



**CHANGE MAKERS  
TOOLKIT**

# manifesto



## **THIS TOOLKIT IS NOT**

About gamification

About teaching you how to teach design

## **THIS TOOLKIT**

Is for all educators willing to take risks

Is custom-made, adaptable and flexible

Helps you to empower children and foster the development of a design thinking mindset, more prone to collaboration, co-creation, creativity and innovation

Allows you to build upon your own experience

Allows you to design your own learning experiences leveraging from the playful experience of the game



# design thinking



## APPLIED TO LEARNING

Choice, inquiry, playfulness and ownership.

We could have chosen different words to start this toolkit. We could have gone with creativity, gamification and innovation. But our aim, with the Empatheia Game and this toolkit, goes way beyond trends and general concepts.

Naming design thinking as an educational approach shares our passion and commitment with learning.

In its essence design thinking is an iterative tool. One that demands a continuum of curiosity, research, reflection, experimentation, connection, risk, failure, new beginnings. Nothing expresses more the power of learning.

# design thinking



## WHY?

Education used to be “about teaching people something” but has evolved to “making sure that individuals develop a reliable compass and the navigation skills to find their own way through an increasingly uncertain, volatile and ambiguous world”(OECD report, 2015).

Design thinking is all about that - a method to nurturing “navigation” skills, a strategy to elicit creativity rooted in empathy and comfort with failure. Rooted in research which demonstrates that the design thinking mindset is critical to the integral development of learners.

Design thinking is not a curriculum, but a process for problem-solving. We will show you how you can use it to plan lessons that empower children and foster the development of a design thinking mindset, more prone to collaboration, co-creation, creativity and innovation.

## YOU WILL LEARN

Which key competences are targeted by the Empatheia Game, and how will the game facilitate the learning of these competences - our theory of learning.

How to use the Empatheia game in the classroom, and complement it with a set of offline activities, including examples for relating it to your national curriculum .

Suggestions for assessment and evaluation of the competences addressed by the game.

Ideas for design thinking applied to learning, and additional resources for making the classroom a place for choice, inquiry, playfulness and ownership.

# design thinking



## WHAT COMPETENCES ?

The Empatheia Game is organized around a framework for building design thinking competences in primary school, developed by a consortium of researchers and practitioners in the field of education.

The five phases of the game - empathy, define, ideate, prototype and test - each aim to address a different set of competences, and includes key competences suggested by the European Commission.

	EMPATHY	DEFINE	IDEATE	PROTOTYPE	TEST
PHASES AND COMPETENCES	Emotional Intelligence	Reflecting on experiences	Visioning	Problemsolving	Capacity to evaluate
	Capacity to observe	Problem based learning	Storytelling/ Narrative capacity to picture scenario	Capacity to concretize	Capacity to analyze
	Learning from real word	Critical thinking	Agency	Capacity to adapt	Validate
	Questioning		Capacity to take initiative	Implement/ Create/ Building	Share
			Embrace experimentation	Learning from mistakes	

