DESIGN THINKING:

A framework to foster creativity in the classroom

INTRODUCTION

Welcome!

This comprehensive guide is designed to equip educators with a diverse array of lesson plan suggestions that leverage the power of design thinking across various year levels, disciplines, and project durations. It offers a **flexible framework** that allows you to adapt and implement design thinking principles to suit your unique teaching context.

Design thinking is a human-centered approach to innovation that fosters creativity, collaboration, and critical thinking. By encouraging students to empathize with users, define problems, ideate, prototype, and test their solutions, design thinking empowers them to become confident problem solvers and change-makers.

The beauty of design thinking lies in its versatility. Whether you have a couple of hours to dive into a quick design challenge or an entire term or year to embark on an in-depth project, this guide has got you covered. Our carefully curated lesson plan suggestions will help you inspire your students to think outside the box, approach challenges with an open mind, and embrace failure as an essential part of the learning process.

As you explore the various lesson plan ideas within this guide, feel free to **adapt and tailor them to suit the specific needs and interests of your students**. Whether it's a STEM project, a social studies exploration, an art and design endeavor, or a cross-disciplinary collaboration, design thinking can enrich the learning experience and empower your students to tackle real-world issues with confidence and creativity.

The journey of design thinking is not just about arriving at a final solution; it's about fostering a growth mindset, encouraging teamwork, and embracing the iterative process of learning. By integrating design thinking into your teaching practice, you'll create a dynamic and engaging learning environment where students can unleash their imagination and turn their ideas into reality.
So, let's embark on this exciting adventure together! Explore the lesson plan suggestions, infuse your expertise as an educator, and witness the transformation of your students as they embark on their unique journeys of design thinking. The possibilities are limitless, and the impact they can create is boundless. Let's inspire the next generation of innovative thinkers and problem solvers with the power of design thinking!

INTRODUCTION

Recap

Design Thinking is a human-centered mindset in which people apply transdisciplinary skills to solve complex problems. It combines a series of steps that can guide you to think as a designer, sparking ideas that can lead to innovation.

1. Empathise
Aim to gain an understanding of the problem to be solved from multiple perspectives

2. Define
Identify the issues (core problems) which will need to be addressed in order to solve the problem. Sort and classify the core problems to understand the relationships between them, and how they will potentially affect the outcome.

3. Ideate
It is time to be creative. All ideas should be considered. Ideas can address one or more of the core problems. Even an idea that results in a part of the solution is useful.

4. Prototype
Some or one of the more promising ideas are selected to be developed through mock-ups, storyboards, staging, etc. The objective is to try things out and find the best solutions for the core problems based on the initial ideas.
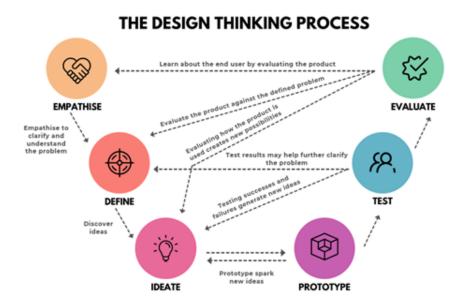
5. Test
It's time to test the prototypes created to collect feedback.

6. Evaluate
Test the final product against the defined problem and understand if all the specifications are met.

INTRODUCTION

THE DESIGN THINKING PROCESS

EMPATHISE

Empathise to clarify and understand the problem

Learn about the end user by evaluating the product

Evaluate the product against the defined problem

Evaluating how the product is used creates new possibilities

Test results may help further clarify the problem

DEFINE

Discover ideas

Testing successes and failures generate new ideas

EVALUATE

TEST

IDEATE

Prototype spark new ideas

PROTOTYPE

More than a process, Design Thinking is a mindset that involves the following:

- Problems can have multiple points of view and are not limited to one right solution
- It is a collaborative process and groups should learn from each other
- Having creative confidence and "can do" attitude
- Understand that failure is part of the process
- Openness to take risks
- No one owns an idea – and the more ideas, the better
- Focus on the right questions, instead of the right answers

COURSE OVERVIEW

Learning Intentions

Develop Problem-Framing Skills:
Understand how to present a well-defined problem that aligns with your year level and discipline.

Master Peer-to-Peer Feedback:
Provide constructive feedback to peers and learn from peers.

