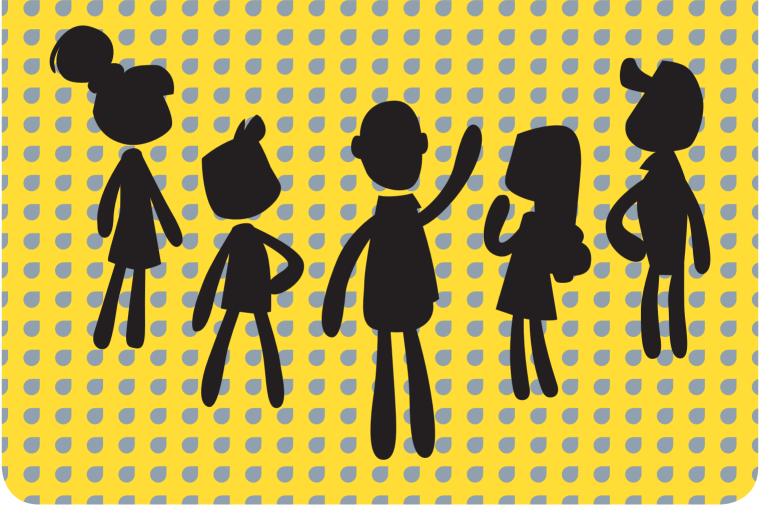
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WHY?

The FUTE (Future Teaching) material is the result of a collaborative project among teacher educational institutions and schools in France, Belgium, Wales, Denmark and Finland and Design School Kolding, Denmark.

The FUTE hypothesis is that by involving pupils more extensively in the planning and execution of teaching, and by bringing more meaningful and real-life problem solving into the classroom, pupils will be more engaged and teaching can become more collaborative and interesting. The aim of the project is to transfer design thinking and co-creation methods to the classroom, creating a modern approach to teaching where challenge framing and problem-solving skills, which can boost innovative thinking, are put at the forefront.

With support from the FUTE material broader, interdisciplinary issues like understanding climate change or homelessness can become cross-disciplinary project courses using design thinking and design methods. The purpose would be to help teams of teachers and the pupils to frame a problem and create a solution doing research and analysis and then craft a tangible solution to a problem (e.g. a new playground for the neighbourhood kindergarten where children can learn about climate change or a 'Home in a Backpack' for homeless people).

Such an approach to learning and teaching can be incorporated into an engaging collaborative process that also develops innovation skills.

Some problems within the schools are of a more general nature relating to class management or interactions between the school and the surrounding community. The present Method Collection includes some techniques that can be used as a collaborative approach to framing and understanding the problem in depth suggesting new innovative solutions that commit everyone involved in new ways.

Teaching and learning are, of course, still very much invested in specific subjects or academic areas, but the material can help teachers create a more varied and collaborative approach to the subject by using the methods in this collection.

WHAT IS DESIGN THINKING AND METHODOLOGY?

Over the last 50 years design has changed substantially, from being an activity with the aim of producing physical products – fashion, graphics, interior decors etc. – to becoming an all-round approach to the innovation process. This approach can be used in all kinds of innovation: products, services and experiences, in private companies but also in the public area – what is called a Design Thinking approach.

Design Thinking means creating a relevant or interesting framework or perspective on an issue or problem by "opening it up": asking lots of questions, challenging and possibly reframing it, to discover and identify the real or most interesting problem that needs to be solved. Different visual tools and prototyping tools are then used to research, quickly test and iterate concepts and solutions in the process and to communicate potential solutions.

The design-oriented process and solution combine attention to usability, feasibility and aesthetics.

Design Thinking focusses on doing things, and a design "thinking" process is therefore a very tangible and pragmatic approach to innovation, where insights and results are documented and communicated visually and in a way that is easily understood and shared inside a design team and also outside.

