

# Online learning module- GlobeSteamSS

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## 1. Introduction

This online learning module has been developed within the GlobeSteamSS project as preparation for students taking part in the Design Challenge Events (DCEs). In these events, students work on real sustainability-related challenges provided by companies, organisations, or community partners. To participate effectively, you first need a solid understanding of the Design Thinking mindset and the structured learning process used throughout the project.

The module introduces the ATOM model, the six-phase framework used in GlobeSteamSS: Explore, Analyse, Ideate, Prototype, Realise, and Evaluate. Each phase breaks the Design Thinking process into clear, practical steps. Through the module you will learn how to understand a challenge deeply, analyse your findings, generate and select ideas, build and test prototypes, plan feasible solutions, and reflect on both your results and your learning journey.

The module has two main learning objectives. First, you will gain insight into each phase of the ATOM model and develop the skills needed to apply them during the DCE. Second, you will work on competences from the GlobeSteamSS Competency

Framework, which draws on DIGCOMP 2.2, EntreComp and GreenComp. These competences include digital collaboration, creativity, systems thinking, ethical and sustainable reasoning, teamwork, and reflective practice. Throughout the module, these competences are linked to the ATOM steps so you can see how they develop in context.

#### 1. Learning objectives linked to the ATOM model

Across the six phases you will learn to:

- Explore a challenge by gathering information, observing real situations and identifying both obvious and hidden insights
- Analyse your findings, identify patterns, and define the core question behind the challenge
- Ideate by applying creative strategies to generate, classify, and select promising ideas
- Prototype by turning ideas into early, testable representations
- Realise by planning how a solution or prototype can be implemented in a feasible way
- Evaluate by gathering feedback, assessing impact, and reflecting on your own innovation process

These phases guide your innovation journey step by step and prepare you for working with real stakeholders during the DCE.

#### 2. Learning objectives linked to the [GlobeSteamSS Competency Framework](#)

- DIGCOMP 2.2

The Digital Competence Framework for Citizen (DigComp) provides a common understanding of what digital competence is. The present publication has two main parts: the integrated DigComp 2.2 framework provides more than 250 new examples of knowledge, skills and attitudes that help citizens engage confidently, critically and safely with digital technologies, and new and emerging ones such as systems driven by artificial intelligence (AI). The framework is also made available following the digital accessibility guidelines, as creating accessible digital resources is an important priority today. The second part of the publication gives a snapshot of the existing reference material for DigComp consolidating previously released publications and references ([Vuorikari & Kluzer, 2022b](#)).

- EntreComp

The development of the entrepreneurial capacity of European citizens and organisations is one of the key policy objectives for the EU and Member States. Ten years ago, the European Commission identified sense of initiative and entrepreneurship as one of the 8 key competences necessary for a knowledge-

based society. The EntreComp framework presented in this report proposes a shared definition of entrepreneurship as a competence, with the aim to raise consensus among all stakeholders and to establish a bridge between the worlds of education and work. Developed through a mixed-methods approach, the EntreComp framework is set to become a reference de facto for any initiative aiming to foster entrepreneurial capacity of European citizens. It consists of 3 interrelated and interconnected competence areas: 'Ideas and opportunities', 'Resources' and 'Into action'. Each of the areas is made up of 5 competences, which, together, constitute the building blocks of entrepreneurship as a competence. The framework develops the 15 competences along an 8-level progression model and proposes a comprehensive list of 442 learning outcomes. The framework can be used as a basis for the development of curricula and learning activities fostering entrepreneurship as a competence. Also, it can be used for the definition of parameters to assess learners' and citizens' entrepreneurial competences ([Bacigalupo et al., 2016b](#)).

- GreenComp

The development of a European sustainability competence framework is one of the policy actions set out in the European Green Deal as a catalyst to promote learning on environmental sustainability in the European Union. GreenComp identifies a set of sustainability competences to feed into education programmes to help learners develop knowledge, skills and attitudes that promote ways to think, plan and act with empathy, responsibility, and care for our planet and for public health. (...)GreenComp comprises four interrelated competence areas: 'embodying sustainability values', 'embracing complexity in sustainability', 'envisioning sustainable futures' and 'acting for sustainability'. Each area comprises three competences that are interlinked and equally important. GreenComp is designed to be a non-prescriptive reference for learning schemes fostering sustainability as a competence ([Bianchi et al., 2022](#)).

Each step of the module follows the same structure: activating prior knowledge, introducing new concepts, guided practice, and short independent tasks. Running examples show how ideas evolve through the full process. From early exploration to real-world testing and evaluation so the content stays practical and connected to what you will experience during the DCE.

By completing this module, you will build both the conceptual understanding and the practical mindset needed to work confidently with Design Thinking and to participate fully in the Design Challenge Event.

## 2. What is Design thinking?

Design Thinking is a practical way to tackle complex, real-world challenges.

Instead of jumping straight to a solution, you first try to deeply understand the people involved and the context of the problem. You explore what is really happening, define the core issue, generate ideas, test them, improve them, and reflect on the results.

Design Thinking starts with empathy (Who is affected?). A strong solution balances three dimensions:

1. Desirability: Do people actually need or want it?
2. Feasibility: Is it technically possible?
3. Viability: Is it sustainable economically and socially?

In GlobeSteamSS, Design Thinking is the mindset behind the Design Challenge Events (DCEs). You will work on real sustainability-related challenges, often provided by companies or organisations. Together with systems thinking, Design Thinking helps you deal with complex societal challenges that do not have one simple answer.

Design Thinking is not linear. You may move back and forth between steps as new insights emerge.

The six design thinking steps in this project.

1. Explore: This initial phase focuses on building a deep understanding of the challenge and the people experiencing it.
2. Analyse: In this phase, information gathered during exploration is synthesised into clear insights.
3. Ideate: The clearly defined problem becomes the starting point for creative solution generation.
4. Prototype: selected ideas are transformed into simple, tangible concepts. You create quick representations of your solution.
5. Realise: the prototype is tested and refined. You gather feedback and adjust your solution.
6. Evaluate: The solution and its impact are assessed. You determine whether the solution addresses the original challenge.

If we connect it to a real world problem, it can look like this:

Challenge example to illustrate the process:

A company wants to reduce food waste in its cafeteria.

1. Explore:  
The team interviews employees and observes lunch behaviour. They discover that many people take too much food because they are unsure about portion sizes.
2. Analyse:  
The team identifies a key pattern: food waste is linked to portion uncertainty and time pressure. They define the problem as:  
“How might we help employees choose the right portion size quickly?”
3. Ideate:  
The team brainstorms possible solutions such as smaller plates, visual portion guides, and a digital pre-order system. They select two ideas to test.
4. Prototype:  
They create a simple poster with portion size visuals and introduce a smaller plate option as a pilot test.
5. Realise:  
Employees test the smaller plates for one week. Based on feedback, the team improves the signage and layout.
6. Evaluate:  
After one month, food waste is measured again. The results show a reduction, and the team reflects on further improvements.

