DIGI EDU HACK 2023

European Commission

2023

Tools and techniques for idea generation and development

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Explore how digital technologies are transforming education,
and devise forward-thinking solutions to the challenges of digital education

This MOOC bite is a transcription from EIT Climate KIC MOOC "Innovation in EdTech: Hacking the Challenges of Digital Education" that was produced for DigiEduHack 2021 edition and accessible in the FutureLearn website. Some information in the document has been altered to remain faithful to the political developments and in line with the redesigned DigiEduHack 2023.

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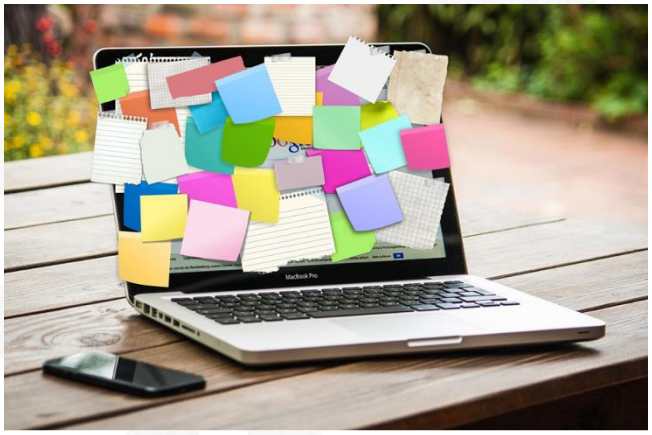
If you came this far, it means that you are interested in and ready to contributing to shaping the future of digital education. During your journey in DigiEduHack, you and your team, will be developing a solution to an existing challenge. To help you design your solution in an iterative way, we have put together this document aiming at giving you an overview about what Design Thinking is, how to use this problem solving approach and what type of tools/methods/canvas you can use during each of the steps of the process.

1. Introduction to Design Thinking



Design thinking emphasizes understanding user needs, ideation, prototyping, and iterative testing. By applying design thinking principles, individuals can approach challenges with empathy, collaboration, and a focus on human-centered solutions. It helps individuals develop a deep understanding of the problem at hand and encourages them to explore a wide range of ideas and perspectives. Design thinking is not limited to designers or specific industries; it can be applied to various fields, including business, technology, education, healthcare, and social issues. Familiarity with design thinking equips people with a versatile framework to tackle complex problems, enhance their critical thinking skills, and drive positive change.

Using design thinking for ideation

In this activity, we explore how you can use design thinking techniques and tools during the DigiEduHack.

What is design thinking?

Design Thinking is a process for imagining improved futures. It helps people innovate new products, services, business models and more! It allows you to learn more, faster, and with less cost and risk. It is a holistic process that uses inputs from different areas in order to be successful.

"*Design thinking is the ability to create, portray and deliver tomorrow's distinction, today.*" - Onyi Anyado

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The Design Thinking process starts with vision, need and emotion or the **heart**, the **head** and the **hand**.

A design thinking mind-set

Toni Chung, one of the coaches at EIT Climate KIC, explained more about the mind-sets required for successful design thinking:

The importance of mindset when it comes to design thinking is that depending on which context you are applying design and thinking whether that is a product that you are trying to develop, whether that is a service you're trying to design for your customers or some sort of internal process maybe that you would like to set up with your team. The application of design thinking can look a bit different.

In terms of the specific tools that you will be using in terms of the process, how it really looks like, how complex it will be, but also in terms of the limitations and the restrictions that you might be facing. But the one thing that stands above all of this that is independent from the actual case and the actual situation is the mind-set. And when I talk about mind-sets, I'm referring to a set of principles that help us understand better what it really means to develop solutions that are not only normative but truly human-centred. And these principles go beyond all of the methodologies and the frameworks and the tools.

If we understand these principles and really try to embrace them, they will impact our actions. I was thinking in our everyday life, in our everyday work. So, for example, there is one principle which is called culture of prototyping, and that principle helps us to understand that sometimes the only way to really know if something is working or not is by trying it out, specifically when we talk about ideas that have never been done before. This principle encourages us to experiment, to explore, to test, but also to understand and accept that uncertainty is just a normal part of the journey.

Design Thinking – Core mind-sets

Mindful of process Always be aware of where you are in the process and what is needed at this moment. Sometimes it is important to be creative and forget about any restrictions. At other times you want to focus on evaluating and decision-making. Keeping this level of awareness will help you to progress faster.

