From The Ground Up

Playful Design Education Toolkit

Manual

Version December 2021

Table of Contents

Introduction to the toolkit

This toolkit aims to help you organise playful educational design workshops for children. Through these activities, they can develop their creativity and practise several valuable design-related skills.

You will find all the information you need to host the workshops in this manual. First, the workshops and the underlying educational approach are explained. Next, step-by-step instructions for organising the first two workshops are given. The manual concludes with suggestions for several more workshops and a tool that helps you come up with your own.

The workshops explained

The workshops are structured to help you and the children get acquainted with the design process. For the purposes of these workshops, that process is structured in three phases:

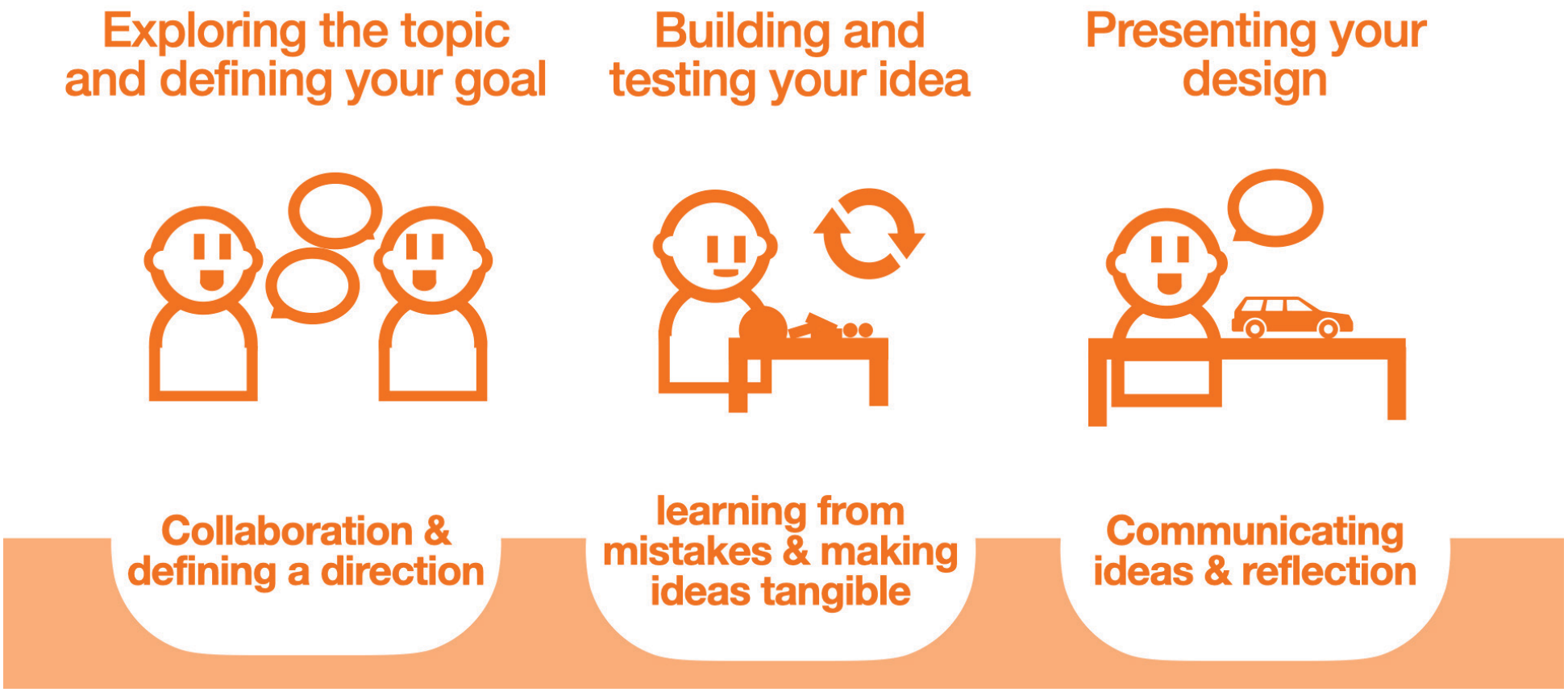
- **Exploring the topic and defining your goal**
- **Building and testing your idea**
- **Presenting your design**

By going through this simplified design process, the children practice several design skills. These skills are further explained on the next page.

The first workshop is quite restrictive in how it should be solved by the children. However, as the children become more acquainted with the design process, the challenges in the workshops become more open-ended; they allow more freedom in how they can be solved.

The toolkit contains two videos that each introduce the topic of a workshop. These videos raise questions that aim to elecit discussions among the children to help them narrow down the requirements for their designs.

