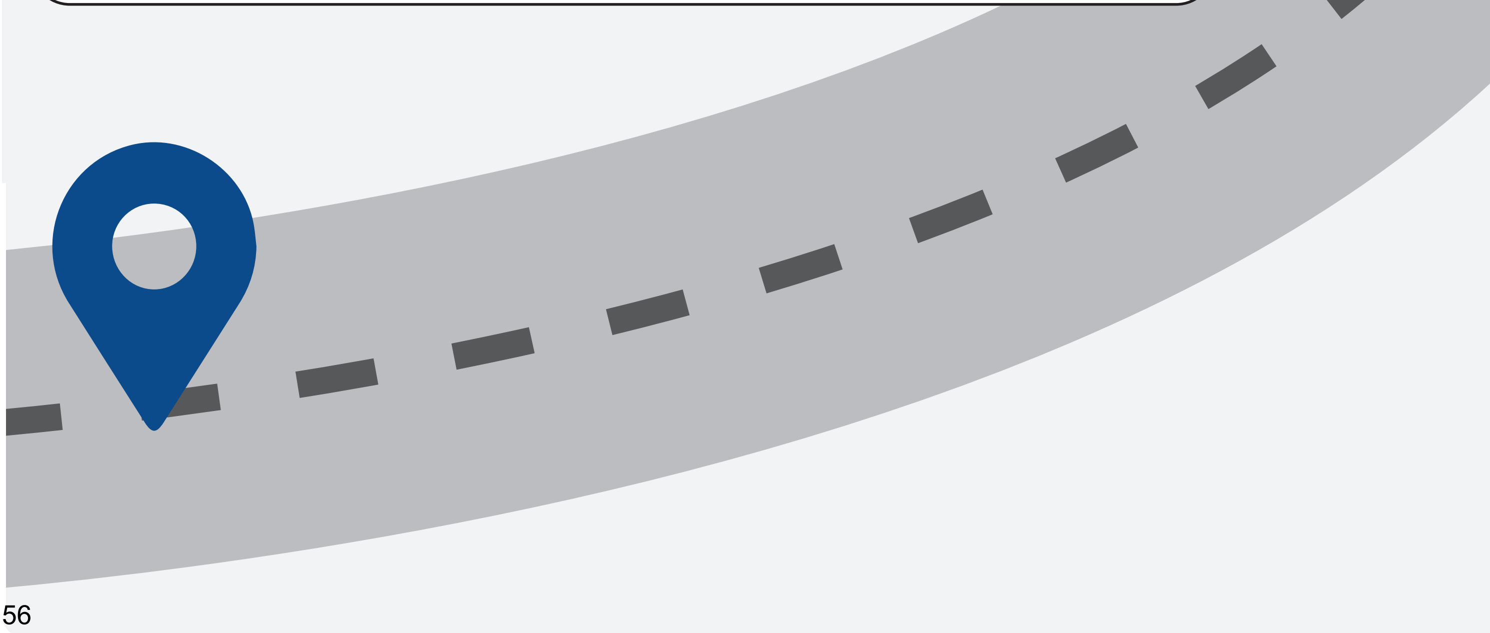
What still needs to be done?

Improvements

1. _______________
2. _______________
3. _______________
4. _______________
5. _______________

Implementation Steps

1. _______________
2. _______________
3. _______________
4. _______________
5. _______________



AFTER 6 MONTH

What will you have done?

What do you need from the NGO for support?

AFTER 1 MONTH

What will you have done?

What do you need from the NGO for support?

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Games & Icebreakers

This section will provide an overview of the games and icebreaker activities that can be used throughout the project

ANIMAL INSTINCTS

Aims:

For each person to find the people in the room who are acting as the same animal

Materials:

• Pieces of paper with one animal written on each (to be picked out of a hat)

Design Process:

GAME TIME!