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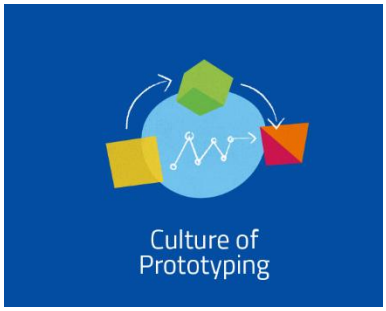
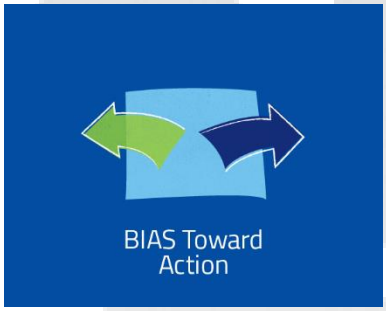


Culture of prototyping Instead of just assuming and guessing, embrace a culture of experimentation and trying out. Don't be afraid to test your ideas and get in touch with your relevant users and stakeholders early on in the process.

Human-centred Always start with the human in mind. In the end, you want to improve the life of others. So, step away from what you think is best for someone else and instead try to understand what really provides value for others.



Bias towards action Think by doing. Instead of running in circles through never-ending discussions, try to progress quickly in small steps through concrete actions. Especially in situations of uncertainty, sometimes the only way to gain clarity is to take a next step and see what happens.

Show, don't tell Be visual whenever you can. As we all know, a picture can say more than a thousand words. Sketch out your ideas and build stuff. Don't be worried about making things look pretty. It's not about creating art but, rather, about having a shared understanding about the ideas that are being discussed.

Remember… Design Thinking is a powerful approach to innovation, but you need to engage these mind-sets to be really successful.

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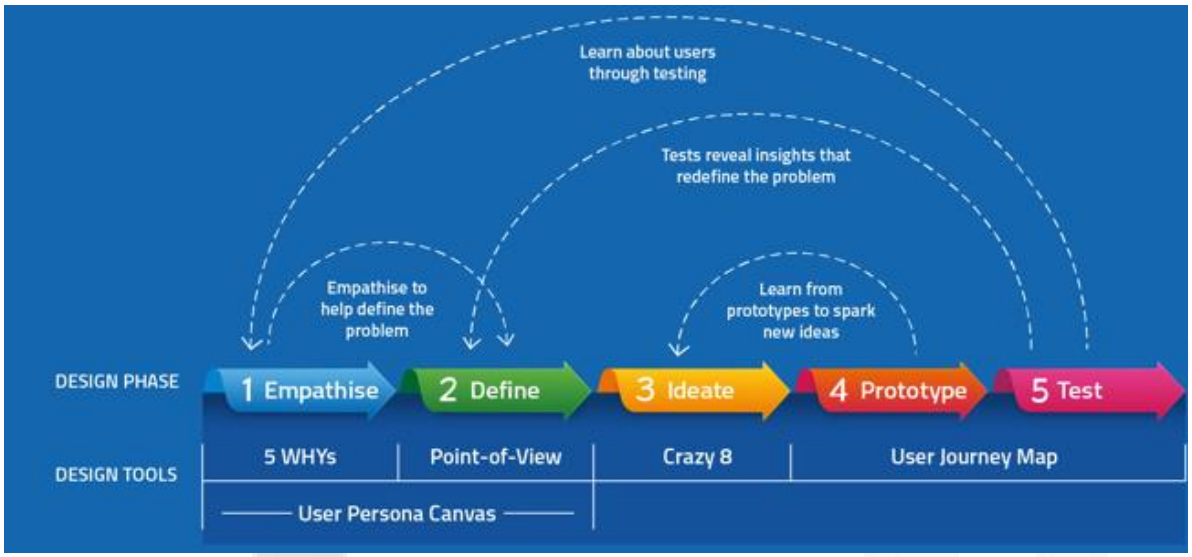
2. The design thinking process

The Design Thinking process involves the following steps:



Empathise	**Understanding user(s) and context** Understanding the situation (what's working, what's not, and for whom, where and when). Before thinking about possible solutions, it is important to gain a better understanding about relevant users and stakeholders. Put yourself into their shoes and explore their realities to find out more about unmet needs and desires. This will help you to understand what kind of value the people you want to serve are really looking for.
Define	**Identifying needs (of the all stakeholders) and framing the challenge** After gathering important insights about relevant users and stakeholders, it is important to create a conscious focus and frame the key challenge(s) that you and your team would like to solve. This step is vital so that you avoid trying to solve everything at once and end up achieving nothing at all.
Ideate	**Developing novel** ideas After defining the key challenges to be solved, it is time to think 'out of the box' and develop novel ideas for possible solutions. It is important to not only stick with the first ideas, but to really push yourself and your team to go beyond the obvious solutions. Also, at some point, you'll want to focus on evaluating and selecting those ideas that hold the biggest potential, and which therefore should be explored further.
Prototype	**Making your ideas tangible** To gain a better understanding about how your idea(s) might work, find quick ways to make them more tangible. It starts by creating simple product mock-ups or visual representations (sketches, storyboards) and can eventually lead to developing full-blown user experiences. By doing this, you will not only understand your idea(s) better, but also detect important blind spots that you need to explore further.
Test	**Quickly testing ideas and learning through experience** Many of your ideas will probably be based on assumptions about what might work and how it will work. In other words, it

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means that you will be guessing a lot – which is OK. Use your prototypes to test your ideas so you can validate these assumptions and learn by receiving authentic feedback. Depending on the type of solution (digital applications, hard goods, service), you will have different possibilities to do that.

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3. 5 Why's

Here is a quick and easy research method that helps you during the 'empathise' phase to uncover a person's beliefs and motivations.

"Ask 'why' five times about every matter"

Toyota developed and refined the 5 Why's technique as a process tool used for problem solving.

The 5 Whys technique is a fantastic method to use to get to the core of a person's beliefs and motivations. Sure, you may feel like a four-year-old asking 'why' every time a person answers your previous question, but if you stick with it, and give the person you're interviewing the time, space, and permission to really go deep, you're likely to wind up with a few key insights.

Duration:	15-20 minutes
Level of difficulty:	Easy
Materials:	Pens and papers
Setting:	Ideally 1-on-1 conversations, but can also be useful for group discussions.
Materials:	Pens and papers

What is the 5 Why's for?

- Getting a deeper understanding about user needs and motivations
- Navigating conversations to deeper layers of information
- Supporting users in better understanding their own needs.

When to use it?

- User interviews
- Group discussions/workshops
- Explorative conversations in general.

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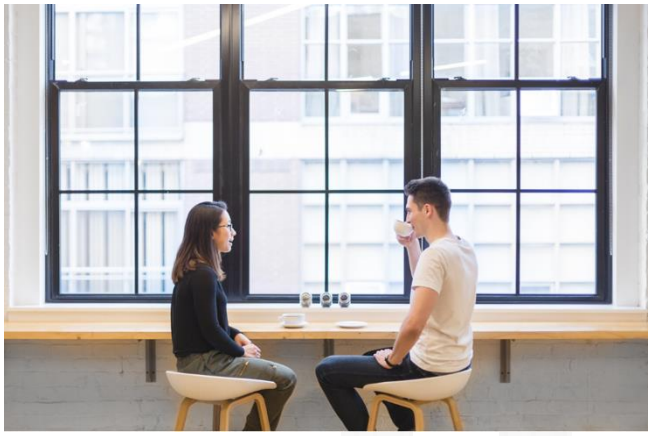
How to run a 5 Whys session?



1. Start by asking your interviewee some very broad questions, for example, “Why do you want to go to university?”
2. Then, start to go into depth about their answers by asking more explorative questions, for example, “Why is it important for you to get a degree?” Keep going. By asking five times, you will get some essential answers that can help you to explore the human or emotional roots of a problem.
3. Write down what you hear, paying attention to anything that triggers you to think “I would like to know more about that”, and write it down so you remember.
4. When you want to ‘dig deeper’, refer back to your notes and navigate the conversations to these points, so you can gain deeper levels of insight by using a sequence of why-related questions.
5. Again, remember to keep a note of your answers.

Coach’s tips

Make sure the interviewee understands the purpose of the interview and feels at ease.	Keep it a conversation – don’t go through the questions like you’re ticking off a checklist.	Be careful to not jump between topics, but to have a certain consistency in the sequence of your questions

Benefits of the technique

The 5 Why’s technique is a versatile and simple tool which you can use in practically any conversation, no matter whether it’s an informal one-on-one talk or a moderated group discussion.