# design thinking

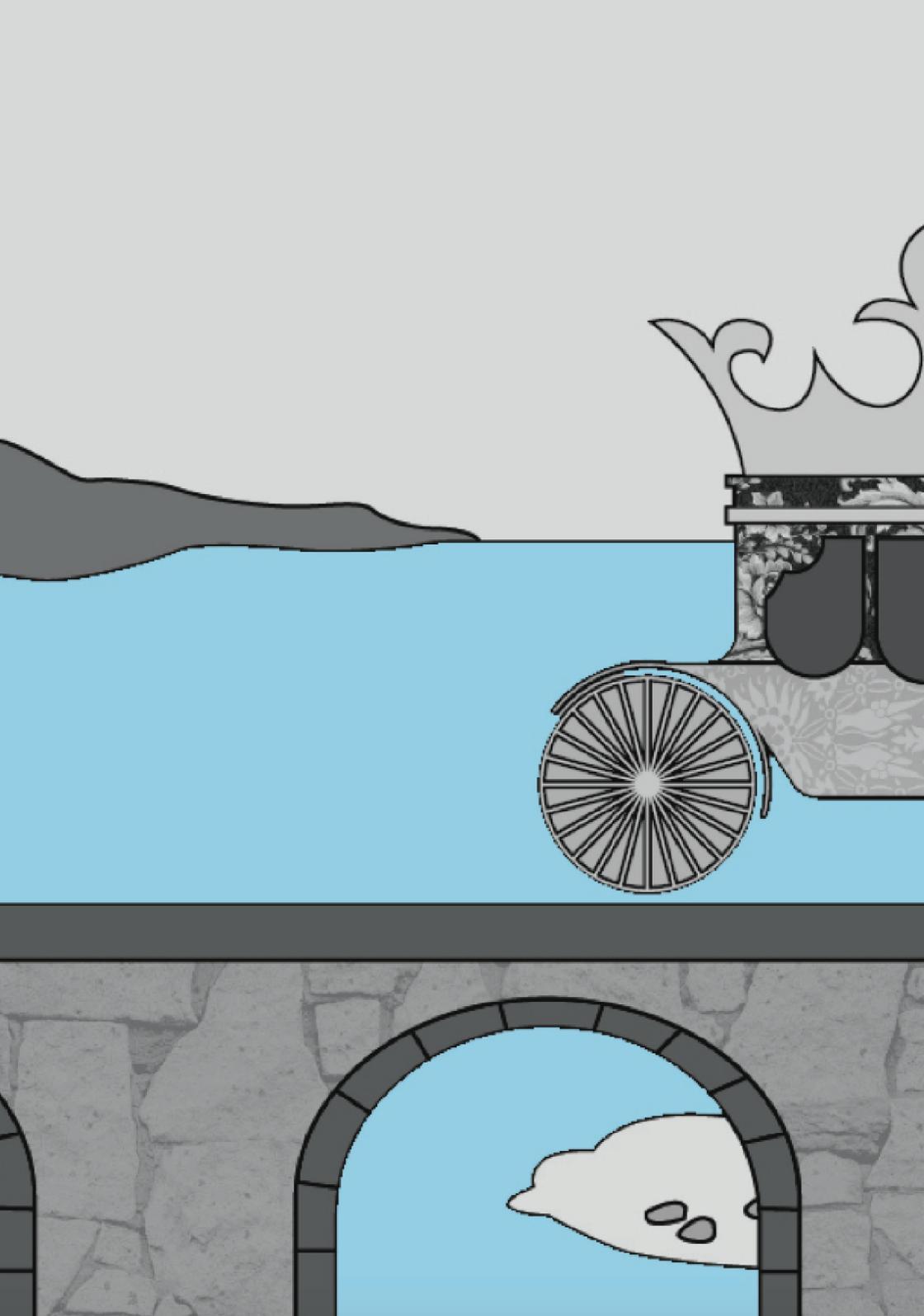


## WHAT COMPETENCES ?

In addition to these, the game and additional activities also address transversal competences like

- Communication skills
- Teamwork/collaborative skills
- Literacy competence: reading & writing in new formats
- Planning and organizing skills

Finally, but not least important, one of the main aims of the Design Thinking process is to promote creativity and fun at the same time that the student is learning how to face realistic problems.



# change makers



## LEARNING JOURNEY FOR THE GAME

### HOW TO MAKE THE CHANGEMAKERS GAME WORK FOR YOU

Using digital educational resources is not an easy task. Digital games have the potential to create active and engaging learning environments, supporting problem-solving, and learning through practice. However, using games for learning requires often rethinking of the classical teaching - who owns the task? how do we help the students? and how do we evaluate learning?

The key to making this design thinking game work in your classroom is to understand the assumptions baked into it — what do we think about teaching and learning and how does that align with the reality of your schools and classrooms.

### OUR THEORY OF LEARNING

**Instructional Pace** - the game is designed with students moving at their own pace in mind, working at different paces at different times, with natural checkpoints built in passing from one stage to the other. You can also choose that the whole classroom moves at once, or moves at a slower pace.