The Design Thinking approach is not a simple five-stage gate process as many Design Thinking maps show, but more like a creative "dance" between different and opposite positions or states that push the innovation process forward from understanding what already exists to developing ideas about what could be and

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will be developed:

- Between finding problems and creating solutions
- Between choosing the framework and dealing with detail
- Between analysis and synthesis
- gent (closed) thinking
- Between abstract (thinking) and practical/tangible actions
- Between working by yourself and cooperating with others
- Between developing an idea and communicating about it
- Between dealing with aesthetics and with technology and functionality

Design Thinking is complex but fun because it creates the kind of engagement and critical reflection that is needed to truly innovate. If done properly, it is a journey of learning and exploration!

WHO IS THE TARGET?

The FUTE method collection is a set of materials specifically adapted to teachers and children within primary and secondary education in the EU with no previous experience of using design methods.

WHO CREATED AND ASSEMBLED THE **FUTE MATERIAL?**

The methods in the FUTE method collection is an amalgam of accumulated practices, approaches and methods from design practice. applied anthropology, marketing, creativity and organisation theory, management thinking and various other areas.

The model, description and organisation of the methods are adapted from The 5C Model of Design Methods and Knowledge and the DSKD Method Collection developed in 2011 by Associate Professors: S. A. K. Friis and A. K. G. Gelting at Design School Kolding in Denmark.

A new version of the models and the method collections was launched in 2014: The 6C Model and The Co-Create Collection. This material is independently authored by Associate Professor S. A. K. Friis and published by U Press in Denmark. Between divergent (open) and conver- The model and Method Collection have been used since 2011 with great success at design schools and universities inside and outside Denmark.

> The present FUTE material has been developed by Anne Katrine G. Gelting and Laila Grøn Truelsen, who both have design backgrounds and are presently working on teaching and development projects at Design School Kolding in Denmark. Thanks also to Illustrator Kristian Kristensen who developed the character illustrations.

> Input for the development, choice of methods and examples of how to use the Method Cards come from the Partners of the FUTE project:

France, Reseau Canopé 42: Atelier Director Arnaud Zohou, designer and teacher Charlotte Delomier and design teacher Apolline Roux..

Belgium, Hogeschool PXL:

Head of Research at the Centre for Educational Innovation in Educational Sciences Wouter Hustinx, PhD in Educational Sciences Marie Evens and PhD in Educational Sciences Stephanie Lem.

Wales, Cardiff Metropolitan University: Professor of Education and Associate Dean for Research Gary Beauchamp and PhD student and research assistant Isabelle Adams...

Finland, University of Turku: Adjunct Professor Päivi Granö and Lecturer of Craft Education Satu Grönman,

Denmark, University College South Denmark: Associate Professor Per Holst Hansen and Senior Lecturer Rasmus H. Jensen,

WHAT DOES THE FUTE MATERIAL **INCLUDE?**

The FUTE material consists of a series of documents that can be downloaded from a FUTE website, intended to be printed and shared with teaching colleagues and pupils. It comprises five different elements:

- A) The document you are reading right now that describes WHY the material was made. WHO has developed the material, WHAT the material contains and HOW it can be used and 09. The 'To Do' List for what.
- B) Two process maps for printing and posting in the classroom that provide an overview of the method categories and the methods and also a process map that can be used as a quide.
- C) A collection of 42 method cards to be printed and distributed to pupils or teams, including reflection cards after each step for reflecting upon the process, the methods used and insights gained.
- D) Teacher Training material with further explanation, examples and exercises for understanding and learning to use the material with collegues and pupils.

HOW ARE THE METHODS ORGANISED?

The 42 method cards in the FUTE collection of methods are divided into five categories:

EIGHTEEN PROCESS METHODS that are designed to be used throughout the process. Six methods concentrate on collaboration and the dynamics within the team; six methods are about framing a challenge and evaluating the information and ideas, and six methods focus on communication and visual tracking within the team and on presenting to people outside the team.