Steps:

1. Write down one animal (that makes a sound) on each of the small pieces of paper
   - *Cow*
   - *Sheep/Goat*
   - *Cat*
   - *Dog*
   - *Pig*
   - *Monkey*
2. Let every participant pick a name out of the hat – ensure that they understand and are able to act out how the animal sounds and acts
3. Tell the group that the aim is that by acting like, and making sounds like their animal they need to find 1-2 other people who are acting like the same animal. When they find their partner/s they raise their hand
4. When instructed the group moves around the room acting like the animal
5. When the first group raises their hand, everyone stops and this group acts again – the group must guess the animal correctly from the winners acting

Tips:

Use this game in Workshop 2 or 3 once participants are comfortable with each other

COUNTING POPCORN

Aims:

For the group to collectively count to 10 or 20, try 10 first, if too easy, for small groups in particular, try 20

Materials:

Design Process:

Steps:

1. Arrange the group in a circle or close group

2. Instruct the group to count from 1 to 10, one person saying one number at any time
   - *There must not be any planning or pattern in who will say the next number, it is completely random*
   - *When more than 1 persons says a number at any time, the group must start from 1 again*
   - *When someone says the incorrect successive number, the group must also start from 1 again*
   - *When the group appears to be making a pattern/planning who will say the next number, the group must start from 1 again*

Tips:

Take your time to explain the game so everyone understand, split into smaller groups if needed

FOLLOW THE LEADER

Aims:

For a designated person to identify who is controlling the actions of the group

Materials:

Design Process:

GAME TIME!

Steps:

1. Arrange the group in a circle
2. Ask one person to leave the room/area (so they cannot see or hear what is happening). They are the 'guesser'
3. Select one of the remaining people to be the 'leader'
4. Ask the person who left (the guesser) to reenter the room and stand in the middle of the circle
5. Now, the leader will start doing an action, the rest of the circle will then copy them. When the leader changes the action, the group will also change their action to follow. Actions could include:
   - *Clapping*
   - *Waving arms*
   - *Jumping*
   - *Funny faces*
   - *Animal impersonations*
6. The aim is for the person in the middle (the guesser) to identify who the leader is

Tips:

Send one of the facilitators out of the room first so the participants are not put under too much pressure

Participants playing Follow the Leader

HOOPS

Aims:

For the group to pass the two hoops around in a circle and try to catch each other

Steps:

1. Arrange the group in a circle
2. Pass a hoop to one person and a second hoop to someone else on the opposite side of the circle
3. Participants must now race to step through the hoop and pass it to the person on their right
4. Both hoops will race around the circle until one hoop catches the other hoop

Materials:

- Two wooden hoops

Design Process:

GAME TIME!

Tips:

If someone has difficulty moving through the hoop (i.e. wheelchair user) then rules can be adjusted to be more inclusive

Facilitators explaining the game Hoops

MARCO POLO

Aims:

For blindfolded people to try to locate other people through calling out and hearing their voices

Materials:

- Fabric to use as a blindfold

Design Process:

GAME TIME!

Steps:

1. Arrange the group in a circle with each person holding hands with the people next to them
2. Choose one person to wear a blind fold and one person to be the caller. Ask them to stand inside the circle at opposite sides
3. Explain that when the blindfolded person calls to ‘marco’ (or similar) the other person must reply ‘polo’. The blindfolded person will then try to navigate the circle and find the other person

Participants playing Marco Polo

Tips:

Allow any vision-impaired participants to help run the activity. This will allow them to show their navigation skills

PASS THE BALL

Aims:

For two teams to race by passing a ball from one person to the next

Materials:

- Two small balls

Design Process:

GAME TIME!

Steps:

1. Divide the large group into two teams. Try to evenly distribute individuals with severe impairments and ensure they are with someone who can help them if required. Be aware of even gender distribution as well

2. Arrange each team in a straight line facing the other team

3. Give the balls to each of the people at the front of the lines and explain:
   - *When you say 'go' they must remain facing forward and pass the ball to the person behind them until the ball gets to the end of the line.*
   - *They must then pass the ball all the way to the front again.*
   - *The winning team is the first team to get the ball back to the person at the front of the line.*

Tips:

Position any people with severe impairments at the front of the lines, to ensure they have enough support and time

Participants playing Pass the Ball

WHAT IS THIS?