In the following chapters, we will explore each step of this process in more detail. Step by step, you will learn how to move from understanding a challenge to developing, testing, and evaluating a concrete solution within the Design Challenge Event framework.

#### EXTRA INFORMATION (Academic background of design thinking/ ATOM model)

Design Thinking is grounded in research on human-centred design and complex problem solving. It builds on the recognition that many societal challenges are “wicked problems” : issues that are difficult to define and have no single correct solution (Rittel & Webber, 1973; Buchanan, 1992).

The process combines divergent and convergent thinking, often visualised in the Double Diamond model (Design Council, 2005). It emphasizes iterative experimentation, stakeholder engagement and systemic awareness (Dorst, 2011; Liedtka, 2018).

Within GlobeSteamSS, Design Thinking is operationalised through the ATOM model (Foremlink, 2021), which structures innovation into six pedagogical phases: Explore, Analyse, Ideate, Prototype, Realise and Evaluate.

While Design Thinking provides the innovation logic (human-centred, iterative, experimental), the ATOM model translates this logic into a structured educational framework. It integrates:

- Entrepreneurial competence development
- Challenge-based learning
- Interdisciplinary collaboration
- Stakeholder co-creation
- Competence assessment

Where the Double Diamond visualises divergence and convergence, the ATOM model adds pedagogical scaffolding and explicit competence development. Together, they bridge innovation methodology and higher education practice.

This combination makes Design Thinking not only a creative tool, but a structured learning approach for sustainability-oriented innovation.

## 3. The ATOM- model

### Overview & Roles

3 Roles:

1. **Teachers & Researchers**

Explore the ATOM model and Design Thinking principles and take action with practical tools and exercises. Engage your students in innovative learning and prepare them for Design Challenge Events, or apply creative problem-solving in your own teaching practice.

2. **Students** (secondary, in transition or HEI)

Prepare to tackle real-world challenges by mastering the ATOM model and Design Thinking principles. This module equips you with the tools and mindset to participate successfully in Design Challenge Events, or to enhance your innovation skills as a stand-alone learning experience.

3. **Industry professionals**

Apply the ATOM model and Design Thinking principles to drive innovation in your organisation. Use practical tools and exercises to co-create solutions with students during Design Challenge Events or to strengthen your own approach to solving complex business challenges.

### The Challenge

Explanation: it all revolves around the challenge. You can choose your own challenge or pick a challenge delivered by real companies, for the DCE's in this project.

Link to page of proposed challenges in the project:

[https://globecop.upb.ro/challenge\\_videos](https://globecop.upb.ro/challenge_videos)

### Steps of ATOM-model

(overview of the steps)

### Real Life Example

Too Good To Go is a well-known European initiative that helps reduce food waste by connecting businesses with unsold food to consumers via a digital platform. Instead of throwing food away at the end of the day, restaurants, bakeries and supermarkets offer “surprise bags” at a reduced price. Consumers buy these through the app and pick them up during a set time window.

In this module, we will use Too Good To Go as a running example. In each step of the Design Thinking / ATOM process, you will see what this could look like in a real innovation journey. The goal is not to copy the solution, but to understand how the

process works: from understanding the context to testing, improving and evaluating impact.

Source: <https://www.toogoodtogo.com/about-us>

## 3.1 Explore

### Slide 1: Overview



### Slide 2: Learning goals

#### ATOM

To achieve a sufficient deep understanding of the challenge itself and of the field surrounding the challenge.

1. To look for the 'not-obvious' or the unknown, which is a fruitful path to innovation.
2. To assess the process of the exploration competences acquired

GlobeSteamSS Competency Framework:

#### From DIGCOMP 2.2

1. Browsing, searching and filtering data, information and digital content (1.1)
2. Protecting personal data and privacy (4.2)
3. Identifying needs and technological responses (5.2)

#### From EntreComp

1. **Spotting opportunities:** Use your imagination and abilities to identify opportunities for creating value (1.1)
2. **Creativity:** Develop creative and purposeful ideas (1.2)
3. **Valuing Ideas:** Make the most of ideas and opportunities (1.4)
4. **Ethical and Sustainable Thinking:** Assess the consequences and impact of ideas, opportunities and actions (1.5)
5. **Mobilizing Resources:** Gather and manage the resources you need (2.3)
6. **Working with Others:** Team up, collaborate and network (3.4)

#### From GreenComp

1. **Systems thinking:** To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems (2.1).
2. **Critical thinking:** To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions (2.2)
3. **Problem Framing:** To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems (2.3)
4. **Collective Action:** To act for change in collaboration with others (4.2)

### Slide 3: Theory- STUDENTS

Before you can come up with a solution, you need to understand the problem properly. In this stage, you'll investigate what's really going on and why. This might mean observing things in real life or gathering information online. You'll use methods like interviews, observation and creative research techniques.

The aim? To get a clear picture of the challenge and the context around it. Don't just look for the obvious – the real breakthroughs often come from spotting the unexpected. These “not-so-obvious” insights can lead to the most creative ideas.

Think about questions like:

- Who is involved in the challenge?
- What is happening now and what works (or doesn't)?
- Why does this matter?
- How do people experience this in their daily lives?

Approach this as an exploration. The more you discover, the stronger your foundation for innovation will be.

**Source** (also for the next steps): *The Foremlink Methodology* | Foremlink. (2021).  
<https://www.foremlink.com/the-foremlink-methodology#/>

### Slide 4: Real-world example

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

EXPLORE: Empathise & understand the context

The founders did not immediately build an app. They first explored the ecosystem of food waste.

They spoke with restaurant owners and supermarket managers, observed closing routines, talked to consumers and identified constraints and frustrations.

Explore is about empathy and deep contextual understanding.

The goal is not to solve yet, but to understand the system, stakeholders and pain points.

#### Slide 5: Extra information- OTHER STAKEHOLDERS:

Exploration is the starting point for addressing complex challenges. It involves seeking knowledge, examining problems from multiple perspectives, and uncovering hidden insights that inform creative solutions. Curiosity plays a central role, as it drives the search for understanding and reduces uncertainty (Litman, 2019). Methods of exploration include observation, dialogue, research, and experimentation, all of which broaden the scope of possible approaches (Fox et al., 2020).

The value of exploration lies in its ability to unlock creativity and generate novel ideas through linking previously unrelated concepts (Hagtvedt et al., 2019). It also helps identify strengths and weaknesses, build on existing knowledge, and develop new strategies (Grossnickle & Hidi, 2019; Wojtowicz & Loewenstein, 2020). By fostering critical thinking and encouraging risk-taking, exploration becomes a powerful tool for problem-solving and innovation.

All activities in this stage focus on gathering diverse information and perspectives to create a solid foundation for the next steps in the process.

#### References

Fox, L., Dan, O., Elber-Dorozko, L., & Loewenstein, Y. (2020). Exploration: from machines to humans. *Current Opinion in Behavioral Sciences*, 35, 104–111.