Collaboration Methods

- 01 Team Rules
- 02. Knowledge and Expertise Map
- 03. Expectations
- 04. Do the Opposite
- 05. Move
- 06. Flow Writing

Framing Methods

- 07. Challenge Framing
- 08. Fact and Inspiration Finding
- 10. Show and Tell
- 11. Success Criteria Grid
- 12. Telescoping

Communication Methods

- 13. Road Map
- 14. Log Book
- 15. Data Wall
- 16. Pecha Kucha
- 17. Pitching
- 18. Storytelling

TWELWE METHODS FOR UNDERSTANDING WHAT IS: These methods focus on gathering and visually analysing information and inspiration in order to create learning and insights.

Research Methods

- 19. Personal Stories
- 20. Desktop Research
- 21. The Anthropologist
- 22. The Photographer
- 23. The Journalist
- 24. The Experiment

Analysis Methods

- 25. Clustering
- 26. Visualising Data
- 27. Biography
- 28. Day Cycle
- 29. Personas
- 30. Analytical Diagrams



TWELVE METHODS FOR CREATING IDEAS ABOUT WHAT COULD BE: After you have completed the research, analysed the information and decided what you want to focus on, you have a base from which you can ideate and create.

Ideation Methods

31. What IF?

- 32. Inspiration
- 33. In the Future
- 34. Multi Perspectives
- 35. Creative Constraints
- 36. Brainstorm

Creation Methods

- 37. Informing by Characters
- 38. The Muse
- 39. The Relay
- 40. Prototyping
- 41. Video prototyping
- 42. Role play

HOW TO USE THE FUTE METHOD COLLECTION?

As mentioned earlier, the FUTE material can be used for planning more varied teaching experiences within existing curricula and subjects, involving teams and pupils in colearning and, most importantly, teaching pupils to work with framing and solving problems or challenges and to develop innovation skills.

The FUTE methods, as proposed here, outline an exact time frame, what kind of material is needed and a specific "how to" step-by-step approach for each method. It is important to understand that these are suggestions only, and the methods can and should be adapted to each team, age group and to specific projects in relation to time frame, materials used and steps taken. When you are intimately familiar with the methods, try to play around with them and adapt them to your needs and preferences.

The Method Collection's 42 methods have different purposes and are placed in different categories to fit into a classic innovation and design process with consecutive phases of research, analysis, ideation and creation. They are intertwined with "pit stops" all along the process for working with collaboration, framing and communication methods (see the FUTE process maps). This way of organising the methods and the sequence might not suit your purposes, and therefore we invite you to reshuffle and change them as much as you need. However, since design methods and Design Thinking may be new to most of you it is necessary to take the time to first understand the Method Collection and then teach the pupils to use the methods progressively and systematically. It is a good idea to select a few methods from each category and try them out first with the pupils.

We suggest two different approaches to introducing the methods when working with a project:

When teaching younger pupils:

- 1) Read through the material.
- 2) If you are doing a project, plan the process, the project or the course, selecting one or two methods from each category (refer to the cases presented later). Plan how you want to work through the phases, if and when you are going to do mini-presentations and how the results will be presented.
- 3) Present the methods that will be used one at a time, help the pupils use the method and be sure to create a tight framing for the use of methods time spent, results expected and deadlines for mini-presentations and end presentation.
- 4) Start the process!



When teaching older pupils:

- 1) Read through the material and examples of how to use the methods.
- 2) Plan the process, selecting two methods from each category that the pupils have to use (refer to the cases presented later). Plan how you want to work through the phases, if and when you are going to do mini-presentations and how the results will be presented.
- 3) Present the process and the different phases to the pupils: Research, Analysis, Ideation, Creation and Process Methods.
- 4) Print out all the method cards for each team.
- 5) Point out which methods the pupils should use and then make them do the "Road Map" method from the Process Method category and make each team or pupil present their process map on a poster.
- 6) Help the teams work through the different methods and phases and be sure to make the pupils evaluate the process along the way; re-evaluate their process and collaboration issues using the different Process Methods.