Aims:

For each person to try and guess the use of an interesting, unknown object

Materials:

- An interesting object to discuss

Design Process:

GAME TIME!

Steps:

1. Arrange the group in a large circle
2. Present the object you have chosen and explain that the aim of this activity is to try and guess what the object is used for, or think of other ways it could be used
3. State an example use and then pass the object around the circle allowing each person to say what they think it is. Ensure people with vision-impairment are able to touch the object
4. After the group has said what they think it is, explain the actual use of the object
5. Some example objects include:
   - *Apple cutter*
   - *Icing bottle*
   - *Wood clamp*
   - *Plastic ice cubes*

Tips:

Try and find an object that is not available locally. This will make the game more challenging and interesting

Participants guessing what the object is

Monitoring & Evaluation

This section will provide an overview of the monitoring and evaluation activities, templates and frameworks

BASELINE INTERVIEW

Aims:

This will help us to learn about the participants current situation and what technology is already available in Pursat

We can use this information to change the focus on the workshops to be more appropriate and to document the impact of the project after completion

Materials:

- Baseline interview template
- Recording device
- Notebook and pen

Who:

The khmer facilitators will need to conduct these interviews with 2 - 3 participants each

When:

This should be done on Day 1 of the Workshop 1 or as soon as possible

Steps:

1. Sit with one of the participants at a time. Try to find a quiet relaxing area to sit

2. Ask the participant for their name, and talk to them for a minute to ensure they are comfortable and relaxed

3. Explain that this interview is to help us learn about the community before the project begins. Please answer honestly; we do not mind what you say, as it will be very helpful to us in the future.

4. Ask if it is okay to audio record the interview
   - *If it is okay, start recording*
   - *If not, take notes of each answer given*

5. Begin the interview and ask the questions in the template. You may use the template on the next page to record the participant's answers

Tips:

Choose a location that is quiet and private to allow for a relaxed interview with the participant

BASELINE INTERVIEW

Date:	**Name:**	**Interviewer:**

Have you ever been involved in a design project with an NGO before? Can you please explain?

What are your expectations for this project? What would you like to get from attending the workshop?

Have you ever thought of something that would make farming tasks easier?
Did you make it? If not, why?

Have you ever used tools for building things before?
If yes, what tools have you used?

Would you use tools if we had tools to use and people to teach you how to use them?

Is there equipment used to do farm work around Pursat, which you find easy to use?
If yes, do you think they would be easy for everyone to use, including people at this workshop?

Is there any equipment around Pursat that is designed to be used by people with disabilities?
If yes, what do you think could be improved?

Where did the equipment come from?

Is there anything else you would like to say before we finish?

DAILY FEEDBACK

Aims:

This will help us to learn about how enjoyable the workshop day has been

We can use this information to identify any workshop components which are very enjoyable or not enjoyable for participants and adjust the activities accordingly

Materials:

- 5 feedback jars
- Bag of rice (or similar)

Who:

Each participant will need to complete this task

When:

This will be completed at the end of each workshop day

Steps:

1. Explain to the large group that we would like them to give us feedback about how much they liked the day. This feedback will be anonymous and we would like you to be honest. If something is wrong we would like to know so we can try and make the next day better for you

2. We will give you each a piece of rice (or similar) and when you leave please put it in the jar that matches how you feel. The jars are:
   - *Very sad*
   - *Sad*
   - *Average*
   - *Happy*
   - *Very happy*

3. Hand out the rice. This can be done while a different facilitator is talking to the group at the end of the day

4. All facilitators should then leave the room to allow the participants to provide their feedback and then leave for the day

5 feedback jars set up on chairs near the exit

Tips:

This feedback needs to be confirmed through a second method, for example, interviews or review sessions with partners

POST WORKSHOP INTERVIEW

Aims:

This will help us to understand how the participant felt about the workshop and what was learnt

We can use this information to determine whether the aims and objectives of the workshop have been met and what may need to change for the next workshop

Materials:

- Post interview template
- Recording device
- Notebook and pen

Who:

The khmer facilitators will need to conduct these interviews with 2 - 3 participants each

When:

This should be completed in the afternoon of the 2nd day of each workshop, after the workshop is finished

Steps:

1. Sit with one of the participants at a time. Try to find a quiet relaxing area to sit

2. Ask the participant for their name, and talk to them for a minute to ensure they are comfortable and relaxed

3. Explain that this interview is to help us learn about the project, what you enjoyed and didn't enjoy and how it may have effected your life. Please answer honestly; we do not mind what you say, as it will be very helpful to us in the future.