<https://doi.org/10.1016/j.cobeha.2020.08.004>

Grossnickle, E. & Hidi, S. (2019) Curiosity and interest: current perspectives. *Educational Psychology Review* 31, 781–788. <https://doi.org/10.1007/s10648-019-09513-0>

Hagtvedt, Lydia P., Dossinger, Karyn, Harrison, Spencer H., & Li Huang (2019). Curiosity made the cat more creative: Specific curiosity as a driver of creativity. *Organizational Behavior and Human Decision Processes* 150, 1-13.

<https://doi.org/10.1016/j.obhdp.2018.10.007>

Litman, J. (2019). Curiosity: Nature, dimensionality, and determinants. In Renninger, R. & Hidi, S. (Eds.) *The Cambridge handbook of motivation and learning*

(pp. 418–442). Cambridge University Press.

<https://doi.org/10.1017/9781316823279.019>

Wojtowicz, Z., & Loewenstein, G. (2020). Curiosity and the economics of attention. *Current Opinion in Behavioral Sciences*, 35, 135–140.

<https://doi.org/10.1016/j.cobeha.2020.09.002>

**Source** (also for the next steps): <https://www.demind.eu/training-pack/>

#### Slide 5: Put theory into Practice

A) ATOM-model: <https://www.demind.eu/the-atom-model-1-explore/>

B) Competency Framework GlobeSteamSS:

<https://acrobat.adobe.com/id/urn:aaid:sc:EU:5fd2409d-5dcf-45aa-972d-9710c3665115>

C) Design Challenge Event

## 3.2 Analyse

### Slide 1: Overview



### Slide 2: Learning goals

ATOM:

1. To analyse all collected data from the exploration phase and identify patterns in order to gain a deeper understanding of the challenge
2. To identify all underlying problems and question all surrounding fields of the challenge

GlobeSteamSS Competency Framework:

#### From DIGCOMP 2.2

1. Evaluating data, information and digital content (1.2)
2. Managing data, information and digital content (1.3)
3. Protecting personal data and privacy (4.2)
4. Identifying needs and technological responses (5.2)

#### From EntreComp

1. **Spotting opportunities:** Use your imagination and abilities to identify opportunities for creating value (1.1)
2. **Valuing Ideas:** Make the most of ideas and opportunities (1.4)
3. **Ethical and Sustainable Thinking:** Assess the consequences and impact of ideas, opportunities and actions (1.5)
4. **Mobilizing Resources:** Gather and manage the resources you need (2.3)
5. **Planning and Management:** Prioritize, organize and follow-up (3.2)
6. **Working with Others:** Team up, collaborate and network (3.4)

#### From GreenComp

1. **Systems Thinking:** To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems (2.1)
2. **Critical thinking:** To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions (2.2)
3. **Problem Framing:** To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems (2.3)
4. **Collective Action:** To act for change in collaboration with others (4.2)

### Side 3: Activating prior knowledge

Q: What is the primary purpose of the Explore stage in the ATOM model?

1. To create a detailed solution immediately
  - Not quite. Jumping straight to a solution can lead to superficial results. The Explore stage is about understanding the problem first.
2. To investigate the problem from different perspectives and gather relevant information
  - Correct! Exploration focuses on curiosity-driven research, collecting insights, and broadening understanding before generating ideas.
3. To select the best idea and start implementing it
  - Incorrect. At this point, you are not choosing or implementing ideas yet. The goal is to learn and discover, not decide.

### Slide 4: Theory- STUDENTS

Now that you've gathered information, it's time to dig deeper. In this step, you look at all the data and observations you collected and start making sense of them. Ask yourself:

- What patterns do I see?
- What might be causing this challenge?
- How do the different parts connect?

You can bring in theories or models to help you understand the bigger picture. The goal is to uncover the real question behind the challenge. The one that will guide your project. This question should be open-ended, not something with a quick yes/no answer.

Why is this important? Because rushing to a solution often leads to “quick fixes” that don’t last. Careful analysis helps you avoid obvious answers and find the root of the problem.

Think of this step as detective work: you’re piecing together clues to see the whole story.

#### Slide 5: extra information- OTHER STAKEHOLDERS

Analysis involves breaking down a problem or concept into its constituent parts to gain a deeper understanding of its structure and underlying causes (Bloom, 1956; Bloom & Krathwohl, 2020). This process requires systematic examination of relationships, patterns, and trends, using both qualitative and quantitative approaches (Creswell & Creswell, 2018; Flick, 2018). Qualitative methods—such as interviews, observation, and focus groups—help uncover meanings and contextual factors, while quantitative techniques identify correlations and support predictions (Gibbs, 2018).

The purpose of analysis is to move beyond superficial interpretations and develop evidence-based insights that inform decision-making and strategy (Lester et al., 2020). It demands critical thinking skills, including interpretation, evaluation, and inference, which are essential for identifying root causes and avoiding quick fixes (Cottrell, 2023; Liu & Pásztor, 2022). Analytical thinking further strengthens this process by enabling systematic reasoning and accurate interpretation of data (Nazarova, 2022).

Technology plays an increasingly important role in analysis, facilitating the use of big data, artificial intelligence, and advanced modelling techniques to improve accuracy and efficiency (Newton et al., 2020). All activities in this stage focus on organising, comparing, and interpreting collected data to build a robust foundation for subsequent steps.

#### References

- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Longmans.
- Bloom, B. S., & Krathwohl, D. R. (2020). *Taxonomy of educational objectives: The classification of educational goals*. Longmans.
- Cottrell, S. (2023). *Critical Thinking Skills: Effective Analysis, Argument and Reflection*. Bloomsbury Publishing.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage.
- Flick, U. (2018). *An introduction to qualitative research*. Sage.
- Gibbs, G. (2018). *Analyzing Qualitative Data*. Sage Publications.

Lester, J. N., Cho, Y., & Chad, R. (2020). Learning to Do Qualitative Data Analysis: A Starting Point. *Human Resource Development Review*, 19(1).

<https://doi.org/10.1177/1534484320903890>

Liu, Y., & Pásztor, A. (2022). Effects of problem-based learning instructional intervention on critical thinking in higher education: A meta-analysis. *Thinking Skills and Creativity*, 45. <https://doi.org/10.1016/j.tsc.2022.101069>

Nazarova, G. (2022). Principles of pedagogical development of analytical thinking in economists. *European Multidisciplinary Journal of Modern Science*, 6, 627–632.

<https://emjms.academicjournal.io/index.php/emjms/article/view/470>

Newton, P. M., Da Silva, A., & Peters, L. G. (2020). A Pragmatic Master List of Action Verbs for Bloom's Taxonomy. *Frontiers in Education*, 5(107), 1-6,

<https://doi.org/10.3389/feduc.2020.00107>

**Source: training pack p. 30- 32**

### Slide 6: Real-life example

#### REAL-WORLD EXAMPLE TOO GOOD TO GO

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

#### **Analyse: Define the core problem**

After collecting insights, the team synthesised their findings.

Instead of defining the problem as: “Restaurants waste too much food.”

They reframed it as: “How might we connect surplus food with consumers in a way that benefits both?”

They identified key criteria: Easy for businesses, attractive for users, scalable

#### **Design Thinking link:**

Analyse is about defining the real problem.