A generic suggestion of methods for a typical innovation project in a team could be the following:

Start by establishing **Team Rules** (method no. 01) and maybe talk about your **Expectations** (method no. 03). Use the **Challenge Frame** (method no. 07) to discuss the focus of your work and **The 'To Do' List** (method no. 09) to plan the work and do the **Road Map** (method no. 13).

Then establish a **Data Wall** (method no. 15) and/or a **Log Book** (method no. 14) using either cardboard and books or digital software and boards to create a shared visual representation of the work that has to be done.

Do the initial research using **Desktop Research** (method no. 20) and maybe The **Anthropologist** (method no. 21).

Analyse the research by using **Clustering** (method no. 25) and maybe **Personas** (method no. 29) or **Analytical Diagrams** (method no. 30).

Take a break and revisit some of the process methods: See how you are doing in the group by looking at your team; maybe you need to revisit the **Team Rules** (method no. 01) and also use the **Do the Opposite** (method no. 04) to be more creative or use **Flow Writing** (method no. 06) to learn what each team member is thinking about the project.

Do a second round of **Challenge Framing** (method no. 07), use **Telescoping** (method no. 12) to reframe the challenge and decide which one you are working with. You may also need to revise the **Road Map** (method no. 13), the **Log Book** (method no. 14) and the **Data Wall** (method no. 15).

Continue with the Ideation Methods, maybe using **Inspiration** (method no. 32) or **Brainstorm** (method no. 36). Subsequently use some process methods like **Telescoping** (method no. 12) to choose which ideas you want to develop further. You may have to establish some **Success Criteria** for the project (method no. 11) to make it easier to choose the right ideas.

The next step is to develop the chosen idea or ideas using some Creation Methods: If you need some inspiration for stimulating the process you could do **The Muse** (method no. 38) and then perhaps **The Relay** (method no. 39) to begin creating solutions and detailing the idea together as a team after which you proceed to *Prototyping* (method no. 40).

Eventually you need to present your idea, and here you can use **Pecha Kucha** (method no. 16) for a short dynamic round of presentation.

In a typical design process one would go through this process several times rather quickly, iterating through phases of collaboration, challenge framing, researching, analysing, ideating, creating and communicating. The methods can be used in that order but again, this is a suggestion, and you must establish how and in what sequence you think the methods can be used in your teaching,



and which ones are suitable for the age group and learning journey you are on. You need to try different approaches and also allow for trial and error, as having a hands-on experience and allowing for mistakes are vital elements of a design-oriented innovation journey.

As mentioned in the introduction, one of the main goals of introducing Design Thinking in schools is to create an innovative mindset and therefore to teach pupils and teachers to work with challenge framing and idea development. Here are some examples of how it can be done starting with different types of motiva-

Projects or courses based on the pupils' perspectives or interests:

Start by making the pupils ask themselves or each other what they are interested in, what they do in their spare time, what they like and what they are good at.

They then formulate problems, issues or challenges and try to understand whether they all face the same challenges and problems. The next step is to develop solution concepts and prototypes.

For example, if there is a keen interest in computer games, what are the challenges: limited time to play, social isolation, lack of physical activity, areas of the body that hurt because of monotonous use of arms and fingers? The of furniture. Developing this concept involves doing research into what kind of damage gam- Projects or courses based on academic ing can do to the body, learning about sports training programmes, biology and physiology or the many different subject areas that would be involved in designing, constructing and launching a new piece of gaming furniture on the market: materials, applied geometry, form and aesthetics as well as socio-cultural issues of creating a material object that needs to fit into daily life and a home's interior decor.

Projects or courses based on crossdisciplinary problems or challenges:

Broad concepts like biodiversity or sustainability, immigration, inequality or "peace" but also more specific issues like social media, food waste, stress or lack of areas for children to play in the city could be interesting starting points for a cross-disciplinary course.