This tool reminds us that, very often, the true motivations of others are not immediately visible and sometimes even unclear to the person. The 5 Whys technique provides a pathway for digging deeper and understanding core needs and desires.

- The 5 Whys process is a great method for understanding a person’s beliefs and motivations
- Really easy and quick to do, taking no more than 15 minutes
- A great tool for helping with problem solving.

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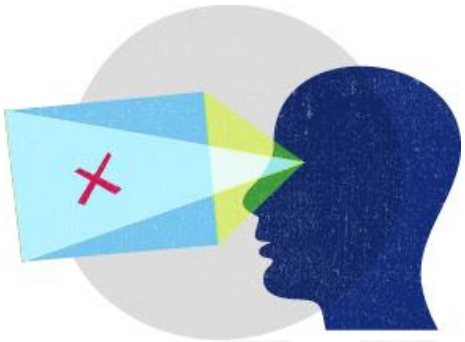
4. Point of View

The Point of View (POV) is a process that allows you to capture a meaningful and actionable problem statement during the 'define' phase.



Design and frame your challenge

Your Point of View (POV) allows you to define the challenge that needs to be addressed early on in the ideation phase. It involves reframing the challenge into an actionable problem statement that drives the rest of the design work.

Duration:	30-35 minutes
Level of difficulty:	Easy
Materials:	Blank A4 paper and pens
Setting:	1-6 people

What is the Point of View used for?

- Finding the right framing for the challenge
- Setting the direction for further solution development
- Creating a shared focus.

When to use it

- For review meetings of the 'Empathise' phase
- After having conducted a substantial (depending on the context) number of interviews and research tasks
- As checkpoints in later stages of the Design Thinking process → 'Are we on the right track?'

How to run a Point of View session…

Collectively, gain an overview about all the user problem insights that have been collected. This could mean looking at Persona Maps, interview summaries, research data and statistics. Try to identify the 3-4 most relevant needs and/or desires and capture them in some visual way.

Try to formulate these needs and/or desires as a challenge question, starting with:

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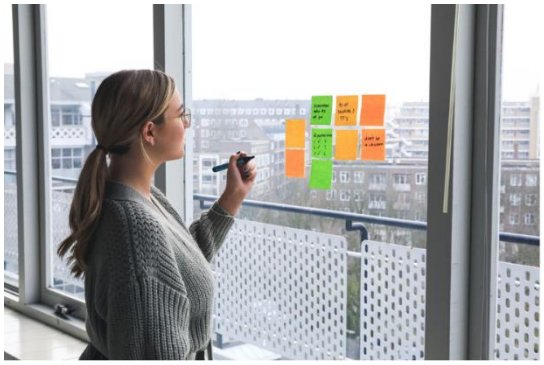

"How might we help [description of target group] to achieve / solve / attract [description of challenge to be solved]…?"

The challenge question should be simple and concise. Try to formulate the question not too broadly (thereby creating a solution space which is too big) but also don't be too narrow (thereby limiting the ideation too much from the outset). Of course, the terms 'too broad' and 'too narrow' depend on the specific context and should be discussed within your team.

Once you have decided on your Point of View (→ challenge question), capture it visibly and make it visible to the team throughout the rest of the process. It shall serve as a checkpoint and decision-making support when evaluating solution ideas later in the process.

Coach's tips

Don't look for the perfect question in the beginning, but allow yourself to brainstorm many different variations and select / refine them step-by-step.	Finding the right wording can be quite challenging at times, especially when working as a group. However, there can be a lot of value in going through this struggle, as it will force your team to create a very clear-shared understanding of the challenge to be solved.	Developing a Point of View will help to create focus. Frequently, this means letting go of other needs/challenges.

Benefits of the technique

Getting off on the right foot is crucial in the design thinking 'define' stage, so using a technique like POV, allows you to get the right frame for your design challenge.

- Defining the right challenge to address
- Provides you with your guiding statement
- A great POV keeps you on track.

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5. Crazy 8

Crazy 8 is a Design Sprint method that helps to push beyond your first idea to generate a wider range of solutions during the 'ideate' phase.