You move from scattered insights to a clear problem statement (Point of View / HMW question).

### Slide 7: Put theory into Practice

A) ATOM-model: <https://www.demind.eu/the-atom-model-2-analyse/>

B) [Competency Framework GlobeSteamSS](#)

C) Design Challenge Event:

### 3.3 Ideate

#### Slide 1: Overview



#### Slide 2: Learning goals

ATOM:

1. To understand the main concepts related to the ideation phase of the atom model.
2. To apply strategies to promote creativity and generate, classify, discuss, and select ideas.
3. To assess the process of acquisition of ideation competence.

GlobeSteamSS Competency Framework:

##### **From DIGCOMP 2.2**

1. Collaborating through digital technologies (2.4)
2. Netiquette (2.5)
3. Protecting personal data and privacy (4.2)
4. Identifying needs and technological responses (5.2)

##### **From EntreComp**

1. **Spotting opportunities:** Use your imagination and abilities to identify opportunities for creating value (1.1)
2. **Creativity:** Develop creative and purposeful ideas (1.2)
3. **Valuing Ideas:** Make the most of ideas and opportunities (1.4)
4. **Mobilizing Resources:** Gather and manage the resources you need (2.3)
5. **Mobilizing Others:** Inspire, enthuse and get others on board (2.5)
6. **Planning and Management:** Prioritize, organize and follow-up (3.2)
7. **Working with Others:** Team up, collaborate and network (3.4)

##### **From GreenComp**

1. **Futures Literacy:** To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future (3.1)
2. **Exploratory Thinking:** To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods (3.3)
3. **Collective Action:** To act for change in collaboration with others (4.2)

### Slide 3: Activation prior knowledge

Q: Which of the following best describes what you do during the Analyse step?

1. You brainstorm freely and collect as many ideas as possible without judging them.
  - Incorrect. This is part of STEP 1 – Explore, where the focus is on generating and collecting information without evaluation.
2. You look closely at the information gathered, identify key issues, and understand underlying causes.
  - Correct! Analyse is about making sense of the data: spotting patterns, clarifying problems, and understanding why things happen.
3. You decide on the most suitable solution and start planning how to implement it.
  - Incorrect Analyse is about insight, not decision-making yet.

### Slide 4: Theory- STUDENTS

Now it's time to get creative! In this step, you brainstorm as many ideas as possible to tackle the challenge you've analysed. The goal is to think big and think differently—don't settle for the obvious.

How do we do this? By using methods that spark creativity, such as:

- Design Thinking – focus on empathy and user needs.
- Lateral Thinking – look at the problem from unexpected angles.
- Arts-based approaches – use visuals, storytelling, or role-play.
- Co-creation – work together and build on each other's ideas.

After brainstorming, you sort and select the best ideas. Discuss them as a group, check which ones fit the challenge, and choose the ones you want to develop further.

Tip: Keep the challenge visible at all times. Every idea should connect back to the core question you defined in Step 2.

Think of this step as a creative playground—there are no bad ideas at first. The more diverse your ideas, the better your chances of finding something truly innovative.

## Slide 5: Extra information- OTHER STAKEHOLDERS

Ideation refers to the creative process of generating and developing ideas to address a challenge or improve existing solutions (Passaro et al., 2016; Fink & Benedek, 2014). It is not limited to producing ideas but also involves nurturing them into actionable concepts. Creativity is central to this process, combining fluency—the ability to generate numerous ideas—and originality—the novelty and value of those ideas (Guilford, 1950, 1967). These cognitive abilities are influenced by motivation, environment, and collaboration, making ideation a dynamic and learnable skill.

The process typically begins with defining the problem, followed by brainstorming, exploring alternatives, and refining potential solutions (Barbot, 2018). Techniques such as divergent thinking (Guilford, 1950), lateral thinking (De Bono, 1970, 1994), and bisociation (Koestler, 2020) encourage the combination of diverse perspectives and unexpected connections. Methods like brainstorming remain widely used to stimulate idea generation (Osborn & Harrington, 1953, as cited in Song et al., 2021).

Effective ideation requires an environment that supports openness, collaboration, and risk-taking, as well as time for incubation and reflection (Fink & Benedek, 2014). Facilitating this process involves clear goal-setting, encouraging diverse viewpoints, and providing structured tools and feedback loops (Selva & Dominguez, 2018). All activities in this stage aim to foster creativity and transform abstract ideas into viable concepts for prototyping.

### References:

- Barbot, B. (2018). The Dynamics of Creative Ideation: Introducing a new Assessment Paradigm. *Frontiers in Psychology*, 9, 1–9  
<https://doi.org/10.3389/fpsyg.2018.02529>
- Csikszentmihalyi, M. (2020). *Finding Flow: The psychology of engagement with everyday life*. Hachette UH Editorial
- De Bono, E. (1970). *Lateral Thinking*. Harper.
- De Bono, E. (1994). *Creative Thinking: The Power of Lateral Thinking for the Creation of New Ideas*. Editorial Paidos.
- Fink, A., & Benedek, M. (2014). EEG alpha power and creative ideation. *Neuroscience & Biobehavioral Reviews*, 44, 111–123.  
<https://doi.org/10.1016/j.neubiorev.2012.12.002>
- Guilford, J. P. (1950). Creativity. *American Psychologist*, 5(9), 444–454.  
<https://doi.org/10.1037/h0063487>
- Guilford, J. P. (1967). Creativity: Yesterday, today and tomorrow. *The Journal of Creative Behavior*, 1(1), 3–14. <https://doi.org/10.1002/j.2162-6057.1967.tb00002.x>
- Koestler, A. (2020). The Act of Creation. *Brain Function, Volume IV*.  
<https://doi.org/10.1525/9780520340176-014>

Passaro, R., Quinto, I., & Rippa, P. (2016). The start-up lifecycle: an interpretative framework proposal. RSA AiIG, Bergamo. <https://n9.cl/4vg3a>

Selva, D., & Dominguez, R. (2018). Idea generation techniques: review and analysis of their use in Spanish advertising agencies. *Open Area. Audiovisual communication and advertising magazine* 18(3), 371-387.

<http://dx.doi.org/10.5209/ARAB.56763>

Song, M., Yang, S., & Park, J. (2021). Asking for good ideas can hurt creativity. The effects of two-step instruction method on quantity and quality of ideas. *Creative and Cognition* 47, 1-4. <https://doi.org/10.1145/3450741.3466631>

**Source: training pack p. 32-34**

## Slide 6: Real-world example

### REAL-WORLD EXAMPLE: TOO GOOD TO GO

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

Ideate: Generate diverse solution ideas

The team explored multiple directions:

- Donation-only systems
- Redistribution logistics
- Discount networks
- A digital platform
- Subscription models

They considered both behavioural and technological approaches.

Eventually, they selected the “surprise bag via app” model.

Ideation encourages quantity before selection.

Creative thinking, interdisciplinary input and open brainstorming help uncover innovative options.