4. Ask if it is okay to audio record the interview
   - *If it is okay, start recording*
   - *If not, take notes of each answer given*

5. Begin the interview and ask the questions in the template. You may use the template on the next page to record the participant's answers

7. Thank them for their time

Tips:

Try to make the person feel comfortable. Explain the importance of being open and honest in their answers

POST WORKSHOP INTERVIEW

Workshop 1
Do you think you have used the process in this workshop to solve problems before? If yes, can you please give an example?
Do you think you will do anything differently when solving a problem that you think many other people also face, after this workshop? If yes, what will you do differently?
Workshop 2
Did your group determine the problem that we would try and work on together in this workshop? If yes, what is the problem?
Is this problem something that you find difficult? If yes, have you tried to solve this problem before? How did you do that?
If we can make something that will solve this problem, will it make [insert action from problem statement] easier for you or just the same?
Workshop 3
What problem is your group trying to solve in these workshops?
Did your group think of different ways to solve this problem in this workshop?
Did you feel like you could give your ideas or opinion about how to solve this problem in your group? If yes, do you have an example of something you told the group about how to solve the problem?
Has your group chosen the best solution to continue to develop?
Can you tell me what made the chosen solution better than the other solutions that your group thought of?
Workshop 4 (if required)
Did you do anything in this workshop that you haven't done before? If yes, what new things did you do?
Do you think you could do that again by yourself now?
Did you feel like you helped other people learn something new this workshop? If yes, what did you help someone else learn and how?

POST WORKSHOP INTERVIEW

Workshop 4 continued
What do you think of the product that we made together? able to make the product better?
If we were to make another one together, do you think any part should be made different? If yes, which parts would you make different?
Do you think the community here would make those changes to a new product without our project team? If no, what would be most difficult? what do you think the community needs from the project team to be able to make the product better?
Are there any parts which you think are good currently and don't need changing?

EXIT INTERVIEW

Aims:

This will help us to understand how the workshop activities and the final product have impacted the participants

We can use this information to determine whether the aims and objectives of the overall project have been met

Materials:

- Exit interview template
- Recording device
- Notebook and pen

Who:

The khmer facilitators will need to conduct these interviews with 2 - 3 participants each

When:

This should be completed a few weeks after the last workshop, or whenever possible

Steps:

1. Sit with one of the participants at a time. Try to find a quiet relaxing area to sit
2. Ask the participant for their name, and talk to them for a minute to ensure they are comfortable and relaxed
3. Explain that this interview is to help us learn about the project, what you enjoyed and didn't enjoy and how it may have effected your life. Please answer honestly; we do not mind what you say, as it will be very helpful to us in the future.
4. Ask if it is okay to audio record the interview
   - *If it is okay, start recording*
   - *If not, take notes of each answer given*
5. Begin the interview and ask the questions in the template. You may use the template on the next page to record the participant's answers
6. FOR individuals with the products, ask the questions listed on page 2 of the template
7. Thank them for their time

Tips:

Try to make the person feel comfortable. Explain the importance of being open and honest in their answers

EXIT INTERVIEW

Date:	**Name:**	**Interviewer:**
How many of the workshops did you attend?		
Which project was your team working on?		
Did you enjoy being part of this project? Why?		
What is the most important thing you remember about the workshops? Why?		
What did you not like about this project? Why?		
How has your life changed since attending the workshops?		
Do you feel like you can design products by yourself now?		
Would you attend workshops like this again in the future?		

EXIT INTERVIEW

Date:	**Name:**	**Interviewer:**
ONLY CONTINUE INTERVIEW FOR PEOPLE WHO HAVE THE PRODUCTS		
Have you used the product yet?		
How many times?		
Would you use it again?		
What have you learnt about the product from using it that you didn't know before?		