Crazy 8: 8 minutes, 8 ideas- Generate design ideas fast

Crazy 8 is a fast-sketching exercise that challenges people to sketch eight ideas in eight minutes. It is a great tool for brainstorming and problem solving in a group, allowing you to quickly generate ideas, then shape and iterate them. All within eight minutes!

Duration:	8-10 minutes
Level of difficulty:	Easy
Materials:	Blank A4 paper and pens
Setting:	All group sizes possible

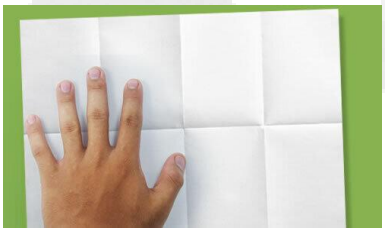
What is the Crazy 8 for?

- Developing 8 different ideas (per person) in a very quick way
- Surfacing all ideas which are 'in the room'
- Going beyond the obvious ideas in a quick way.

When to use it

- As a start for ideation meetings
- Whenever you would like to quickly develop larger numbers of ideas within a group
- Whenever you would like people to think 'outside the box'.

Here are the rules for the ideation:



Every person takes one blank sheet of A4 paper and a pen. Every person folds their paper in half three times (two times widthwise, one time lengthwise) and then unfolds the paper again. Now, the paper should be divided by the folding lines into eight little boxes, looking like this

The time keeper gives the signal for the start and end of each ideation round (one minute) sharp timing!

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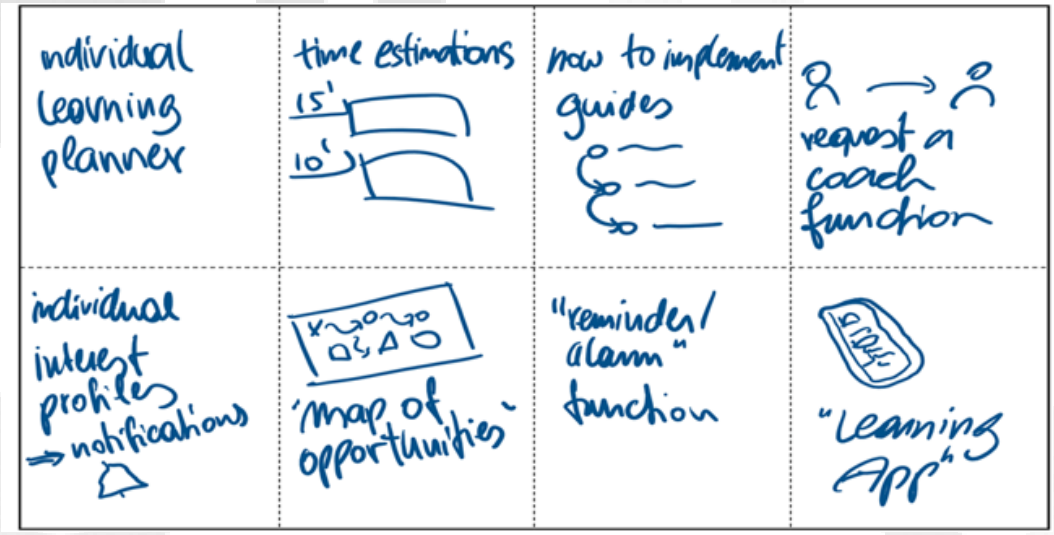
For each round, every person is supposed to write down or visualise one idea, using one of the boxes. You have exactly one minute to write /sketch a single idea and every box should represent a new idea.

Everyone follows the commands of the timekeeper and switches to the next box simultaneously. After eight rounds (= eight minutes), the ideation is over and all the boxes should be filled.

The goal is not to come up with full-fledged ideas but, instead, to quickly sketch out anything that comes to mind and create a first pool of ideas to work with. So, don't worry if your visualisations look chaotic or messy. It's just a start.



Also, not all ideas on your canvas will be great or very feasible to implement – that is also fine. After you have sketched out the ideas, you can go through them one by one and select which ones you would like to develop further.

Coach's tips

Often, the first boxes get filled easily (obvious ideas). The last ones take a bit more effort but are often more interesting.

It is perfectly fine if you cannot think of an idea in a particular round. Just leave the box empty and transition

To be more efficient, ask everyone to present only their three favourite ideas.