## Slide 7: Put theory into Practice

A) ATOM-model: <https://www.demind.eu/the-atom-model-3-ideate/>

B) [Competency Framework GlobeSteamSS](#)

C) Design Challenge Event

## 3.4 Prototype

### Slide 1: Overview



### Slide 2: Learning goals

ATOM:

1. To understand the main content of the prototype phase
2. To design the outcome of the ideation phase
3. To relate to all requirements for the best solution
4. To assess the process of the prototype phase competences acquisition

GlobeSteamSS Competency Framework:

#### From DIGCOMP 2.2

1. Collaborating through digital technologies (2.4)
2. Netiquette (2.5)
3. Developing digital content (3.1)
4. Protecting personal data and privacy (4.2)
5. Identifying needs and technological responses (5.2)

#### From EntreComp

1. **Mobilizing Resources:** Gather and manage the resources you need (2.3)
2. **Mobilizing Others:** Inspire, enthuse and get others on board (2.5)
3. **Planning and Management:** Prioritize, organize and follow-up (3.2)
4. **Coping with Uncertainty, Ambiguity & Risk:** Make decisions dealing with uncertainty, ambiguity and risk (3.3)
5. **Working with Others:** Team up, collaborate and network (3.4)

#### From GreenComp

1. **Adaptability:** To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk (3.2)
2. **Exploratory Thinking:** To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods (3.3)
3. **Collective Action:** To act for change in collaboration with others (4.2)

### Slide 3: Activation prior knowledge

Q: Which of the following methods can support creativity during the *Ideate* stage?

1. Lateral thinking
  - Correct. Lateral thinking encourages looking at the challenge from unexpected angles, which helps generate fresh and innovative ideas.
2. Co-creation
  - Correct. Co-creation involves working together, building on each other's ideas, and increasing the diversity of perspectives in the brainstorming process.
3. Usability testing.
  - Incorrect. Usability testing is used later to evaluate prototypes. During the *Ideate* stage, the focus is on generating, discussing, and selecting ideas—not on testing solutions.

### Slide 4: Theory- STUDENTS

This is where your ideas start to take shape. You move from thinking to doing by creating a prototype, a first version of your solution.

Why prototype? Because seeing and testing your idea makes it real. It helps everyone (you, your team, and even potential users) understand what the solution could look like.

What happens in this step?

- Visualise your idea: Use sketches, mock-ups, models, or digital tools to make it tangible.
- Explore details together: Discuss complexities and opportunities as a team.
- Gather extra knowledge: What do you need to make the prototype stronger?
- Test if possible: Share your prototype with others or in the real world to get feedback.

The aim is to bridge the gap between idea and action. A good prototype communicates your concept clearly so others can relate to it and give useful input.

Think of this step as building a “rough draft” of your solution—something you can improve later.

## Slide 5- Extra information- OTHER STAKEHOLDERS

Prototyping is the process of converting ideas into tangible or digital representations that can be tested and refined. A prototype acts as an early model of a concept, enabling designers and stakeholders to assess feasibility, gather feedback, and identify improvements before full-scale implementation (Oxford Dictionary, 2023; Merriam-Webster Dictionary, 2023; Lauff et al., 2020). This iterative approach reduces uncertainty and fosters learning through experimentation (Gerber & Carroll, 2012; Jensen et al., 2017).

Prototypes vary in fidelity and purpose. Concept prototypes validate core ideas, while functional prototypes test technical performance. Visual prototypes focus on aesthetics, and product prototypes combine design and functionality for comprehensive evaluation (Coutts et al., 2019). These methods are widely applied in fields such as product design, software development, industrial design, and architecture.

The prototyping process typically involves defining the problem, generating ideas, constructing the prototype, testing with users or stakeholders, and refining based on feedback (Coutts et al., 2019). Testing methods—such as usability studies, interviews, and surveys—help uncover issues early, saving time and resources. Prototyping also builds creative confidence by reframing failure as an opportunity for progress (Gerber & Carroll, 2012). Physical prototypes use materials like paper or foam, while digital prototypes employ CAD tools and 3D printing (Ijadi Maghsoodi et al., 2018, 2019). Tacit knowledge gained through hands-on practice is critical and cannot be replicated through conventional learning (Lauff et al., 2018).

All activities in this stage aim to bridge the gap between ideas and actionable solutions through iterative design and testing.

### References

Coutts, E., Wodehouse, A., & Robertson, J. (2019). A Comparison of Contemporary Prototyping Methods. *Proceedings of the Design Society: International Conference on Engineering Design*, 1(1), 1313–1322.

<https://doi.org/10.1017/dsi.2019.137>

Gerber, E., & Carroll, M. (2012). The psychological experience of prototyping. *Design Studies*, 33(1), 64–84. <https://doi.org/10.1016/j.destud.2011.06.005>

Ijadi Maghsoodi, A., et al. (2018). CLUS-MCDA: A novel framework based on cluster analysis and multiple criteria decision theory. *Computers & Industrial Engineering*, 118, 409–422. <https://doi.org/10.1016/j.cie.2018.03.011>

Ijadi Maghsoodi, A., et al. (2019). Hybrid hierarchical fuzzy group decision-making based on information axioms and BWM: Prototype design selection. *Computers & Industrial Engineering*, 127, 788–804. <https://doi.org/10.1016/j.cie.2018.11.018>

Jensen, M. B., Elverum, C. W., & Steinert, M. (2017). Eliciting unknown unknowns with prototypes. Introducing prototrials and prototrial-driven cultures. *Design Studies*, 49, 1–31. <https://doi.org/10.1016/j.destud.2016.12.002>

Lauff, C., Knight, D., Kotys-Schwartz, D., & Rentschler, M. (2020). The role of prototypes in communication between stakeholders. *Design Studies*, 66, 1–34. <https://doi.org/10.1016/j.destud.2019.11.007>

Lauff, C., Kotys-Schwartz, D., & Rentschler, M. E. (2018). What is a Prototype? What are the Roles of Prototypes in Companies?. *Journal of Mechanical Design*, 140(6), 61–102. <https://doi.org/10.1115/1.4039340>

Lim, Y. K., Stolterman, E., & Tenenber, J. (2008). The Anatomy of Prototypes. Prototypes as Filters, Prototypes as Manifestations of Design Ideas. *ACM Transactions on Computer-Human Interaction*, 15(2), 1–27. <https://doi.org/10.1145/1375761.1375762>

Merriam-Webster Dictionary. (2023). Definition of a prototype. <https://n9.cl/ylic9>

Oxford Dictionary. (2023). Definition of a prototype. <https://n9.cl/qhilc>

**Source: p.34-36**

## Slide 6: Real-world example

### REAL-WORLD EXAMPLE: TOO GOOD TO GO

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

**Prototype:** Make ideas tangible

The team built an early version of the mobile app.

It included:

- Basic listings
- Reservation system
- Simple payment flow

It was not perfect but it allowed real testing.

Prototyping is about learning, not perfection.

You create a tangible version of your idea to make it testable and visible.