FACILITATOR FIELD DIARY

Aims:

This will help us to document feedback about each activity

We can use this information to evaluate the effectiveness of the project activities in terms of how well participants are being empowered and providing insights into each activity

Materials:

- Field diary template

Who:

Each facilitator present during the activity

When:

After each activity, or group of activities.
These should be completed within 1 week of the workshop

Tips:

Complete the diary entries at the end of each day to ensure you can remember all of the collaboration

Steps:

1. Read the marking description table for a description of each collaborative competency

2. After an activity has been completed, complete a field diary entry. This can be done during the day, later that evening or after the workshop is finished

3. Read each of the competencies and circle the part of the scale that represents your opinion. If you have not seen any evidence of that competency, circle 'No Evidence'. See below for an example: See below for an example:

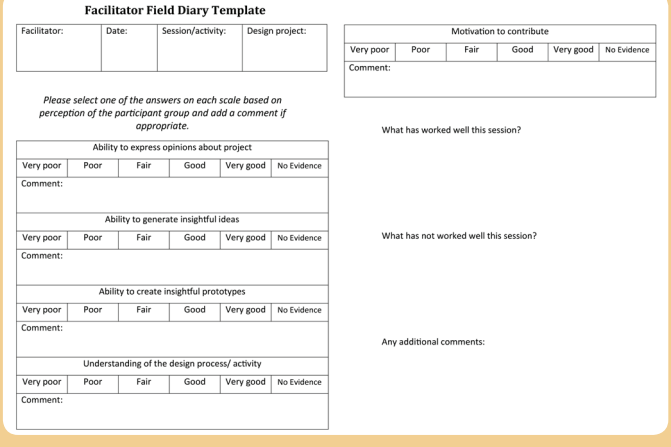
Ability to express opinions about project					
Very poor	Poor	Fair	Good	Very good	No Evidence

សមត្ថភាពក្នុងការបង្កើតគំនិតដ៏ល្អ					
ខ្សោយណាស់	ខ្សោយ	មធ្យម	ល្អ	ល្អណាស់	ពុំមានតម្រុយ

4. Add a comment to explain your answer, or provide an example if you would like

5. Add comments to document what has 'worked well' and what has 'not worked well' during this activity. These comments are important as they will be used to improve future projects

6. Add any additional comments you would like to



Facilitator Field Diary Template

Facilitator:	Date:	Session/activity:	Design project:

Please select one of the answers on each scale based on perception of the participant group and add a comment if appropriate.

Ability to express opinions about project					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

Ability to generate insightful ideas					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

Ability to create insightful prototypes					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

Understanding of the design process/ activity					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

Motivation to contribute					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

What has worked well this session?

What has not worked well this session?

Any additional comments:

Participants working in groups to complete calendars

FACILITATOR FIELD DIARY

Facilitator Marking Description

Please see below for a description of each of the levels of competency

Ability to express opinions about project				
Very poor No evidence that the participant is able to express brief opinion about elements of the project	*Poor* Little evidence that the participant is able to express brief opinion about elements of the project	*Fair* Participant is able to express brief opinion about elements of the project when guided by facilitator	*Good* Participant is able to express detailed opinion about elements of the project when guided by facilitator	*Very* good Participant is able to express detailed opinion about elements of the project without the need for facilitator guidance
Ability to generate insightful ideas				
Very poor No evidence that the participant is able to expand on ideas presented by a facilitator or generate ideas Independently	*Poor* Little evidence that the participant is able to expand on ideas presented by a facilitator or generate ideas	*Fair* Participant is able to expand on ideas presented by a facilitator when closely guided	*Good* Participant is able to expand on ideas presented by a facilitator and generate own ideas when closely guided	*Very good* Participant is able to expand on ideas presented by a facilitator and generate own ideas independently
Ability to create insightful prototypes				
Very poor No evidence that the participant is able to build basic or detailed prototypes	*Poor* Little evidence that the participant is able to build basic or detailed prototypes	*Fair* Participant is able to build basic prototype when assisted and directed by facilitator	*Good* Participant is able to build basic prototype when directed by facilitator	*Very good* Participant is able to build basic prototype independently and detailed prototype when directed
Understanding of the design process / activity				
Very poor No evidence that the participant is able to identify the current stage of the process or explain the rationale behind the use of design activities	*Poor* Little evidence that the participant is able to identify the current stage of the process or explain the rationale behind the use of design activities	*Fair* Participant is able to identify the current stage of the process when prompted by a facilitator	*Good* Participant is able to describe the current stage of the process when prompted by a facilitator. Participant is aware of the rationale behind the use of most design activities	*Very good* Participant is able to describe the current stage of the process independently. Participant is aware of the rationale behind the use of each design activity
Motivation to contribute				
Very poor No evidence that the participant is engaged in the process or that they are likely to continue involvement throughout the project	*Poor* Little evidence that the participant is engaged in the process or that they are likely to continue involvement throughout the project	*Fair* Participant requires facilitator focus to stay engaged in the process and seems likely to continue involvement throughout the project	*Good* Participant seems engaged in the process and is likely to continue involvement throughout the project	*Very good* Participant seems highly engaged in the process and is likely to continue involvement throughout the project