**Student Agency** - the game is built to provide just enough scaffolding for students to navigate, yet allow students to explore on their own and decide their desired course of action.

**Project based learning** - the approach to learning we encourage throughout this game is project based, experiential learning (learning-by-doing), across disciplines. We encourage you to see the topics you could relate this game to in your own practice.

**Teacher Guidance** - your role is that of a facilitator, the knowledge arising from reflecting on and discussing the use of the game. The game can be used in combination with other practical activities, as described in the next section.

# change makers



## WINNING THE GAME

There is no “one solution” to win the game - there are multiple ways to design the carriage.

Since the design process is not a linear one, there is never only one way of solving an issue, rather multiple possibilities, each one being based on choices made at some point in the design process. There is, therefore, no real right or wrong answer in the game, only variations of different winning solutions.

This principle of “there is never only one single way” is an invitation for children to try out multiple options, consider different points of view, and have in mind that there are many ways to solving a problem. Of course, each of these solutions comes with its drawbacks, which require to be taken into account, analysed and assumed in order to choose and design the best solution.

# change makers



## DESIGNING A ROYAL CARRIAGE

### OBJECTIVE

The player will go through several phases in order to solve the task of designing a carriage that responds to the wishes and needs of the royal family and solves the task at hand.

### MAIN STEPS OF THE GAME

**Context setting** - suggested step prior to playing the game: What was life like in the middle ages?

**Step 1: Empathise** - talk to stakeholders to understand the needs of the royal couple - What does the royal couple need that carriage for? How should it be like, what should it be fit for?

**Step 2: Define** - formulating/choosing the best way to describe the needs by defining the indicators to concentrate on - What to focus on? What direction to take?

**Step 3: Ideation** - based on the indicators from previous stage, the player finds ideas for the design.

**Step 4: Prototype** - exploring the limits of the design, the prototyping phase is critical for learning - where one realizes that some of the ideas are not feasible

**Step 5: Testing** - testing the solutions, and redesigning the carriage according to the feedback and failures.

### THE "NOTEBOOK"

As the player advances the game, it has access to a notebook, which corresponds to a designer's notebook, which contains what the player has learned so far, and can be accessed at any stage from all screens. The notebook has the function to remind the players where they are in the process and what their mission is, and also to help them remember the choices they made in a simple, visual way



# game general walkthrough



## CONTEXT SETTING

### What was life in the middle ages

**Objective:** [Prior to playing the game]

Getting the children to learn how life was like during the middle ages in order for them to capture the context, the existing technology, in order to avoid mixing time periods. This step allows them to immerse themselves into the historical context of the game.

**Skills/competencies:** General knowledge, capacity to imagine life throughout history, imagination

**Materials needed:** Films, books, websites, field visits, etc.

- Fill up the classroom with things about the medieval time (cartoons, illustrated books, images, videos, comicstrips, etc.)
- Use a toy carriage to introduce the parts that will have to be designed - for younger children

Start with introducing the experience of living in the medieval time to ensure all children have a common reference point before starting the game. Some ideas:

- A short role play with characters from the game
- Read a story that introduces the way of living in the medieval times (novel-like stories)
- Watch a short movie
- Visit the local history museum or historical sites

# game general walkthrough



## STEP 1: EMPATHISE

### Offline activity suggestion

#### EXPLORING OTHER VIEWS

**Objective:** To get the children to listen, be curious and explore, to get a better understanding of the situation by listening to contradictory points of view

**Skills/competencies:** Empathy, capacity to listen, capacity to process information, capacity to compare different views, curiosity

**Materials needed:** Paper cards (printed and cut)

**Time (suggested):** 45 min

Beyond the characters included in the game, start a conversation with the children around extra characters. Ask to children what other characters could be helpful or have interesting things to say about the carriage?

#### How to ?

1. Ask the children to list all the characters they have met in the game and what those characters have said about the carriage
2. Present the additional character cards, marked with letters from A to K, and ask them to imagine what type of character they represent. They write the type just below the character (artist, shoemaker, etc.)
3. Ask the children to imagine what those characters would potentially be advising in terms of carriage design > the children identify minimum one quality that the character would advise for and give an argument. They place the letter corresponding to the characters on the cursors representing the size, speed, beauty, resistance, and comfort. You could also make a collective synthesis of what the characters might say on the white/blackboard.