After these first two video-supported workshops, you as facilitator get more freedom in how you organise the workshops. Several tasks that were first done by the videos, such as introducing a topic, asking questions and facilitating the children's discussion are now up to you. On page 12 you will find a tool and several suggestions in the shape of 'challenge sheets' to help you to design more workshops.



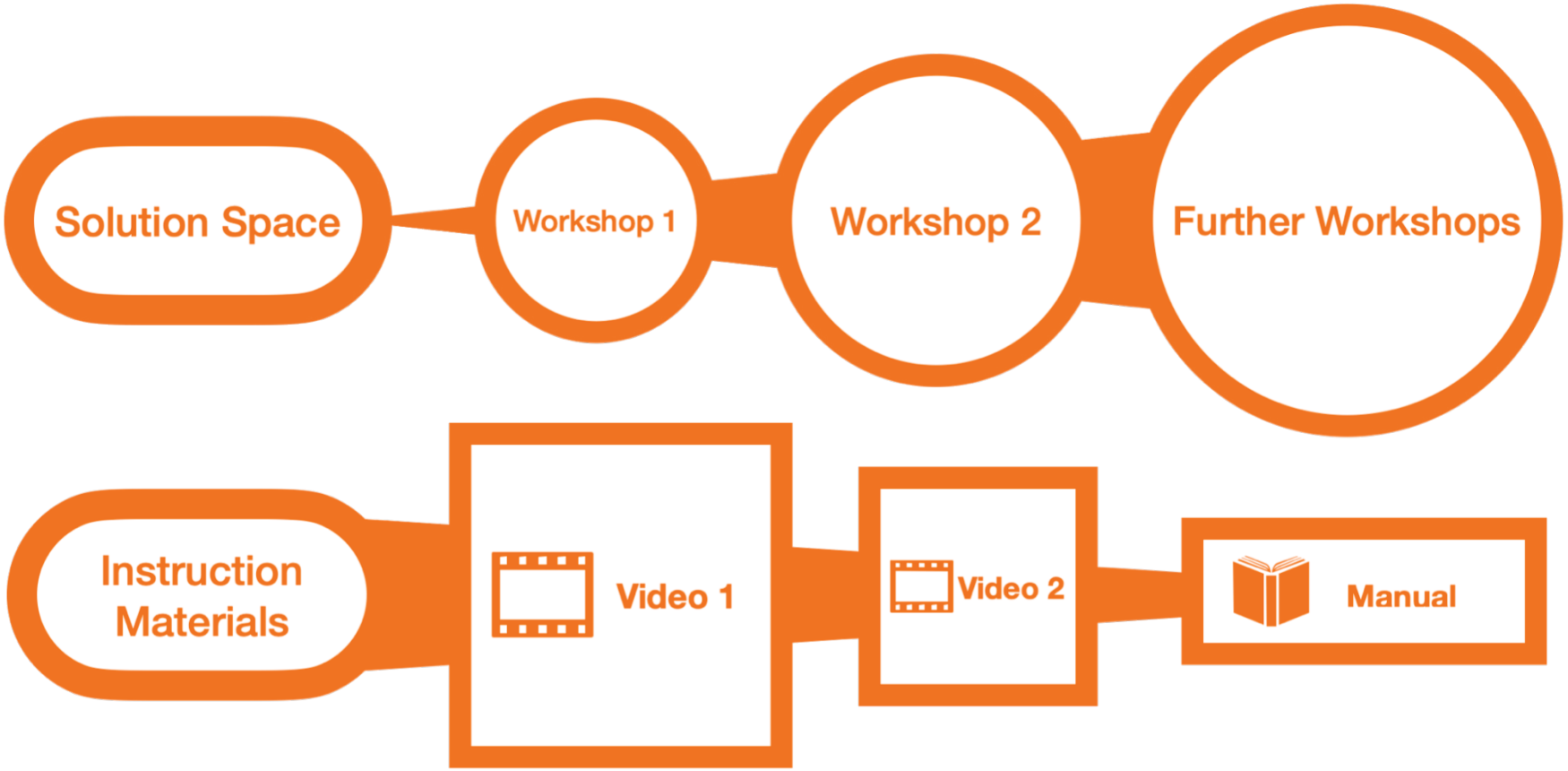
Design Process & Skills

In each of the workshop phases, the children practice specific design-related skills. In the first phase, they practice collaboration and defining a direction. In the second phase they practice learning from mistakes and making their ideas tangible, and in the third phase they practice reflection and communicating their ideas.