## Slide 7: Put theory into Practice

- A) ATOM-model: <https://www.demind.eu/the-atom-model-4-prototype/>
- B) [Competency Framework GlobeSteamSS](#)
- C) Design Challenge Event

## 3.5 Realise

### Slide 1: Overview



### Slide 2: Learning goals

ATOM:

1. To produce and realise the prototype to the best possible way
2. To make the solution or prototype come into action
3. To understand the main concept related to the realisation phase
4. To assess the process during the realisation phase regarding the acquisition of competences.

GlobeSteamSS Competency Framework:

#### From DIGCOMP 2.2

1. Integrating and re-elaborating digital content (3.2)
2. Protecting personal data and privacy (4.2)
3. Solving technical problems (5.1)
4. Identifying needs and technological responses (5.2)
5. Creatively using digital technology (5.3)

#### From EntreComp

1. **Mobilizing Resources:** Gather and manage the resources you need (2.3)
2. **Mobilizing Others:** Inspire, enthuse and get others on board (2.5)
3. **Planning and Management:** Prioritize, organize and follow-up (3.2)
4. **Coping with Uncertainty, Ambiguity & Risk:** Make decisions dealing with uncertainty, ambiguity and risk (3.3)
5. **Working with Others:** Team up, collaborate and network (3.4)

#### From GreenComp

- 1. Adaptability:** To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk (3.2)
- 2. Collective Action:** To act for change in collaboration with others (4.2)
- 3. Individual Initiative:** To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet (4.3)

### Slide 3: Activation prior knowledge

Q: Your team has generated several promising ideas. You now start shaping one idea into a prototype. What should you focus on first to make this step effective?

1. Creating a detailed version that looks as much like the end product as possible
  - Not quite. A prototype does not need to be perfect. In this stage, the aim is to build a rough draft that helps bring the idea to life and makes discussion easier.
2. Making a simple, tangible representation of the idea so the team can discuss and test it
  - Correct! Prototyping is about turning ideas into something visible and testable: sketches, mock-ups, models or digital versions. It helps the team explore details, spot complexities, and gather feedback early.
3. Collecting user feedback through surveys
  - Incorrect. Feedback is useful, but without a prototype people cannot understand your concept clearly. Visualising the idea first is essential to bridge the gap between thinking and doing.

### Slide 4: Theory-STUDENTS

After testing and refining your prototype, it's time to plan how to make it happen. This step is all about turning your concept into a realistic action plan.

What does that involve?

- Match your idea to what's possible: Be ambitious, but stay practical.
- Answer key questions: Who will do what? Where will it happen? How many resources do we need?
- Work with stakeholders: Discuss your plan with the people who matter—partners, clients, or community members.
- Choose the right approach: Depending on the situation, you might fully implement your prototype or create a detailed blueprint for others to follow.

The goal is to design a plan that is clear, realistic, and detailed enough for someone else to put into practice. This is the bridge between your creative idea and real-world impact.

Think of this step as building the roadmap that will guide your project to success.

#### Slide 5: Extra information- OTHER STAKEHOLDERS

Realisation focuses on transforming prototypes into actionable solutions through structured implementation. This stage bridges the gap between design and practice by planning, testing, and refining prototypes within real-world constraints (Barbieri et al., 2013). It is inherently iterative, requiring continuous feedback and collaboration between participants and external stakeholders to ensure feasibility and alignment with project goals (Camburn et al., 2017).

Successful realisation depends on selecting the appropriate prototyping approach. Low-fidelity models may be suitable for rapid testing, while high-fidelity prototypes are essential for evaluating user experience or technical performance (Kent et al., 2021). Strategies for effective implementation include setting clear objectives, involving stakeholders, establishing timelines, and conducting systematic testing (Coutts et al., 2019). These practices help identify potential issues early and reduce risks associated with cost, time, and complexity (Erichsen et al., 2020).

Challenges such as resource limitations and technical constraints require adaptive planning and willingness to iterate. Best practices emphasise user-centred design, collaboration, and openness to refinement based on feedback (Donati & Vignoli, 2015). Rather than focusing solely on building, this stage is about orchestrating the transition from concept to reality, ensuring that the prototype evolves into a solution that is viable, scalable, and ready for implementation.

#### References

Barbieri, L., Angilica, A., Bruno, F., & Muzzupappa, M. (2013). Mixed prototyping with configurable physical archetype for usability evaluation of product interfaces. *Computers in Industry*, 64(3), 310–323.

<http://dx.doi.org/10.1016/j.compind.2012.11.010>

Camburn, B., Viswanathan, V., Linsey, J., Anderson, D., Jensen, D., Crawford, R., Otto, K., & Wood, K. (2017). Design prototyping methods: state of the art in strategies, techniques, and guidelines. *Design Science*, 3(e13).

<https://doi.org/10.1017/dsj.2017.10>

Coutts, E. R., Wodehouse, A., & Robertson, J. (2019). A Comparison of Contemporary Prototyping Methods. *Proceedings of the Design Society: International Conference on Engineering Design*, 1(1), 1313–1322.

<https://doi.org/10.1017/dsi.2019.137>

Donati, C., & Vignoli, M. (2015). How tangible is your prototype? Designing the user and expert interaction. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 9(2), 107–114. <https://doi.org/10.1007/s12008-014-0232-5>

Erichsen, J., Sjöman, H., Steinert, M., & Welo, T. (2020). Protobooth: gathering and analyzing data on prototyping in early-stage engineering design projects by digitally capturing physical prototypes. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing*, 35(1), 65–80 <http://doi.org/10.1017/S0890060420000414>

Kent, L., Snider, C., & Hicks, B. (2021). Mixed reality prototyping: Synchronicity and its impact on a design workflow. *Proceedings of the Design Society*, 1, 2117–2126 <https://doi.org/10.1017/pds.2021.473>

**Source: p. 36-38**

### Slide 6: Real-world example

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

REAL- WORLD EXAMPLE: TOO GOOD TO GO

Realise: Test, refine and implement

After pilot testing, the team:

- Improved user experience
- Refined branding
- Strengthened partnerships
- Optimised logistics

They moved from small-scale testing to broader rollout.

Realisation bridges prototype and real-world application.

Feedback loops and iteration remain central.

### Slide 7: Put theory into Practice

- A) ATOM-model: <https://www.demind.eu/the-atom-model-4-prototype/ATOM-model>: <https://www.demind.eu/the-atom-model-5-realise/>
- B) [Competency Framework GlobeSteamSS](#)
- C) Design Challenge Event

## 3.6 Evaluate

### Slide 1: Overview



### Slide 2: Learning goals

#### ATOM:

1. To evaluate the innovative solutions (material or non-material) produced by the students
2. To receive feedback on the solutions produced, from the challenge-owner and/or end-user of the solution
3. To evaluate the process of CBL using the 6 phases of the atom model
4. To receive feedback on the innovation journey the students experienced, from the teacher and from the team members

#### GlobeSteamSS Competency Framework:

##### From DIGCOMP 2.2

1. Protecting personal data and privacy (4.2)

##### From EntreComp

1. **Ethical and Sustainable Thinking:** Assess the consequences and impact of ideas, opportunities and actions (1.5)
2. **Coping with Uncertainty, Ambiguity & Risk:** Make decisions dealing with uncertainty, ambiguity and risk (3.3)
3. **Working with Others:** Team up, collaborate and network (3.4)

##### From GreenComp

1. **Critical thinking:** To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions (2.2)

2. **Futures Literacy:** To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future (3.1)
3. **Collective Action:** To act for change in collaboration with others (4.2)

### Slide 3: Activation prior knowledge

Q: You are preparing to turn your refined prototype into a concrete action plan. Which of the following sequences best reflects what should happen during the Realise stage?