# game general walkthrough

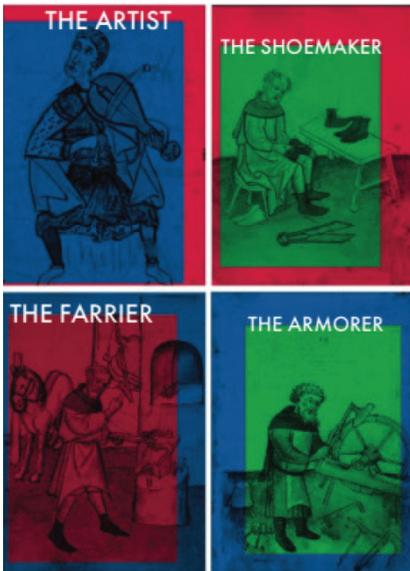


## STEP 1: EMPATHISE

### Offline activity suggestion

#### EXPLORING OTHER VIEWS

Example : The children take a card and decide that this character is an artist, then they try to put themselves in the shoes of the character and imagine what this character would advocate for in terms of quality. For example, the artist would most probably advocate for beauty/aesthetics.



<b>Robustness (strong, long-lasting)</b>	
<b>Ergonomy (comfortable/convenient)</b>	
<b>Aesthetics (beautiful, harmonious, nice looking)</b>	
<b>Size</b>	
<b>Speed</b>	

# game general walkthrough



## STEP 2: DEFINE

### Offline activity suggestion

#### REVIEWING OPTIONS

**Objective:** Allowing the children to make choices which are supported by arguments and reasoning

**Skills/competencies:** Making informed choices, taking decisions, critical thinking, arguing, arguing choices

**Materials needed:** Cards - at the end of the toolkit

**Time (suggested):** 45 min.

This activity should be done before letting the children configure the traits of the Carriage.

There is no good or bad answer. The aim is to see each choice through different angles and question preconceptions and initial intuitions - maybe being slow is a good thing, or being rough has its advantages.

#### How to ?

1. Ask your class to name at least 2 advantages for each of the traits (see suggestions for questions on next page). Encourage children to argue for their choice, in order to make sure that it opens up the reflection, yet it does not influence their choice too much. Similar arguments may be found for different characteristics.
2. Ask every question, one after the other, and ask the children to find arguments in favor of each trait.
3. After the exercise, children make their choice and proceed with the game.

Alternative for older children (aged 9-10): ask the children to debate in groups.

# game general walkthrough



## STEP 2: DEFINE

### Offline activity suggestion

#### REVIEWING OPTIONS

**Question 1: Why being slow is a good thing ?**

(less dangerous, see the landscape better, you will not be sick, less stressed, the horses will be less tired, etc.)

**Question 2: Why being fast is a good thing ?**

(otherwise very long trip, you will grow tired, get bored quickly, etc.)

**Question 3: Why being rough is a good thing ?**

(not make people jealous, less expensive, easier to repair if smth breaks, etc.)

**Question 4 : Why being fancy is a good thing ?**

(shows the importance of the royal couple, allows the expression of Arts & Crafts, shows the wealth to the other kings and queens, etc.)

**Question 5 : Why having basic comfort is a good thing ?**

(less expensive, faster to build, etc.)

**Question 6 : Why having luxury comfort is a good thing ?**

(makes the journey more comfortable, more beautiful, less tiring, etc.)

**Question 7 : Why being small is a good thing ?**

(the carriage can pass in small streets, the carriage is less complex to build, more robust, etc.)

**Question 8 : Why being large is a good thing ?**

(a lot of space, can take a lot of stuff with you, can move around more freely, shows the importance of the royal couple, can take people on board, etc.)

**Question 9 : Why being light is a good thing ?**

(the carriage is faster, less tiring for the horses, easier to maneuver, etc.)