Educational approach

The video for the first workshop gives the children specific examples to base their work on. The next video further opens up the ‘solution space’ of the second workshop by leaving more questions for the children to answer. This ‘solution space’ refers to the extent of freedom they have in solving a problem. By practising all phases of the design workshops several times, the children can take on increasingly complex challenges. In this way they exercise their creativity not only in how they give shape to the prototype, but also in what way they solve a problem.

With each workshop, you become more adept at organising and facilitating them. As there are no more videos to support you from the third workshop onward, you will have a more active role in shaping the activities. It is up to you to facilitate the children’s learning process by opening up the solution space in each challenge.


Solution Space
Workshop 1
Workshop 2
Further Workshops
Instruction Materials
Video 1
Video 2
Manual

Organising the first workshop

Let’s design a toy car!

Phase 1: Video & Discussing Questions (20–25 minutes)

- Show the video for workshop 1 to the children
- When the video prompts a pause, pause it and let the children discuss the question that was asked in the video
- After giving them some time to discuss the question, unpause the video and continue until the next time the video prompts a pause

Phase 2: Designing and Prototyping (about two hours)

- Once the video is done, let the children collect the materials they want to use for making the toy car (e.g. clay, twigs, wood etc.)
- Let them ‘prototype’ their toy car
- You can help the children by asking questions that help them to make their goals explicit such as: *‘What is your car going to transport?’*, *‘Where is it going to drive (e.g. on a highway, on a dirt road, on the plains)?’*, *‘How many people can go in the car?’*, and *‘What is it going to look like?’*
- While the children are working on their designs, prepare a table for the presentations in the next step

This workshop focuses on introducing to the design process. The children make a prototype of a toy car from locally available materials such as clay and twigs.

Phase 3: Presentation (5 minutes per child)

- **The children take turns with presenting their design in front of the others. After the presentation, first let the other children ask their questions. You could ask the presenter to explain:**
    1. *Why did you want to build this?*
    2. *What purpose does it have?*
    3. *How and why did you make it like this?*
    4. *What makes this special to you?*
    5. *What would you still change or improve about your design?*
- **Then encourage the children to give feedback to the presenter by asking them:** *'What did you like about the design?', and 'What do you think could be improved?'*
- **Finally, you could ask the presenter how he or she thinks those improvements could be made:** *How can that improvement be made to your design?'*

Phase 4: Final Video (5 minutes)

- **First, the video congratulates the children for finishing the design challenge**
- **Then it points out the design-related skills they practiced while working on the toy car**

Organising the second workshop

Let’s design a building!

Phase 1: Video & Discussing Questions (20–25 minutes)

- Show the video for workshop 2 to the children
- When the video prompts a pause, pause it and let the children discuss the question that was asked in the video
- After giving them some time to discuss the question, unpause the video and continue until the next time the video prompts a pause

Phase 2: Designing and Prototyping (about two hours)

- Once the video is done, let the children collect the materials they want to use for making the building (clay, twigs, wood etc.)
- Let them ‘prototype’ the design of their building
- You could help the children to make their goals explicit by repeating the questions from the video: *‘What is the purpose of your building?’*, *‘Who is going to use it?’*, *‘How is it going to be used?’*, *‘Where is it going to be located?’*, and *‘What is it going to look like?’*
- While the children are working on their designs, prepare a table for the presentations in the next step

In this workshop, the children are challenged to design a building. Where in the first workshop the children were shown examples, in this workshop they have to come up with how to prototype their solution themselves.

Phase 3: Presentation (5 minutes per child)

- **The children take turns with presenting their design in front of the others. After the presentation, first let the other children ask their questions. You could ask the presenter to explain:**
    1. *Why did you want to build this?*
    2. *What purpose does it have?*
    3. *How and why did you make it like this?*
    4. *What makes this special to you?*
    5. *What would you still change or improve about your design?*
- **Then encourage the children to give feedback to the presenter by asking them:** *'What did you like about the design?', and 'What do you think could be improved?'*
- **Finally, you could ask the presenter how he or she thinks those improvements could be made:** *How can that improvement be made to your design?'*

Phase 4: Final Video (5 minutes)

- **First, the video congratulates the children for finishing the design challenge**
- **Then it points out the design-related skills they practiced while working on the toy car**

Organising more workshops

After the first two workshops, it will be up to you to introduce the topic and steer the children's discussions.

The instruction on the opposite page explains how to use the three 'challenge sheets' for organising more workshops. The challenge sheets can be found on page 14–16.

Each sheet presents a topic with a suggested challenge to go with it, a story to explain the challenge, and several practical suggestions for organising that specific workshop.

On page 17 you will find several more tips on how to plan more workshops for the children.