Facilitator:	Date:	Session/activity:	Design project:

Please select one of the answers on each scale based on perception of the participant group and add a comment if appropriate.

Ability to express opinions about project					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					
Ability to generate insightful ideas					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					
Ability to create insightful prototypes					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					
Understanding of the design process/ activity					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

Motivation to contribute					
Very poor	Poor	Fair	Good	Very good	No Evidence
Comment:					

What has worked well this session?

What has not worked well this session?

Any additional comments:

TECHNOLOGY EVALUATION

Aims:

This will help us to document the final solution and how well it met the defined requirements

We can use this information to ensure the solution is improved after the project is finished, as well as, capture useful insights for future projects

Materials:

- Pen or pencil
- Technology evaluation template

Who:

Project leaders as well as all available facilitators

When:

This should be completed at the end of the project once all interviews and testing are complete

Steps:

NOTE: Complete this activity after final workshop is complete. This can be done in any location but should involve as many of the project team as possible

1. Write down the project name, intended end-user and defined requirements on the template
   - *The requirements were most likely defined during workshop 2 and 3. If there are no formalized requirements, reflect on the aims of the project used to guide idea generation and screening*
2. For each requirement, reflect on whether the final solution met the requirement or not. For each requirement add reference to evidence and recommendations for future work
3. Based on what is known about the project and the community, reflect on whether the community were satisfied with the end solution. Add details, such as differing opinions, and evidence
4. Based on what is known about the project and the community, reflect on whether the solution was adopted by the community. Add details, such as differing opinions, and evidence
5. Reflect on whether the final solution is generalizable outside of the specific group of participants involved in the project

Tips:

Attach photos, drawings or interview scripts for evidence

Project name:			
End-user of solution:			
Effectiveness of solution (to meet identified requirements)			
Requirement	*Achieved? (yes/no/unsure)*	*Evidence (if available)*	*Recommendations (if required)*
1.			
2.			
3.			
4.			
5.			
6.			
7.			
Product improves universal design characteristics of the environment			

Community satisfaction with solution	
Satisfaction rating (circle one)	*Details/Evidence (if available)*
Very dissatisfied	
Dissatisfied	
Neither	
Satisfied	
Very satisfied	

Adoption of solution		
Timeframe	*Achieved? (yes/no/unsure)*	*Details/Evidence (if available)*
End of project transfer of ownership		
Short-term adoption		
Long-term adoption		

Generalizability of solution			
Areas of importance	*Appropriateness of solution*	*Evidence (if available)*	*Recommendations (if required)*
Local			
National			
Other:			

Additional comments

Acknowledgments

We would like to thank all of the practitioners and academics, in Indonesia, Cambodia, New Zealand, Australia and the Netherlands, who have given input during the design of this handbook.

Finally, many of the activities shown in this handbook were inspired by other authors. We acknowledge this and would like to thank them for their contribution to the research field. The activities used for inspiration are shown below.