Recognise the versatility of Design Thinking Across Disciplines:
Understand how Design Thinking can be applied to various academic subjects, recognising the importance of alignment with educational standards

Apply Design thinking in Classroom Settings:
Understand how Design Thinking can be applied to various academic subjects.

Conduct Effective Evaluation:
Learn how to evaluate the effectiveness of a Design Thinking project and how to formulate an action plan for improvement

General Capabilities in the Spotlight

*Personal and Social Capability

*Critical and Creative Thinking

COURSE OVERVIEW

Lesson Success Criteria

Surface understanding:
- Identify the six stages of the design thinking process
- Identify what constitutes a well-defined problem in the context of Design Thinking

Deep understanding:
- Describe how design thinking fosters skills like creativity, collaboration and critical thinking
- Explain the steps needed to frame a problem effectively, including considerations like relevance to curriculum and real-world applications
- Conduct curriculum mapping by identifying relevant achievement standards

Transfer understanding:
- Demonstrate the ability to adapt a lesson plan to include design thinking principles
- Reflect on the challenges and benefits of implementing Design Thinking in the classroom and suggest improvements for future applications.
- Provide peer-peer feedback on at least one problem posed in the course discussion board
- Evaluate the Design Thinking project, identifying at least three aspects that worked well and three aspects that could be improved. Develop an action plan based on this evaluation

DELIVERABLES

In this course, you will be challenged to deliver a series of components to meet the course standards. These components are designed to enhance your understanding of the Design Thinking principles and support the implementation of those learning in a real-world context. Let's take a closer look at the deliverables expected from you:

1. Problem facing

Students will be required to present a well-defined problem that aligns with their year level and the discipline being taught. The problem should be carefully chosen, taking into consideration the interests and needs of the students, and may even be developed in collaboration with industry partners, other teachers, or parents. This real-world connection will provide an authentic context for their design challenge and add depth to their understanding of the problem-solving process.

The problem presented by the students should be one that can be addressed using Design Thinking methodologies. It should be clear, concise, and relevant to their curriculum and learning objectives. Additionally, students must outline how long the project will take, factoring in the duration of each phase of the Design Thinking process.

2. Peer-to-peer feedback

To develop their ability to provide constructive feedback and learn from your peers, you are expected to review at least one problem posed in our discussion board. Remember to start with positive aspects, be specific and offer possible solutions.

3. Curriculum mapping

To ensure alignment with educational standards, you are expected to conduct curriculum mapping. This involves identifying at least three achievement standards from the latest version of the curriculum that are applicable to your project.

4. Evaluation

After implementing their Design Thinking project, you will conduct a thorough evaluation of your experience. This evaluation process involves reflecting on the effectiveness of their problem-solving approach, project implementation, and teamwork. To do this, you are expected to identify at least three aspects that worked well during the project and three aspects that presented challenges or could be improved. Based on your evaluation, you will then develop an action plan for their next implementation. This action plan should outline specific strategies for addressing the identified areas of improvement and enhancing the success of future Design Thinking projects.

Tip 1: Selecting the problem

Undoubtedly, one of the most challenging aspects of the design thinking process is choosing the right problem to tackle, and this decision hinges on the specific discipline and year level of your students. Consideration can be given to collaborating with an industry partner to introduce a real-world problem, which can be highly engaging but may require more effort to coordinate.

Striking a balance is crucial; the chosen problem should be broad enough to encourage creative exploration yet focused enough to remain manageable within the given timeframe.

Moreover, student enthusiasm is paramount. Select a problem that resonates with their interests and passions, as this will naturally drive their excitement and dedication throughout the project. To illustrate, let me share some examples of previous projects I've worked on with students:

"How might we build a mine fit for the future?"

This compelling project delved into critical facets, including safety concerns, environmental impact, and community involvement, all within the context of Australia's mining industry.

"How might we improve crew well-being on board ships?"

In this thought-provoking endeavor, students explored the multifaceted realm of crew members' well-being, addressing issues like physical health challenges due to time zone effects and personal space limitations, as well as psychological well-being aspects like loneliness and homesickness. Additionally, this project provided a unique opportunity for students to discover and explore lesser-known careers related to the maritime industry.

Tip 2: Redefining your role

Transitioning from a traditional role of leading your students' learning to that of a **facilitator** may seem challenging, but it is pivotal for embracing a trial-and-error process. Granting students **more autonomy** than they may be accustomed to is essential, encouraging self-regulated learning strategies while offering support only when needed.