Coming up with more design activities

Instruction

1

2

3

Story & Discussion

Tell the kids a story to help them understand and then discuss the problem.

Prototyping

Ask the children to build a prototype to solve the problem in the story.

Presentation & Test

Ask the children to present their solution for the problem in the story. Then allow them to ask questions and give feedback to each other. Some challenge suggestions also have a competitive element. You can use this moment to see who has won.

C Character

P Problem

G Goal

Every challenge sheet introduces a character with a wish, that runs into a problem that hinders them from reaching their goal.
The challenge sheets give suggestions for these three story elements for you to turn into a story for the children. You can elaborate or change the story as you see fit. By introducing the challenge in this story structure, you help the children imagine what they need to consider when they are coming up with a solution.
After telling the story, you can help them to do so by helping them to specify: what, where, when, who, and how.

Suggestions

The challenge sheets also give suggestions for how you could organise the activities, or in what direction you could steer the kids' solutions.

Workshop 3: Who can build the safest bridge?

Competition

Preparation

Prepare two bricks or stones to act as river banks for the children to build their bridge across.

Story

Use the suggestions to create a story for the challenge.
You could also make the story about having to cross the 'river' with their toy car.

Prototyping

Give the children the chance to collect materials and ask them to prototype their solution for the problem in the story.

Presentation

Ask the children to present and test their way of getting across the 'river' one by one. Give them the opportunity to give feedback to each other.

Options

You could challenge the kids: who can build the best bridge?

or

Give an open-ended story: in what way can you cross the river?

C A girl is walking to the next village with her new shoes on

P There is a river but she wants to keep her shoes dry

G Help her get across the river without getting her shoes wet

Suggestions

You can use two big bricks to act as the river banks for the kids to build a bridge across. Additionally, you could use something as a weight to test if the bridge is 'strong enough' to support their toy car.

Workshop 4: Who can make a water-ready boat?

Competition

Preparation
Prepare bottles, some wood and stationery for the children to use to make their boats.

Story
Come up with a story for the challenge and let the children discuss the topic to define the goal

Prototyping
Let the children build their prototype for the ship.

Presentation
Let the children present and test their ships one by one.

Options
Organise a competition for what boat stays afloat longest, gets furthest and put that in the story.

or

You could also let the children focus on how they make the boat look.

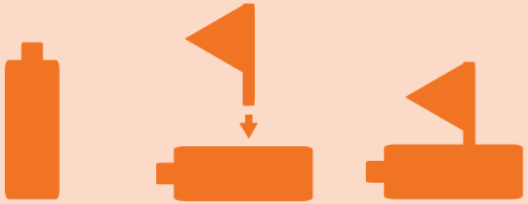
C A man wants to sail across the lake to visit his family on the other side

P He doesn't have a ship to reach the other side of the lake safely

G Get to the other side of the lake without having his boat sink to the bottom

Suggestions
Find some place where the kids can test their boat for water-readiness and to do the final showdown.

With the help of some creativity, empty bottles can be transformed into the hull of a ship.



Workshop 5: How can we transport things and people?

Challenge

Preparation
Prepare some materials to illustrate the problem and what they could build to solve it.

Story
Come up with a story for the challenge and ask the children to discuss the topic to help them define their goal.

Prototyping
Let the children collect materials and ask them to prototype their solution for the problem in the story.

Presentation
Give the kids the opportunity to present their design, and the others to ask questions and give feedback.

Options
You could talk about railways, trains, ships and other means of transport and let them prototype those.

or

Give a more open-ended story and allow the children come up with their own solutions.

C The mayors of two cities want to increase the transport of goods between their cities

P There is no way for people and goods to go from one city to the other

G Connect the cities in some way for people and goods to be transported

Suggestions
This challenge may lend itself more to drawing out solutions. You could also give them the tools to draw their solution first and afterwards prototype it in other materials, such as clay or wood.

Organising more workshops: How can we ... ?

Challenge

Preparation
Prepare the materials that you intend the children to use during the workshop.

Story
Come up with a story for the challenge and ask the children to discuss the topic to help them define their goal.

Prototyping
Let the children collect materials and ask them to prototype their solution for the problem in the story.

Presentation
Give the kids the opportunity to present their design, and the others to ask questions and give feedback.

Options
It helps to give the children a story with a clear problem for them to discuss and solve.
The materials you make available to the children greatly influence what the children might come up with as a solution.

C Create a relatable character in a relatable context for the children

P The problem should have a prototypable solution for the kids

G The character's goal helps the kids identify the most important factors

Suggestions
You can use the same workshop structure to help the kids to come up with solutions for problems in their own surroundings as well.
This can motivate the children to use their newly acquired skills and practice them even more.