References

Chevalier, J. M., & Buckles, D. J. (2008). SAS2 social analysis systems: A guide to collaborative inquiry and social engagement: IDRC.
Activities:
Option Domain

Ferguson, K., & Candy, S. (2014). Participatory Design Handbook. Retrieved from Melbourne, Australia.
Activities:
Construction process
Expectations
Getting to know each other
Knowledge exchange
Materials
Precedents

Freudenberger, K. (1999). Rapid rural appraisal and participatory rural appraisal manual: Catholic Relief Services.
Activities:
Calendars

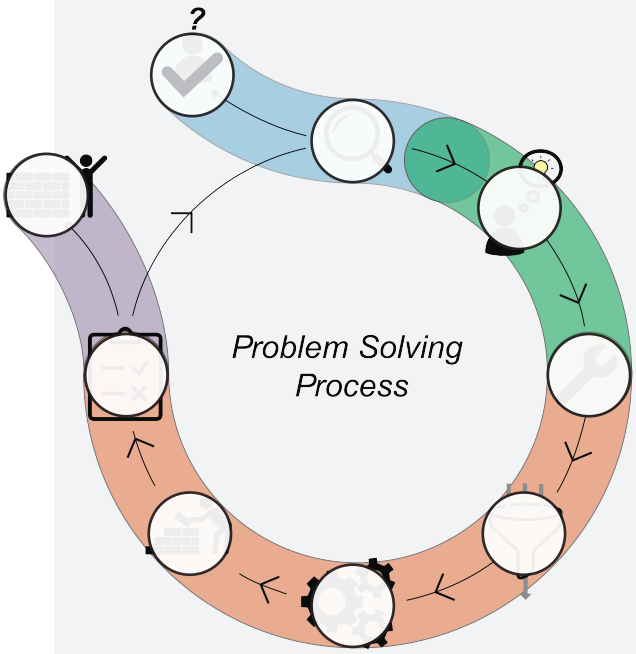
IDEO. (2015). The Field Guide to Human-Centered Design (Vol. 1). Canada.
Activities:

Brainstorm
Bundle ideas
Collage
Determine what to prototype
Frame your design challenge
Get feedback
Guided tour
Integrate feedback
Live prototyping
Rapid Prototyping
Resource assessment
Resource fl w
Role Playing

PeaceCorps. (2007). Participatory Analysis for Community Action (PACA) Training Manual: Information Collection and Exchange.
Activities:
Community mapping
Daily activities
Needs assessment

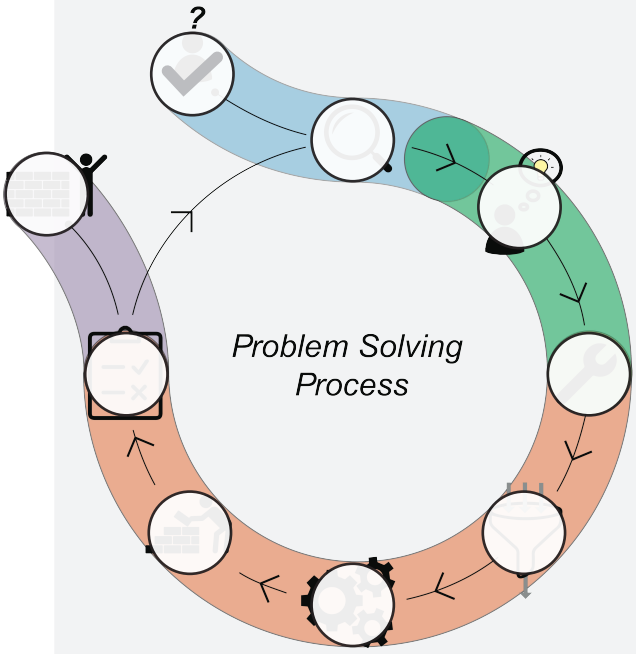
PROJECT PROGRESS

Team Number 1



Project Stage	Information
Pre Design	*The project focuses on …*
Generative Design	*The chosen idea …*
Evaluative Design	*The first prototype …*
Post design	*The final design …*