To ensure a smooth transition, it is advisable to set the tone from the outset by emphasizing that **there are no wrong answers** in this creative journey. Empower your students to explore every idea that comes to mind as they work towards finding the best-suited solution for themselves. Initially, some students might take time to adapt to this newfound autonomy, but once engaged, they unleash their potential, presenting remarkable ideas that reflect their empathy and critical thinking capabilities.

CLASSROOM TIPS

To help students ease into this environment, incorporating **ice-breakers and fun activities** can work wonders. Group dynamics activities foster **trust among students**, establishing a safe and supportive space for creativity and innovation to flourish.

A fun and engaging technique involves having students find three things they have in common and creating a group name from it. Alternatively, you can encourage them to share their secret superpowers, sparking creativity and building camaraderie within the group. Feel free to devise your own innovative techniques, ensuring they are enjoyable, captivating, and foster an atmosphere of trust and collaboration.

By adopting the facilitator role and nurturing a supportive learning environment, you will witness your students' growth as independent thinkers and problem solvers, celebrating the richness of their imagination and insights. Together, you will embark on a transformative journey where curiosity thrives, and the pursuit of innovative solutions becomes an exhilarating adventure.

Tip 3: Establishing the time frame

Design Thinking's adaptability allows you to tailor the process to fit various durations, ranging from a few hours to an entire term. The timeframe you choose largely depends on the **available time and resources** at your disposal.

For those students who are new to Design Thinking, I **suggest starting with a short and straightforward problem**. This initial experience will provide them with a clear understanding of the process and **boost their confidence and enthusiasm** for tackling more complex challenges in the future.

On the other hand, embarking on a long-term project spanning several weeks offers students the opportunity to engage in thorough testing, evaluation, and iteration of their solutions. These invaluable skills transcend disciplines and year levels, enriching their learning experience and empowering them as problem solvers.

In essence, your project's timeframe should be thoughtfully considered, aligning with the learning goals and the level of familiarity your students have with Design Thinking. Whether it is a brief introduction to the process or a deep dive into a comprehensive project, each timeframe presents unique learning opportunities, nurturing creativity, critical thinking, and innovation.

QUESTIONS?

For any questions or suggestions related to the lesson plan, please contact the **Education Futures Academy** team:

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LESSSON 1

Empathy phase:
Understanding what
people are feeling

LESSON 1

Lesson Overview

The first lesson in the unit focuses on the Empathy phase of the Design Thinking Process. Students will be introduced to Design Thinking, learn the importance of empathy in problem-solving, and will interact with an industry partner or volunteer to understand a real-world issue more deeply.

Learning Intentions:

- Gain a foundational understanding of the Design Thinking Framework.

- Develop empathy skills for effective problem identification and solution formulation.

- Understand how empathy fits into the broader Design Thinking Process

Success Criteria:

- Students can articulate what Design Thinking is and can describe its Empathy phase.

- *Students form diverse groups and collaborate effectively.*

- *Students ask insightful questions of the industry partner or volunteer, demonstrating empathetic understanding

General Capabilites

*Personal and Social Capability

LESSON 1

Preparation for teachers:

- Develop a short presentation about Design Thinking and the specific problem students will explore during the process.

- If possible, recruit an industry partner or volunteer to be interviewed by students. Make sure they are invited to join the empathy session. Face-to-face participation is always preferred, but organizing a virtual interview might also be an option.

- Define the group dynamics focusing on diversity and collaboration.

Materials

- Paper and pens for note-taking
- Printed version of the problem presentation
- Printed Handout – "The Design Thinking Mindset"

Resources

- Video: What is human-centered design?
- Website:Design Kit by IDEO
- Video: Design Thinking – The power of empathy (Teacher resource - Brene Brown speaking on the Power of Empathy)

LESSON 1

Lesson overview

Introduction
(5 min)

Optional
Research time
(10 min)

Group
formation
(10 min)

Industry
Interaction
(20 min)

Problem
introduction
(10 min)

Presentation
Handout (5 min)

Total Lesson Time: 60 Minutes

Notes:

LESSON 1

Lesson steps

1. Introduction (5 min): Gather students and introduce the Design Thinking framework. Briefly explain each phase and its importance.