**Question 10 : Why being strong is a good thing ?**

(the carriage can resist shocks, will not break so easily, gives you a feeling of safety, etc.)

# game general walkthrough



## STEP 2: DEFINE

### Offline activity suggestion

#### REVIEWING OPTIONS



How to ?

Before letting the kids configure the traits of the Carriage. The teacher conducts a little exercise in which, for each of the characteristics, the kids need to give at least 2 advantages for each of the traits - see suggestions for questions below. It is important that for each characteristic, at least 2 arguments are

found in order to make sure that it opens up the reflection for the kids but does not influence their choice too much. The aim with this offline activity is to get the kids to see each choice through different angles and to realize that maybe.



Being slow is a good thing, or that being rough is a good thing, so to question kids` preconceptions and initial intuitions. Similar arguments may be found for different characteristics.



Ask every question, one after the other, and ask the kids to find arguments in favor of each trait.

# game general walkthrough



## STEP 3: IDEATION

### Offline activity suggestion

#### BRAINSTORMING AND SKETCHING

The exercises in the ideation phase all have the objective to get the children going with generating ideas, by going beyond what already exist and what they know, combining ideas and reshaping them.

The exercises are preparing for brainstorming, exemplifying two important principles for visioning, storytelling and idea generation:

- Quantity as a first step for quality
- Building up on each other's ideas.

We recommend to have a warm up exercise first - like the "Yes, and..." exercise before you move on to imagining variations and combining ideas.

# game general walkthrough



## STEP 3: IDEATION

### Offline activity suggestion

#### YES AND...

**Objective:** warm up exercise for ideation and storytelling, this exercise builds on the idea of being open to others' suggestions, not rejecting them as "bad ideas", "this would never work", and so on.

**Skills/competencies:** storytelling, agency, say yes instead of no, fast and creative thinking

**Materials needed:** none

**Time (suggested):** 10 min

**Expected result(s):** an understanding of what it means to say yes to others' ideas

#### How to ?

1. Divide the students in groups of 4-6 (for children aged 8-10, or in a large group with a teacher for younger children.)
2. The first person (or the teacher) begins to tell a story about for example a trip/adventure the group will make in the following week. For example: "Next week we will all go together on an adventure at the zoo". The next one in the group continues with "Yes, and...": "Yes, and we will see the lions". The next person goes on: "Yes, and each of us will feed the lions", and so on....Another example:""
3. The most important thing is to build further on the story by starting the propositions with "Yes, and..."
4. Stop the exercise after 5 minutes, or after everybody in the larger group has had the chance to contribute. Ask the students how was the exercise? What was the strangest suggestion? What did they discover building on each other's ideas? Give enough time for them to answer - do not answer for them.

# game general walkthrough



## STEP 3: IDEATION

### Offline activity suggestion

#### IMAGINING VARIATIONS

**Objective :** start the process of ideation and thinking out of the box

**Skills/competencies:** thinking out of the box, visioning, building on each other`s ideas

**Materials needed:** A4 paper template, pencils

**Time(suggested):** 30 minutes

**Expected results:** creating a physical proof that all children can be creative in the form of a drawing and that there is not "one" solution but many options

#### How to ?

1. Divide the children in groups of 3-5, and give a A4 paper to each group. Draw or ask the children to draw a bike.
2. Each child has to have something to draw with, and each will have to take turns to draw a bike. The only condition is that each bike has to be different from the previous ones - You can choose if you allow them to talk to each other or make this exercise in silence. Allow them to work for 15-20min.

Option : you may prompt them with questions : What would a very fast bike look like?

What if you want to travel together with your friends? What if you need to carry some stuff around?

3. Stop the exercise after the time has run out.
4. Use 2-3 minutes to discuss how was the exercise and what have they learned during this exercise, either in small groups (9-10 yrs), or in plenum (6-8 yrs).



# game general walkthrough



## STEP 3: IDEATION

### Offline activity suggestion

#### COMBINING IDEAS

**Objective:** Understanding that some characteristics featured in the game are contradictory, and that designing is also about making informed choices.