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to the next one at the signal of the timekeeper.

Benefits of the technique

Some people may find the Crazy 8 method difficult at first, particularly if they don't come from a design background. So, remember to reassure everyone that they don't need to be an artist to take part.

Crazy 8 allows us to quickly generate ideas that may seem weird, impossible or even impractical, and these often inspire us to ideate more and come up with some great solutions.

- The Crazy 8 process is a great method for quickly generating ideas
- It is quick and easy to do, only taking a few minutes
- You can iterate quickly
- It's a great tool for gathering design ideas or solutions to problems.

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6. User Journey Map

User Journey Mapping allows you to create a timeline of touch points between you and your customer. Understand your customers' journeys from beginning to end.

A User Journey Map is an excellent tool that allows you to visualise how your customer will interact with your product and service, allowing you to identify key moments in the product or service you are designing.

It helps you to build an emotional connection with your customer that in turns, allows you to better understand them, which ultimately leads to a better user experience.

Duration:	8-10 minutes
Level of difficulty:	Easy
Materials:	User Journey Canvas and pens/post-it notes
Setting:	1-8 people

What is the User Journey Canvas used for?

- Gaining a better (shared) understanding of user experiences and challenges
- Prototyping new ideas and solutions
- Detecting blind spots and critical moments within the user experience.

When to use it

- Can be used during the 'Empathise' phase for capturing insights from user-exploration activities
- Can be used to create quick prototypes of solution ideas, thereby making them understandable in greater detail
- Suitable for services but also tangible product ideas.

How to run a User Journey Mapping session…

The intention of this activity is to get you started using the User Mapping Activity.

Identify a problem to solve or an idea you need to design - and off you go.

Build the User Journey Map step-by-step:

- Put yourself into the shoes of the user and think about his/her most important steps / activities within the experience that you are mapping. These shouldn't be more than 5-6 steps / activities.
- Visualise each step / activity with simple drawings (it's not about creating art), so it also becomes a visual journey.

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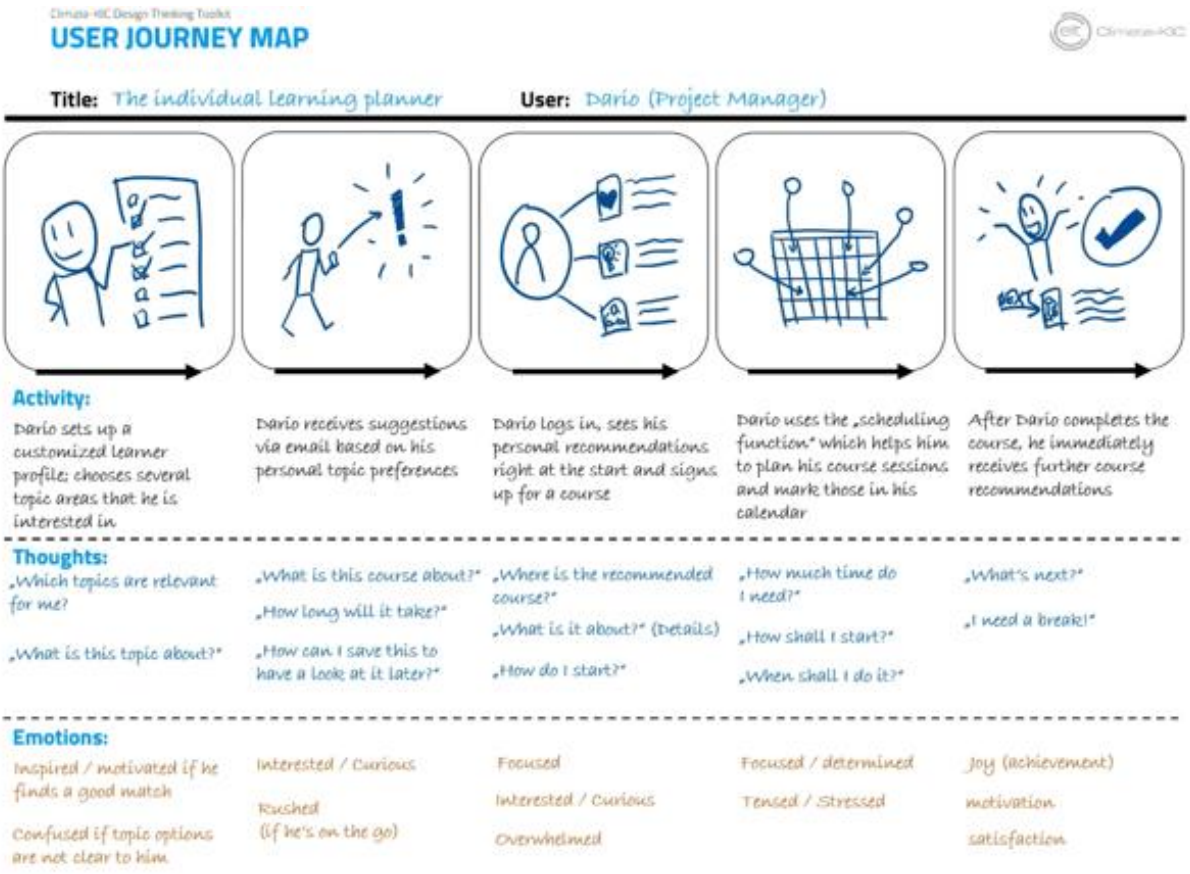
- For each step / activity, describe the following categories (short phrases / bullet points are enough):
  - ACTIVITY: What is the user doing at this moment?
  - THOUGHTS: What is the user thinking at this moment? What is going through his/her mind?
  - EMOTIONS: What is the user feeling at this moment?