2. Group formation (10 min): Assign students into groups. To make sure groups are diverse enough, you might want to assign each student a colour or number. If students are not used to working together, ask them to find three things they have in common and then come up with a creative name for their group based on those three words.

3. Problem introduction (10 min): Present the problem to students. Encourage them to make notes and write down at least two questions about it.

4. Presentation Handout (5 min): Distribute printed copies of the presentation for note-taking and future reference.

5. Industry Interaction (20 min): If available, have the industry partner or volunteer share their experiences and answer questions.

6. Optional Research time (10 min): If time permits, students can conduct additional research to deepen their understanding of the problem.

LESSSON 2

Definition: Framing the problem

LESSON 2

Lesson Overview

Students will work in groups to define and frame the specific problem they wish to solve. The focus will be on moving from a vague or general problem statement to a specific and actionable challenge. Students articulate the precise problem they aim to solve and identify its constraints. While they may begin generating ideas, your role as a facilitator is to refocus their attention on the problem at hand, and you can inform them that ideation will take place in the upcoming session. Emphasize the importance of a well-defined problem, as a clear focus is crucial for finding effective solutions.

The first problem statement students arrive at might be too broad, too narrow, or biased. Teach them the importance of reframing problems to capture the real challenges

Learning Intentions:

- Understand the importance of precisely framing a problem within the Design Thinking process.

- Practice collaborative problem identification and framing.

Success Criteria:

* Students can articulate a well-framed problem that is both specific and actionable. Students collaborate effectively in teams to achieve consensus on the problem they will work on.

- Students can use frameworks like "Should, Could, Must" and "How might we:" to refine their problem statements.

General Capabilites

* **Personal and Social Capability**

LESSON 2

Preparation for teachers:

- Ensure that students have their notes and materials from the previous session, especially the problem statements they initially identified.

Materials

- Notes and handouts from the previous session
- Printed Handout - "Should, Could, Must"
- Printed Handout - "How might we...?"
- Butcher's paper
- Texters
- Post-it-notes/sticky notes for voting (Optional)

LESSON 2

Lesson overview

Recap and Preperations
(5 min)

Framing the
Problem
(10 min)

Mind
Mappping
(15 min)

Should,
Could, Must
Activity
(10 min)

Problem Voting
(10 min)

Total Lesson Time: 50 Minutes

Notes:

LESSON 2

Lesson steps

1. Recap and Preparation (5 min): Organise students into their groups from the last session. Briefly recap what the Definition phase is and why it is important in Design Thinking.

2. Mind Mapping (15 min): Direct each group to draw a mind map, with the main question in the middle. Encourage the exploration of different concepts and ideas, encouraging students to research more about the problem from several resources.

3. Problem Voting (10 min): Once the mind maps are comprehensive, have students vote on which problem they are most excited to solve. Ensure every team member has a say; provide stickers or sticky notes for this purpose if desired

4. Should, Could, Must Activity (10 min): Distribute the "Should, Could, Must" handout. Ask students to write at least 5 things that their solution should, could, or must do in order to solve the problem.

5. Framing the Problem (10 min): Students will summarise their problem in one "How might we?" statement that specifies what the problem is, where it is located, who it is affecting and why it is important.

LESSSON 3

Ideation: The Art of Idea Generation

LESSON 3

Lesson Overview

This lesson focuses on the ideation stage of the Design thinking process. Students will be encouraged to think creatively and freely brainstorm ideas ("divergent thinking"), before honing in on the most promising concepts ("convergent thinking"). The goal is to choose a singular, compelling idea to pursue as a solution to the problem they defined in the previous session.

Learning Intentions:

- To understand the role of Ideation in the Design Thinking Process

* To practice both divergent and convergent thinking strategies.

Success Criteria:

* Students generate a wide range of ideas through brainstorming.

* Students successfully evaluate and narrow down these ideas to select one viable solution.

* The chosen idea is a product of collective decision-making within this group.

General Capabilites

* **Personal and Social Capability**

* **Critical and Creative Thinking**

LESSON 3

Preparation for teachers:

- Ensure students have their notes and materials from the previous session

- Prepare tips for students to maximise their ideation, such as withholding criticism, being open to wild ideas, and prioritising quantity over quality during the brainstorming phase.