Based on these broad concepts the pupils should ask each other how they experience the issue, do research amongst their family and friends and engage in further desktop research on the subject chosen.

On the basis of those results they formulate specific challenges to investigate and work with, for example, "How can young girls be made aware of how social media influences them?" or "how might we create habitat areas for bees and insects in our schoolyard?"

Working with such problem areas would require the pupils to gather knowledge about the functionality and programming of social media, to study the natural habitats for bees and insects and the impact of a lack of biodiversity on humans.

This would create a motivation for investigating certain aspects of for example biology, psychology and computer programming.

To create solutions the pupils would also have to learn how to create a website, design a campaign, solution and the concept presented could be a build a bee hive or plant flowers that would attract training programme for gamers or a new piece bees and insects and other kinds of subject areas.

concepts, phenomena or objects:

The methods in the collection can also be used to create a learning experience and a course based on specific academic subjects like history, arts and crafts, home economics and math. For example the teacher of history could ask the pupils to research different wars or revolutionary periods and events in their own country and then create a board game that would illustrate the relationships that lead to the situation.



Another way of working with the methods in the collection could be in mathematics, where pupils could be asked first to define, research and then plan a holiday making them learn about distance calculation, VAT, use of percentage, time calculation etc

In arts and crafts the pupils could be asked to design a product that would keep people warm in a cold winter. The teacher could take the class to a sledding hill for the next lesson to observe what kind of products are used there and then frame challenges and opportunities for new products that the pupils can then develop and craft.

To give you more inspiration, here are two case studies highlighting two types of challenges. They exemplify specific methods and actual experiences collected from the partner schools in the FUTE project.

the school a better place"

A large team of teachers and pupils across a school began to plan a project to make their school a nicer place for everybody. They used As part of the arts and crafts programme at a **Expectations** (method no. 03) for sharing what specific changes they would want the project to bring to their everyday school life: An end to bullying, better physical surroundings, better Framing workshop (method no. 07) the problems were reformulated as challenges such as: "How can we improve every classmate's enjoyment of school days?" or "How can we ensure that everyone has a friend?" "How can we make lunch break a calmer experience?" "How can we make it more fun to exercise during school?"

A team of eighth graders was in charge of the project to improve pupils' eating habits. They started by gathering information they already had about the topic using **The Anthropologist** (method no. 21) and The Journalist (method no. 23). The next step was using Clustering

(method no. 25), to sort the information into three categories: physical space, food and behaviour. They also mapped their insights using Day Cycle (method no. 28) to learn how the canteen was used during the day. They used Personas (method no. 29) to create four fictional characters who represented different types of pupils in the school, for instance "Thomas," a 16-year-old in his final year of school, who loves fast food and hanging out with friends and "Sarah," a 13-year-old quiet girl, who prefers to chat with her friends and brings her own food to school, etc. This approach allowed the team to identify new possibilities for creating different areas of the canteen for different types of behaviour and also using the canteen outside of the lunch hour for different activities. The team then used **Prototyping** (method no. 40) to create three prototypes, scale models of the new canteen made out of paper, cardboard and small objects. and applications and are derived from ideas The approach enabled the team to discuss and evaluate the design of the new canteen. Finally, the strongest elements of the three prototypes were combined into one prototype that was presented to Challenge 1: Using design method for "making several stakeholders such as pupils and teachers.

> Challenge 2: Using design methods in arts and crafts teaching

nearby secondary school, the staff of a retirement home had invited a class to help redecorate the home's lounge, which the nursing home staff found boring and clinical. The craft teachers and pupils eating and exercise habits, etc. In a **Challenge** used **Fact and Inspiration Finding** (method no. 08) to plan how they could gather inspiration and knowledge about the needs of the residents and their taste in colours and themes. First they created a process map using Road Map (method no. 13). The average age of the residents was over 90, so the pupils had to carefully plan how to initiate a conversation with them about a pleasant lounge environment. As a result of thorough consideration, the pupils used **The Journalist** (method no. 23) and conducted interviews, asking residents about their favourite seasons, colours, landscapes and childhood memories. They also used The Photographer (method no. 22) to collect pictures of favourite belongings at the retirement home. The project continued as art workshops with the pupils,



residents, family and staff using **Multi Perspectives** (method no. 34). Along the way the pupils also used **Challenge Framing** (method no. 07) and **Success Criteria Grid** (method no. 11) to specify that they wanted to create a decoration piece that related to the residents' stories and lives and also clarified what aesthetic criteria it should fulfil.