**Skills/competencies:** critical thinking, creativity, making choices, generating ideas

**Materials needed:** optional: cards in annex

**Time (suggested):** 20 min

**Expected result(s):** an understanding of what it means to say yes to others` ideas

#### How to ?

Alternative - for kids yrs.9-10

1. Turn all the cards upside down, choose two of them.
2. Formulate either a contradictory sentence with the two cards chosen, or one that shows how the

two fit together.

Example: The child chose a motorcycle and a boat. The sentence can either highlight a contradiction, e.g:” It cannot be at the same time both fast as a racer motorcycle and as beautiful as the most luxurious yacht.”, or a fit: “It can be as resistant as an army boat, and as beautiful as a Ducati motorcycle ”.

#### How to ?

Alternative - for kids yrs. 6-9

1. Put all the cards into a pile in the middle of the table
2. Each kid picks one card and shows it to the rest of the group
3. First, they identify what it is (a bike, a boat, etc.) then decide upon what are the key features of this transportation mean based on the ones from the game : the bike is light, the tank is slow and

# game general walkthrough



## STEP 4: PROTOTYPE

### Offline activity suggestion

#### SCENARIOS OF USE STORYTELLING

Drawing the result of one`s work and how the others perceive that product (in this case a carriage) as a cartoon can help the students imagine different scenarios where the product will be used, giving a lot of insights and ideas to the design.

**Objective:** go from an idea to drawing a product, experimentation

**Skills/competencies:** empathy, create/build, storytelling, capacity to iterate

**Materials needed:** paper, coloured pencils

**Time (suggested):** 45 min

**Expected result(s):** a cartoon illustrating the use of the carriage/product

#### How to ?

Read to the students or print out and give it to them

1. Start telling a story of use of the carriage and draw it in the first 3 boxes.
2. Then pass your drawing to another person or group and ask them to imagine and draw a disruption in your story.
3. Then exchange your scenario back and discuss it : what happened? why did it happen? is it likely to happen? what can we learn from this disruption in terms of design?

# game general walkthrough



## STEP 5: TESTING

### Offline activity suggestion

#### DESIGNING A CARRIAGE SHARING LOG BOOK/CALENDAR

For keeping track of the carriage use for both the royal family and their neighbours.

The goal of this activity is for children to structure the information in a form.

#### How to ?

1. Start by deciding how many days a month/year does the royal family need the carriage - what are the occasions they need the carriage for? how far do they need to go, and how many days would that take at the speed of the carriage goes? any annual events they have to attend? what about leisure trips?
2. Draw a calendar / form with all the days of the year - or download a free calendar template from the web.
3. Mark down the days that the carriage is occupied.
4. Decide on how will the other neighbours know about the available days - is it at the beginning of the year? is it flexible? where do you "publish", or how do you let the neighbours find out about the calendar? How do the neighbours let the royal family know about their own needs?

# game general walkthrough



## STEP 5: TESTING

### Offline activity suggestion

#### PITCHING - FOR CHILDREN 9-10 YRS OLD

Pitching an idea means simply describing an idea in a simple form for a person that does not know anything about your product to begin with, and get their immediate thoughts and feedback (see suggestion for feedback under next activity). It can also be used to present the results in Step 6.

**Objective:** Trying out and failing without frustration, readjusting/correcting

**Skills/competencies:** Presentation skills, collaboration skills, capacity to evaluate, capacity to analyse and reflect

**Materials needed:** none (other students/teachers from different classes need to be invited as public)

**Time (suggested):** 45 min

**Expected result(s):** test of an idea by pitching. the result can be formalized in a feedback scheme, or just with points by a jury.

#### How to ?

Read to the students or print out and give it to them

1. Start by defining what do you want to say - and what do you want the others to tell you?
2. Decide within your group who will be talking. It is important that the one talking knows what (s)he has to say.
3. The other students in the team can ask questions after the presentation if something has been forgotten.
4. Ask the public to give you their immediate reaction after the presentation is over - what do you think about it, did you like what you heard? what was interesting about it? what would make the carriage better? if you were the king/queen, how would you use it?(alternatively, one can use the feedback round in the next exercise)
5. Ask the opinion of at least 3 persons, write down their comments, and try to adjust your design. It is important NOT to defend your product but, say thank you to ALL comments.