Materials

- Notes and handouts from the previous sessions
- Texters
- Sticky notes
- Stickers for voting (optional)

Resources

- Video: Creative Confidence
- Video:A Better Way to Brainstorm: How to Get Students to Generate Original Ideas
- PowerPoint: "Tips for effective ideation"

LESSON 3

Lesson overview

Group Assembly
(5 min)

Solution
Consolidation
(10 min)

Problem Recap
(5 min)

Idea Voting
(10 min)

Introduction to
Brainstorming
(5 min)

Silent
Brainstorming
(5 min)

Idea Sharing
and sorting
(15 min)

Total Lesson Time: 55 Minutes

Notes:

LESSON 3

Lesson steps

1. Group Assembly (5 min): Gather students in the designate area, organising them by their respective work groups.

2. Problem Recap (5 min): Prompt each group to briefly review the problem they have chosen to focus on.

3. Introduction to Brainstorming (5 min): Familiarise students with the concept of brainstorming and share tips for effective ideation.

4. Silent Brainstorming (5 min): Conduct a silent brainstorming session, this avoids group thinking, ignites their creative spark and ensures uninterrupted idea generation. Encourage students to jot down as many ideas as possible on sticky notes, one idea per note for easy organisation

5. Idea sharing and sorting (15 min): Ask students to present their ideas to the group and begin sorting them by theme. Facilitate discussions on how certain ideas can merge, evolve, or be refined for better solutions.

6. Idea Voting (10 min): Supply students with stickers for voting on the most promising ideas. Reinforce the notion that this selection process is democratic and that the chosen idea should resonate with all members of the group.

7. Solution Consolidation (5 min): By the end of this session, each group should have a consolidated vision for their solution, preparing them for the prototyping phase in the next session.

LESSSON 4

Prototyping: Bringing ideas to life

LESSON 4

Lesson Overview

In this session, students will construct a simple, testable prototype of their solutions, fostering a hands-on, experimental approach to problem-solving.

The prototype will allow students to obtain feedback on the idea and pilot it with the industry partner or even with other people (e.g., students, teachers, parents, etc). It can be tempting to build out a complete, complex prototype, but it is important to keep it simple. The prototype doesn't need to model the entire idea, instead, you could choose only a part of it to be prototyped. A simpler prototype is more conducive to getting quick stakeholder feedback, allowing students to learn what is and is not effective in the prototype to iterate as needed.

Learning Intentions:

- Understand the role of prototyping in the Design Thinking process.

- Create a prototype that addresses the identified problem.

- Prepare for gathering feedback in the evaluation phase.

Success Criteria:

* Students can articulate what a prototype is and its purpose in design thinking.

* Students successfully construct a tangible or visual prototype of their solution.

* Students prepare a list of questions for gathering feedback on their prototype.

General Capabilites

Personal and Social Capability

Critical and Creative Thinking

Preparation for teachers:

- Students will need a range of materials readily available so that they can explore to create their prototypes. These could include rulers, glue, blu tac, scissors, cardboard boxes. You might also want to include, for example, modelling clay, coloured paper, straws, pop sticks, balloons, bamboo skewers, a pack of craft materials.

Materials

- Paper
- Pens
- Texters
- Various prototyping tools (as listed above)

Resources

- Video: What is a prototype?
- A prototype can adopt different formats, such as:
- A Storyboard can help you visualize your concept from start to finish.
- A Roleplay is a quick and tangible way to test an idea or experience to get into character and act it out.
- A Visual prototype incorporates drawing, sculpting, and building to unlock all kinds of innovative solutions.

LESSON 4

Lesson overview

Group Formation
(2 min)

Wrap up
(2min)

Problem Recap
(8 min)

Feedback
Preperation
(8 min)

Introduction to
Prototyping
(8 min)

Material
Exploration
(5 min)

Prototyping
(20 min)

Total Lesson Time: 53 Minutes

Notes:

LESSON 4

Lesson steps

1. Group Formation (2 minutes): Arrange students by their respective working groups.

2. Problem Recap (5 minutes): Groups briefly state the problem they are working on and their proposed solution.

3. Introduction to prototyping (8 min): Discuss the significance of prototyping and iteration. Highlight the importance of continuing to improve solutions. Include time for a quick Q and A

4. Material Exploration (5 min): Introduce available materials for building the first version of their prototype (sketch).