The arts and crafts teacher felt that the pupils' original design ideas lacked richness and personality, so she gathered the pupils to do **Show and Tell** (method no. 10) during the sketching and designing segment, but also during the testing and making part. As a result the pupils came up with new ideas by sharing their work with others, which allowed the class to evaluate, elaborate, inspire and ideate together.

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CREATION METHOD: 37. INFORMING BY CHARACTERS



37. INFORMING BY CHARACTERS

This method is a way to uncover brand new ideas for teaching, learning and designing products. Fictive characters or real persons will inspire you and stimulate your imagination and creativity.

Materials needed: Images of inspirational characters, pens and paper or a smartboard or a sharable online board e.g. padlet.

Time required: 45 minutes to half a day.

- 1) Pick three inspiring characters who are either fictive or real. Gather pictures of them and describe what their characteristics are.
- **2)** Create ideas inspired from the way they look, behave or what skills they have or focus on issues from their perspectives. Be as detailed and visual as possible and try to be true to the character even though it seems crazy or silly. The wilder the better!
- **3)** Look at the ideas developed and gather new insights, ideas and perspectives.

CREATION METHOD: 38. THE MUSE



38. THE MUSE

Sometimes having a specific goal or target group is not enough when you want to be really innovative. This method uses a fictive or a real character as a creative stimulus and inspiration for a project. The Muse provides a visual, aesthetic, intuitive approach to keeping the focus and a common thread running through a project, providing a sense of where you want to go with the result

Materials needed: Magazines or pictures for cutting and making a collage, paper, glue and pencils or a computer, picture editing and layout software.

Time required: 30-45 minutes.

- **1)** Do some Desktop Research (method no. 20) to find interesting people you can use directly or indirectly as inspiration for developing a fictional character.
- **2)** If you are developing your own fictional character, start by writing a little story about her, making a picture of her through collage, drawing or desktop software.
- **3)** You must have a picture of your Muse close by, on the desk or on the wall, and it must be a muse that is inspiring, interesting and matches the theme, challenge or project you are working with and who can function as a driver.
- **4)** Use the Muse when working, discussing and evaluating your work: What would the Muse say or think about your challenge, research and ideas?

CREATION METHOD: 39. THE RELAY



39. THE RELAY

A method of engaging in shared creation by combining short bursts of individual work and switching that work between team members to share and develop ideas. This method can be applied in different media such as writing, drawing or building and it allows for new combinations and perspectives. This method also creates a good team spirit when developing ideas!

Materials needed: A table for the team to sit around, drawing paper and pens, Play-Doh, LEGO bricks or clay, a timer.

Time required: 45 minutes.

- **1)** Get your material out on the table. There must be enough material for everyone on the team.
- **2)** The whole group must individually draw, make a collage or model or write about the challenge or the idea you are developing together for five minutes.
- **3)** When the time is up, pass on your work to the team member sitting next to you, and set the timer again to five minutes letting the next team member work on freely interpreting what is going on and developing new ideas. You are not allowed to interfere or explain too much even if your work is being changed a lot.
- **4)** Keep on passing the work along until the whole team has worked on each other's ideas.
- **5)** Select the best idea/ideas and write them up and discuss how they could be developed.