1. Identify key responsibilities → Consult stakeholders → Assess resources and realities
  - Correct! In the Realise stage, you focus on designing a realistic plan: clarifying who will do what, discussing your approach with stakeholders, and matching your ideas to what is possible in the real world.
2. Fully implement the final solution → Visualise possible improvements → Brainstorm new ideas
  - Not quite. Full implementation comes after Realise, not at the start of it. This stage is about planning, aligning with stakeholders, and ensuring feasibility—not about launching the final product yet.
3. Analyse the problem again → Select new ideas → Test the rough prototype
  - Incorrect. These actions belong to earlier stages (Explore, Ideate, Prototype). By the time you reach Realise, your prototype has already been created and tested, and your focus is on turning it into an actionable plan.

### Slide 4: Theory- STUDENTS

The final step is all about reflection and feedback. Evaluation happens in two parts:

#### 1. External feedback

Your solution (or action plan) is reviewed by external partners—this could be the company, organisation, or end-users who posed the challenge. They give feedback on how well your idea works and what could be improved.

#### 2. Internal reflection

Together with your teachers and classmates, you look back on the process:

- What worked well?
- What could be done differently next time?
- How can these insights shape future projects?

This isn't just about looking backwards—it's about looking forward. Think of evaluation as a launchpad for new ideas and continuous improvement.

The goal? To learn from experience, strengthen your skills, and make sure your solutions create real impact.

#### Slide 5: Extra information- OTHER STAKEHOLDERS

Evaluation is the final stage of the innovation process and provides a systematic approach to assessing the effectiveness and impact of ideas, prototypes, and implemented solutions. It involves defining clear objectives, selecting relevant indicators, and applying structured methods to measure performance and outcomes (Dziallas & Blind, 2019). Evaluation ensures that decisions are evidence-based, identifying which ideas merit further development and which require adjustment or discontinuation (Barbieri et al., 2013).

An effective evaluation process begins with establishing goals and key performance indicators (KPIs), which may include financial viability, usability, or social impact (Domínguez et al., 2019). Data collection and analysis follow, using reliable and valid methods to generate actionable insights (Bortolini et al., 2021). Stakeholder engagement is critical throughout the process, as feedback enhances relevance and fosters shared ownership of results (Cook et al., 2023). Communication strategies—such as timelines, progress reports, and transparent reporting—help maintain clarity and trust.

Best practices include iterative assessment, active stakeholder involvement, and continuous monitoring of implemented actions (Nandal et al., 2020). Frameworks such as Lean Startup and Design Thinking exemplify evaluation approaches that prioritise rapid testing, user feedback, and adaptability (Bortolini et al., 2021; McLaughlin et al., 2019). Ultimately, evaluation is not merely a concluding step but a mechanism for learning and improvement, ensuring that innovation processes remain dynamic and responsive to change.

#### References:

Barbieri, L., Angilica, A., Bruno, F., & Muzzupappa, M. (2013). Mixed prototyping with configurable physical archetype for usability evaluation of product interfaces. *Computers in Industry*, 64(3), 310–323.

<http://dx.doi.org/10.1016/j.compind.2012.11.010>

Bortolini, R., Nogueira, M., Danilevicz, A., & Ghezzi, A. (2021). Lean Startup: a comprehensive historical review. *Management Decision*, 59(8), 1765–1783.

<https://doi.org/10.1108/MD-07-2017-0663>

Cook, D., Bikkani, A., & Poterucha, M. J. (2023). Evaluating education innovations rapidly with build-measure-learn: Applying lean startup to health professions education. *Medical Teacher*, 45(2), 167–178,

<https://doi.org/10.1080/0142159X.2022.2118038>

Domínguez, E., Pérez, B., Rubio, A., & Zapata, M. (2019). A taxonomy for key performance indicators management. *Computer Standards & Interfaces*, 64, 24–40. <https://doi.org/10.1016/j.csi.2018.12.001>

Dziallas, M., & Blind, K. (2019). Innovation indicators throughout the innovation process: An extensive literature analysis. *Technovation*, 80, 3–29. <https://doi.org/10.1016/j.csi.2018.12.001>

McLaughlin, J., Wolcott, M., Hubbard, D., Umstead, K., & Rider, T. (2019). A qualitative review of the design thinking framework in health professions education. *BMC Medical Education*, 19(98), 1–8. <https://doi.org/10.1186/s12909-019-1528-8>

Nandal, N., Kataria, A., & Dhingra, M. (2020). Measuring Innovation: Challenges and Best Practices. *International Journal of Advanced Science and Technology*, 29(5), 1275–1285. <https://doi.org/10.1186/s12909-019-1528-8>

**Source: p.38-40**

### Slide 6: Real-world example

#### REAL-WORLD EXAMPLE TOO GOOD TO GO

*Too Good To Go helps reduce food waste by connecting businesses with unsold food to consumers through an app, allowing people to pick up discounted surprise bags. In this module, we use it as an example to illustrate the Design Thinking/ATOM process.*

Evaluate: Measure impact and reflect

Too Good To Go continuously measures:

- Meals saved
- CO<sub>2</sub> emissions reduced
- User growth
- Partner satisfaction

They use this data to improve and expand the platform.

Evaluation ensures the solution is:

- Desirable (users keep using it)
- Feasible (operationally manageable)
- Viable (sustainable long term)

### Slide 7: Put theory into Practice

- A) ATOM-model: <https://www.demind.eu/the-atom-model-5-realise/ATOM-model:https://www.demind.eu/the-atom-model-6-evaluate/>
- B) [Competency Framework GlobeSteamSS](#)
- C) Design Challenge Event

## 4. ATOM Model- Summative evaluation

### 1) Multiple Choice – Explore

Q1: What is the primary purpose of the Explore stage?

1. To gather information and uncover both obvious and non-obvious insights
  - Correct! Exploration is about deeply understanding the challenge and discovering unexpected insights.
2. To create the first version of your solution
  - Not correct. Prototyping happens later.
3. To compare different ideas and select the strongest one
  - Not correct. Selecting ideas is part of Ideate.

### 1) Multiple Choice – Explore

Q1: In the Explore stage, which action best supports finding “not so obvious” insights?

1. Conducting short surveys with closed questions
  - Not ideal. Closed questions limit discovery and may miss unexpected findings.
2. Observing real world contexts and asking open questions
  - Correct. This invites multiple perspectives and uncovers hidden patterns.
3. Starting with a preconceived solution and testing it quickly
  - Not correct. This narrows exploration and risks overlooking key context.