Now that you have your first draft of the User Journey Map, you can use it in several ways:

- Identify blind spots where you are lacking information
- Identify crucial moments within the user journey. These could be major barriers or critical points of decision-making ('make-or-break') along the journey.

Coach's tips

It is advisable to work with sticky-notes as this will allow you to quickly exchange and add elements if needed.	Sometimes it makes sense to look at a user experience from a bird's eye view and sometimes it can helpful to zoom in and be very detailed about a particular part of the experience.	Always be conscious of the purpose of the mapping and what insights you would like to generate.	The user journey is usually mapped from a user perspective → What is he/she experiencing?

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Benefits of the technique

User Journey Map allows you to create a shared vision. As a team you are able to look at the entire experience from the user's point of view. And because it's been completed as a team, you can look at the journey from different perspectives.

- Helps you build an emotional connection with your customers
- Identifies gaps and allows you to fill them with great touch points
- Predicts customer behaviours and brand success.

Downloads

User Journey Map template pdf

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7. User Persona Mapping

A persona map helps you to get into the mind-set of your users to understand their behaviours, attitudes and emotions.

Personas allow us to personally connect with our audience

Human beings should take centre stage in Design Thinking and a persona allows us to understand the goals, motivations, and behaviours of our customers, helping us to develop better relationships between us and them.

Duration:	8-10 minutes
Level of difficulty:	Easy
Materials:	User Journey Canvas and pens/post-it notes
Setting:	1-8 people

What is the User Persona Canvas used for?

- Getting a shared understanding needs of relevant users
- Creating an overview of collected user-insights
- Detecting blind spots concerning user needs.

When to use it

- Documentation tool during interviews
- Tool for collecting and visualising findings from user exploration activities
- Tools to define starting points for user exploration activities:
    - Identifying crucial assumptions
    - Identifying blind spots.

How to run a User Persona Mapping session

The intention of this activity is to get you started using the User Persona Canvas.

Identify a product or service you want to design and get started.

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To keep in mind

1. Prepare a persona template either by printing out a prepared template (ideally size A3 or larger) or by drawing it on a large sheet of paper (or flipchart).
2. Start filling out the fields of the User Persona Map one by one. Here are some guidelines for doing that:
   - Always start by defining the specific user profile (centre field) and the use case that you're going to map. A simple way of doing this could be: '[user name] who is doing or trying to [description of activity]'
   - A user does not necessarily have to be the end user of a specific solution, but can be any stakeholder (group) that is relevant to developing/delivering the solution.

At the end of your mapping session/discussion, always define the next steps. Here are some examples:

- You identified blind spots which require further exploration and activities
- You realise that the user profile is still too broad (= too many contradicting or context-specific findings) and decide to restructure the profiles
- You decide that the level of user understanding is clear enough to move on and enter the Define-Ideate phase.