5. Prototyping (20 minutes): This is the core of the lesson and thus takes up the most time. In groups or sub-groups, students develop their prototypes. They can select an appropriate template from the references below that aligns best with the format of what they are trying to create.

6. Feedback Preparation (8 minutes): End the session by encouraging students to think about how they will test this prototype with the industry partner or other audiences. Students will prepare questions for stakeholder feedback, to keep evolving their solution. This will help students think about the evaluation phase and their next steps.

7. Wrap-up (2 minutes): Quick recap of what was accomplished and what will happen in the next lesson.

LESSSON 5

Testing: Seeking peer-to-peer feedback

LESSON 5

Lesson Overview

Students will practice critical thinking and peer-to-peer feedback by presenting their prototypes to the larger group. The focus is on gathering constructive comments that can further inform the next stages of their projects. If the point of a prototype is to test an idea, then collecting feedback is what pushes things forward.

Learning Intentions:

- To articulate the problem and the proposed solution clearly

- To present a prototype effectively

- To provide constructive feedback

Success Criteria:

* Students can clearly explain the problem they are trying to solve and how their prototype addresses it.

* Students actively provide positive and constructive feedback.

* Students demonstrate an understanding of how to use feedback for future iterations.

General Capabilites

* Personal and Social Capability

* Critical and Creative Thinking

LESSON 5

Preparation for teachers:

- Ensure all student prototypes are available for presentation.

- Review some tips with the students on how to effectively present their problem and solution, alongside, showcasing their prototype.

Materials

- Sticky notes
- Paper
- Student's prototypes
- Blu tac

Resources

- PowerPoint - Includes examples of constructive feedback and tips on effective presentation

LESSON 5

Lesson overview

Setting Up
(3 min)

Wrap up
(2 min)

Feedback
Sorting
(5 min)

Feedback
Collection
(10 min)

Preperation Time
(10 min)

Group
Presentation
(20 min)

Total Lesson Time: 50 Minutes

Notes:

LESSON 5

Lesson steps

1. Setting up (3 min): Organise the classroom into presentation areas, making sure each group has their prototype and materials ready.

2. Preparation time (10 min): Allocate time for student groups to prepare their presentations.

3. Group Presentation (20 min): Each group will take turns presenting their prototypes and ideas to the class. The approximate time per group would be 5 minutes.

4. Feedback Collection: (10 min): After each presentation, the audience writes down one aspect they appreciated about the showcased idea, and one area for improvement, on two separate sticky notes, which they then stick to the presented prototype.

5. Feedback sorting (5 min): After all presentations are done, groups collect their prototypes and attached feedback, sorting them into positive remarks and areas for improvement.

6. Wrap-up (2 min): Briefly discuss the importance of feedback for the next phase of their projects. Emphasize that this is not the time to evaluate the feedback critically; there will be an opportunity for thorough analysis in the subsequent session

LESSSON 6

Ideation phase: Iteration and refinement.

LESSON 6

Lesson Overview

In this lesson, students will engage in an iterative process to refine their prototypes based on the feedback received. They will critically evaluate the suggestions and make informed decisions to improve their solutions.

Learning Intentions:

- Understand the concept of iteration in the design thinking process.

- Learn to implement feedback to improve an existing idea or prototype.

- Develop the ability to make iterative changes based on constructive suggestions.

Success Criteria:

* Students can articulate the changes planned for their prototype and why they were necessary.

* Students apply critical thinking to discern which pieces of feedback will not improve their prototype.

* Each group plans an updated prototype that incorporates at least one piece of feedback received from peers.

General Capabilites

* Personal and Social Capability

* Critical and Creative Thinking

LESSON 6

Preparation for teachers:

- Prepare a guide for students that includes tips on how to effectively incorporate feedback into their prototypes.