CREATION METHOD: 40. PROTOTYPING



40. PROTOTYPING

Prototyping is used to build a three-dimensional model of an idea to either develop the idea further by testing the shape, the idea, details or functionality or to show others what an idea or solution would look like and how it would work. Prototyping is crucial for idea development. You do not need to use expensive materials or a lot of time. You can use paper, cardboard, LEGO bricks or bits and pieces of waste or scrapped materials. Building, moulding and gluing also gives those pupils who are not talented in writing and abstract thinking the opportunity to shine in class.

Materials needed: Clay, cloth, paper, card-board, milk cartons, drinking straws and all kinds of waste products and materials you can find, glue or glue guns. Go wild and use anything that can be glued together.

Time required: 45 minutes to one day.

- 1) Collect an assortment of materials for model and prototype building. Different materials and waste products can often be used in the most surprising way.
- **2)** Before making a more complicated prototype/model, make a scale drawing of the object.
- **3)** Remember to do prototyping early in the project, as it can be really simple and cheap but still very useful.

CREATION METHOD: 41. VIDEO PROTOTYPING



41. VIDEO PROTOTYPING

Video prototyping is a method for both testing and communicating how something will function and be experienced by a potential user. It can also be used to illustrate or explain the result of a project work or cross-disciplinary challenge.

Materials needed: Video-camera, smart phone, cardboard props, paper, pens, editing and rendering software.

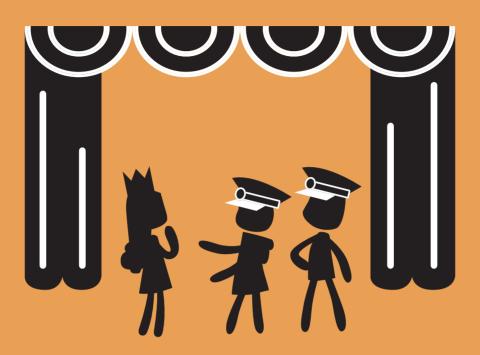
Time required: Half a day to one day.

How?

- **1)** Start by making a storyboard showing a situation, the product or the results of the project or research.
- 2) Think about the following questions: How will you display and demonstrate the important details or insights? Do you want to film with real people? Will you do a stop motion film with animated objects? Do you need to build some props or objects? Do you need to film at a specific location?
- **3)** You can easily use very simple tools like a smart phone camera, props made of paper and cardboard and post-it notes.
- **4)** Use the computer or smart phone app to edit the film, including rendered objects or stop motion techniques to communicate your ideas, insights or products.

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CREATION METHOD: 42. ROLE PLAY



42. ROLE PLAY

Role play has always been a way of experiencing what it would be like to be a horse, a prince or a wizard. This method uses role play and acting to try to experience something and develop ideas and solutions in relation to a challenge or a project.

Materials needed: Paper, pens, costumes, settings, props (or not!).

Time required: 1 hour to 1 day.

How?

1) Start by discussing the following: what do you want to learn and develop through acting it out? What kind of situation or scene would be interesting to act out? What do you need to do it and get in the mood? Do you need props and costumes? Do you want to create a storyboard to act from or will it be improv theatre where the different characters are clearly defined but you will develop the dialogue and actions on the fly?

- **2)** As role play and acting is something many people find a bit difficult it is important to have fun while still being serious enough to actually act and commit properly to the exercise!
- **3)** Follow the story board or the characters you have chosen as faithfully as possible and be respectful towards one another. Make the others relax and try to follow their ideas and experiments if you are improvising.
- **4)** Act out different scenes, situations and roles.
- **5)** Step back and evaluate what happened. What possibilities and situations arose from the role play or acting that seemed interesting? Did you become aware of new things you had not thought of before? Explain!

CREATION METHOD - REFLECTION



REFLECTION

There are six methods for developing the ideas you have developed and chosen, creating concepts, solutions or answers to the challenge.

Guide questions for evalulation of the creation:

How have you created the solution?

What was the concept or solution?

How will the solution look like?

How will it work?

Who is it for?

How can they use it?

What have you learned about the subject or about other things, through creating a solution?