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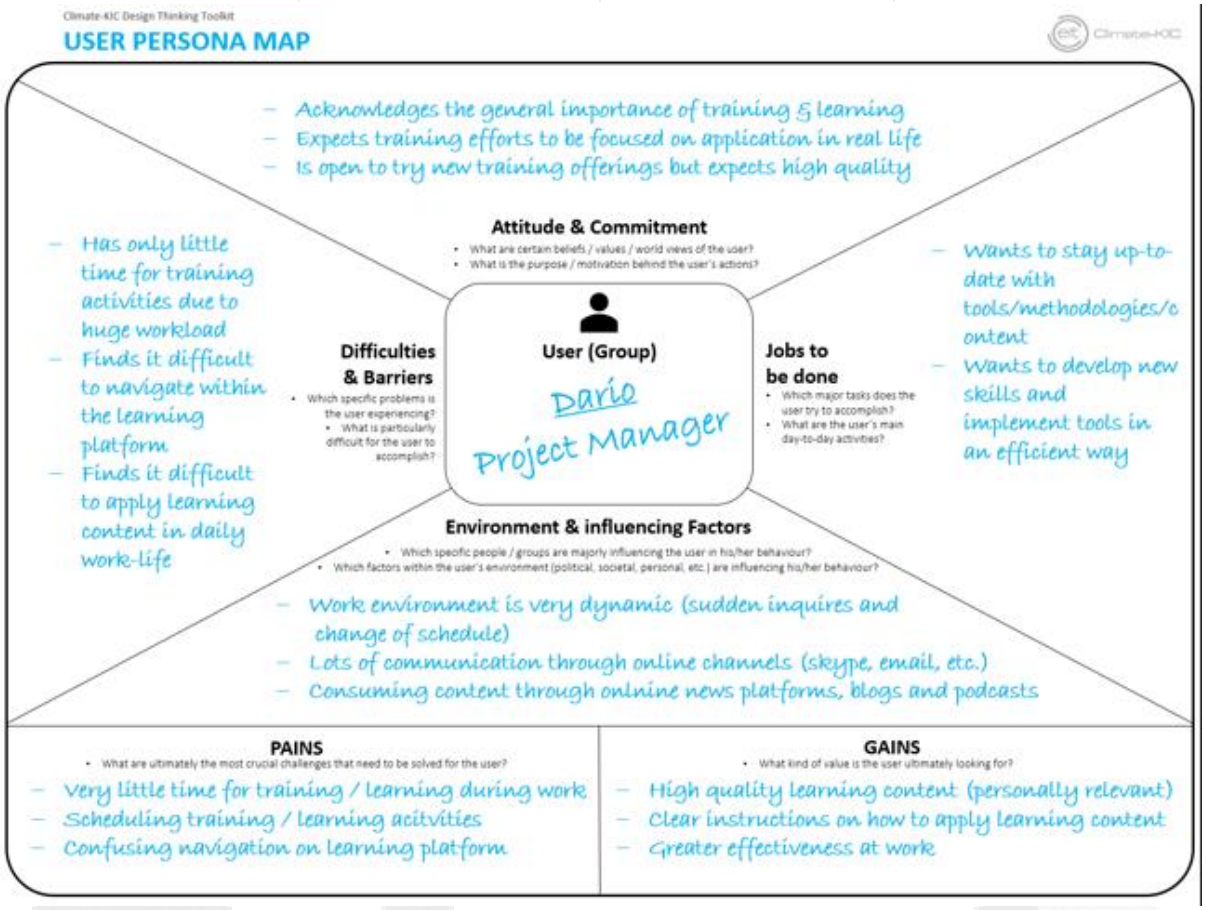
Coach's tips

The User Persona Map is a very versatile tool which can be used for many purposes. Always be clear on what you are using it for.	The objective is not to list all possible findings and attributes to the map, but to focus on those that are relevant to the use case.	One of the biggest challenges is to overcome your personal bias.	Try to be as open as possible and treat every field or insight with the same level of curiosity, no matter how knowledgeable you consider yourself to be.



Benefits of the technique

A User Persona gives your audience a personality, allowing you to empathise with them; it gives them a name. As you work on the design of your product or service, you can validate any assumptions you have with your personas and it is expected that you have to iterate your personas quite a bit.

- Create a visual understanding of your customer needs
- They are quick to create and easy to iterate, so you can revise assumptions
- Connect you emotionally with your customers
- Discover weaknesses in your design solution

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