# game general walkthrough



## STEP 5: TESTING

### Offline activity suggestion

#### DEEPER DESIGN

**Objective:** exploring further, thinking deeper

**Skills/competencies:** reviewing, reflecting, thinking deeper/further

**Materials needed:** none

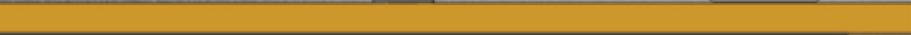
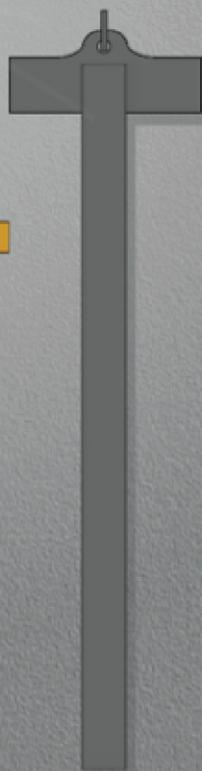
**Time (suggested):** 45 min

**Expected result(s):** new parts of the carriage that could have been worth designing...

In the game, the design is limited to the most important/critical element of a carriage but in a real-world design process, depending on time constraints, budget, etc. you can actually go a lot further by working on many more details.

#### How to ?

1. Ask children to list the different parts of the carriage that they could choose from, and why they were important.
2. Think of other elements of the carriage not covered by the game, that would have been interesting to design, and why. For example : the roof, the size of the windows, the horses, etc. , and some variations : two-horses carriage (light but limited speed, faster to prepare...), four-horses carriage (faster but more demanding for the structure of the carriage),etc.
3. Ask children to think about some daily objects that have a high level of design details (a car, a computer, etc.).
4. Select one object and identify what are, according to the children, the most important aspects/features and the more detail-oriented ones( for example, for a car : the most critical may be the size, the comfort, the silence, etc. and details may be the color of the paint, the material of the seats, etc.)



INSIDE SEATS

WALLS

STORAGE



# *design thinking applied to learning*

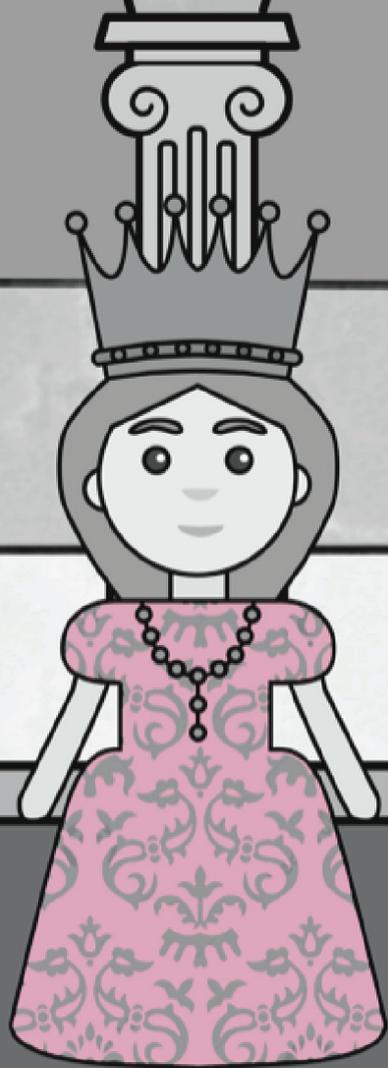


In a way, schools across the world have been performing design thinking elements for centuries.

Creative and critical thinking, research and reflection, curiosity and problem solving are rooted in almost all educational approaches (apart from the “factory model of education” or mass education models).

What we offer now, is an entry point for a structured way of thinking, designing and facilitating learning.

Choice, inquiry, playfulness and ownership will be foundational elements and success criteria for your learning design. Both for you and your learners.



# credits



## The project:

ChangeMakers | Nurturing the design thinking mindset of children through gaming

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