Team Number 2



Project Stage	Information
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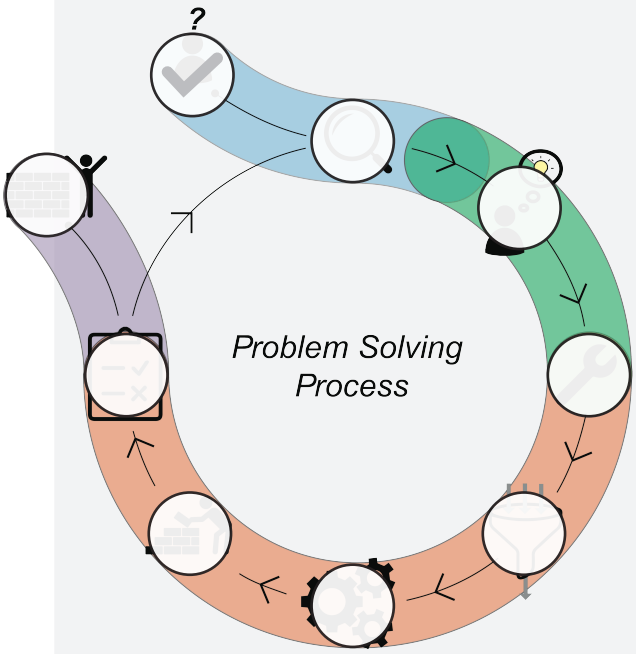
Generative Design	*The chosen idea …*
Evaluative Design	*The first prototype …*
Post design	*The final design …*

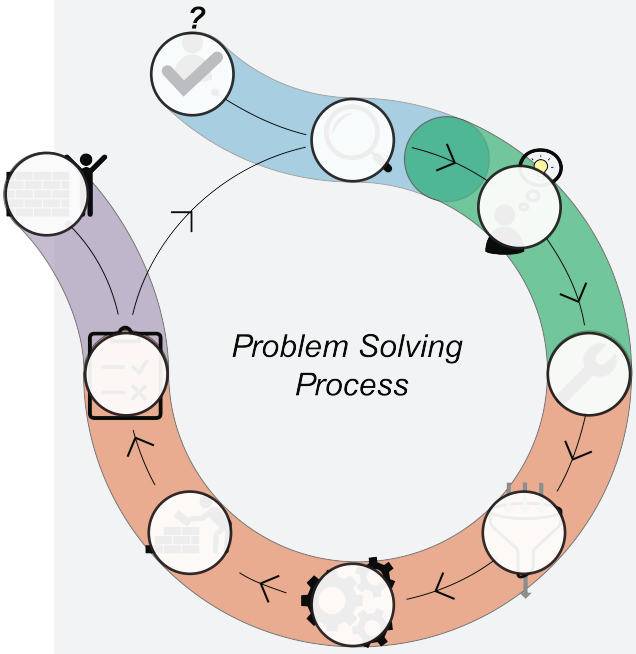
PROJECT PROGRESS

Team Number 1



Project Stage	Information
Pre Design	*The project focuses on …*
Generative Design	*The chosen idea …*
Evaluative Design	*The first prototype …*
Post design	*The final design …*

Team Number 2



Project Stage	Information
Pre Design	*The project focuses on …*
Generative Design	*The chosen idea …*
Evaluative Design	*The first prototype …*
Post design	*The final design …*

M&E CHECKLIST

Workshop	Data collection	
Workshop 1	*Baseline interview*	☑
	Daily feedback	☐
	Post workshop 1 interview	☐
	Facilitator field diary	☐
Workshop 2	*Daily feedback*	☐
	Post workshop 2 interview	☐
	Facilitator field diary	☐
Workshop 3	*Daily feedback*	☐
	Post workshop 3 interview	☐
	Facilitator field diary	☐
Workshop 4 (if required)	*Daily feedback*	☐
	Post workshop 4 interview	☐
	Facilitator field diary	☐
Community Revisit	*Exit Interview*	☐
	Technology Evaluation	☐

NOTES

NOTES

Contact

People's Action for Inclusive Development (PAfID)

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Virak Kheng, Director-Cambodia: virak.kheng@pafid.org