### 2) Multiple Choice – Explore

Q2: Which prompt would be most helpful during Explore to deepen understanding of the challenge?

1. “Which solution can we build fastest?”
  - Not correct. This pushes premature solutioning.
2. “Who is affected, in what situations, and why does this matter?”
  - Correct. This broadens context and reveals underlying factors.
3. “How can we make the interface more colourful?”
  - Not correct. This is a design detail, not an exploration question.

### 3) Multiple Choice – Analyse

Q3: During Analyse, which of the following best describes a robust analytical move?

1. Grouping observations into themes and checking for relationships between them
  - Correct. Patterning and linkage reveal underlying causes.
2. Selecting your favourite quotes from interviews
  - Not sufficient. Cherry picking can bias interpretation.
3. Counting data points without interpreting their meaning
  - Not sufficient. Numbers alone do not explain the problem.

### 4) Scenario Question – Analyse

Q4: You notice contradictions in your data (e.g., users say one thing but do another). What should you do in Analyse?

1. Discard the outliers to keep the dataset clean
  - Not correct. Outliers can signal valuable insights.
2. Re examine sources and triangulate with additional evidence
  - Correct. Contradictions warrant deeper verification and synthesis.
3. Assume the majority view is always right
  - Not correct. Majority signals are useful but not definitive.

### 5) Multiple Choice – Ideate

Q5: In Ideate, which team behaviour most effectively increases idea diversity?

1. Building on others' suggestions without judging them initially
  - Correct. Deferred judgement and “yes and” expands the space.
2. Voting on the first three ideas to save time
  - Not correct. This reduces creative breadth too soon.
3. Limiting brainstorming to the core team only
  - Not ideal. Fewer perspectives usually means fewer novel ideas.

### 6) Multiple Choice – Ideate

Q6: Which pair of techniques aligns best with the goals of Ideate?

1. Empathy mapping and root cause analysis
  - Not a perfect fit. These are stronger in Explore/Analyse.
2. Lateral thinking and arts based approaches
  - Correct. Both stimulate unconventional connections and vivid expression.
3. Regression testing and A/B testing
  - Not correct. These are evaluation techniques suited for later stages.

## 7) Multiple Choice – Prototype

Q7: At the start of Prototype, which output is most appropriate?

1. A low fidelity sketch or mock up that others can react to
  - Correct. Start simple to learn fast and iterate.
2. A comprehensive requirements document signed by all stakeholders
  - Not ideal. Useful later, but it doesn't make the idea tangible.
3. A detailed costed implementation plan
  - Not correct. Planning comes after learning from early prototypes.

## 8) Scenario Question – Prototype

Q8: When testing a prototype informally, what feedback prompt is most useful?

1. “What do you think of our idea—do you like it?”
  - Not ideal. Opinions are vague and hard to act on.
2. “Show me how you would use this to achieve your goal.”
  - Correct. Behavioural tasks reveal usability and clarity.
3. “Would you definitely use this every day?”
  - Not correct. Hypotheticals over predict future behaviour.

## 9) Multiple Choice – Realise

Q9: In Realise, which consideration best ensures feasibility?

1. Identifying roles, timelines, and the resources needed at each step
  - Correct. Clarity on who/when/what/how much enables action.
2. Adding more features so stakeholders are impressed
  - Not correct. Scope creep undermines delivery.
3. Ignoring stakeholder input to avoid delays
  - Not correct. Alignment reduces risk downstream.

## 10) Multiple Choice – Evaluate

Q10: For Evaluate, which approach strengthens learning for future projects?

1. Capturing external feedback only and archiving it
  - a. Not sufficient. Without reflection, learning is limited.
2. Combining external feedback with a structured team retrospective on process
  - a. Correct. Outcomes + process insights drive improvement.
3. Measuring success solely by on time delivery
  - a. Not correct. Timeliness alone ignores quality, impact, and user value.

## 11) Multiple choice – Design thinking

Q11: Which statement best reflects the mindset of Design Thinking?

1. We should choose one idea quickly and stick to it
  - No. Iteration and learning through feedback are key.
2. We start by understanding the people affected before proposing solutions.
  - Correct. Empathy and user understanding come first.
3. A prototype must look like a final product
  - Not correct. Prototypes are meant to be quick and low-fidelity at first.

## 12) Multiple choice – Design thinking

Q12. Why do teams often move back and forth between steps?

1. Because the process is poorly planned
  - Not correct. Iteration is a feature, not a flaw.
2. Because new insights or test feedback can change the direction
  - Correct. Testing and research often reveal new information that reshapes the problem or solution.
3. 3. Because ideation should happen after implementation
  - Not correct. Ideation typically happens before prototyping and realisation.

## 5. Conclusion

You have now explored the full content of the GlobeSteamSS online learning module and completed the six steps of the ATOM model. Through the examples, exercises and reflections, you have followed the complete learning journey that underpins the Design Challenge Events and the wider educational goals of the project.

For students, this means you are now ready to put the process into practice. You have learned how each phase of the ATOM model builds on the previous one, how to apply Design Thinking methods in a structured way, and how the associated competences support your ability to tackle real sustainability challenges. You can now move confidently towards the Design Challenge Event or apply the methodology in your own projects.

For teachers and researchers, this module provides a clear overview of how the six phases translate into learning activities, competence development and scaffolding for students. You can now use this framework to guide learners, support reflection, and integrate the ATOM model into your teaching or research practice.

For industry professionals, you have gained insight into the structured innovation process that students will follow during the challenge. This shared understanding strengthens collaboration, supports co-creation with learners and ensures that the challenge-based work aligns with your organisational context.

With this shared foundation, all three roles can now move forward: students into the DCE or their own challenge-based work, and staff and partners into facilitation, supervision or collaboration. The ATOM model provides the common language and structure that connects everyone throughout the GlobeSteamSS learning journey.

## 6. Resources

Bacigalupo, M., Kamylyis, P., & Van, D. B. L. (2016b). ENTREComp: The Entrepreneurship Competence Framework. *JRC Publications Repository*.

<https://doi.org/10.2791/160811>

Bianchi, G., Pisiotis, U., & Cabrera, G. M. (2022). GreenComp The European sustainability competence framework. *JRC Publications Repository*.

<https://doi.org/10.2760/13286>

Brown, T. (2008). Design thinking. *Harvard Business Review*, 86(6), 84–92.

Buchanan, R. (1992). Wicked problems in design thinking. *Design Issues*, 8(2), 5–21.

Design Council. (2005). The Double Diamond: A universally accepted depiction of the design process.

Dorst, K. (2011). The core of design thinking and its application. *Design Studies*, 32(6), 521–532.

Foremlink. (2021). *ForEMLink – A guide to the ATOM model and its challenges*.

Liedtka, J. (2018). Why design thinking works. *Harvard Business Review*, 96(5), 72–79.

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169.

*Training pack – Demind. (n.d.). Demind. <https://www.demind.eu/training-pack/>*

Vuorikari, R., & Kluzer, S. (2022b). DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes. *JRC Publications Repository. <https://doi.org/10.2760/115376>*