- Ensure all required materials listed below are available.
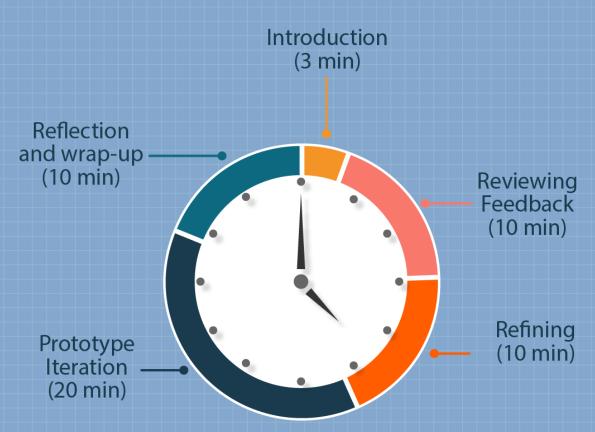
Materials

- Student prototypes – mind map, sketch, and feedback notes from previous session
- Prototyping materials (as listed in earlier lessons)
- Markers
- Handout – ideation
- Sticky notes

Resources

- Guide on effective iteration techniques
- Video: Improve your designs with ITERATION - YouTube
- Examples of iterative processes in real-world projects

LESSON 6

Lesson overview

Introduction
(3 min)

Reviewing
Feedback
(10 min)

Refining
(10 min)

Prototype
Iteration
(20 min)

Reflection
and wrap-up
(10 min)

Total Lesson Time: 53 Minutes

Notes:

LESSON 6

Lesson steps

1. Introduction (3 min): Recall a few concepts related to the Design Thinking mindset. Recall the previous lesson and emphasise the value of feedback in the iterative process.

2. Reviewing feedback (10 min): Each group reviews and discusses the feedback received, identifying what changes are essential for improving their prototype.

3. Refining (10 min): Students write at least three improvements for their solution on the handout provided. They should also note why each change is made. Students ideate how to put those improvements into practice.

4. Prototype iteration (20 min): Groups begin to make changes to their prototypes based on the feedback. They may choose to revise their existing prototype or build a new one from scratch.

5. Reflection and wrap-up (10 min): Each group discusses what they have learned from the iteration process and how it has impacted their prototype. Conclude by summarizing the day's activities and how they contribute to a cyclical, iterative problem-solving approach.

LESSSON 7

Prototyping: Refining your solution

LESSON 7

Lesson Overview

This lesson is an iterative phase that focuses on refining and potentially expanding the student solutions based on previous feedback and evaluations.

Learning Intentions:

- Develop a deeper understanding of the iterative design process

- Encourage critical thinking to identify areas for improvement in their solution.

Success Criteria:

- Successfully identify areas in which their prototype could be improved.

* Make informed decisions about whether to iterate the prototype or to proceed to presenting the solution.

General Capabilites

* **Personal and Social Capability**

* **Critical and Creative Thinking**

LESSON 7

Preparation for teachers:

- Review the projects your students are working on and identify potential weaknesses. Consider strategies to support them in identifying where they need to direct their efforts in this lesson. The focus for the educator is to facilitate rather than instruct, allowing students to critically think about their next steps.
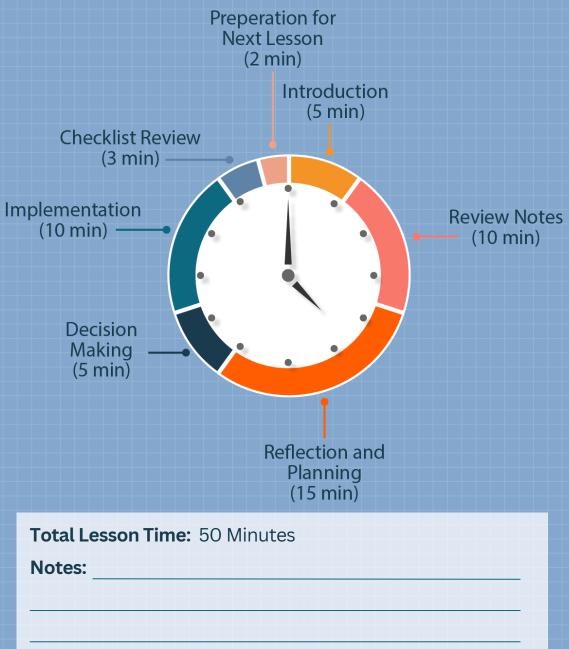
Materials

- Earlier prototypes
- Notes from the last meeting
- Design Thinking framework
- Should, Could, Must list

Resources

- Webpage: "integrate feedback and iterate" - Design Kit
- Webpage: "Keep iterating" - Design Kit

LESSON 7

Lesson overview

Preperation for
Next Lesson
(2 min)

Introduction
(5 min)

Checklist Review
(3 min)

Implementation
(10 min)

Review Notes
(10 min)

Decision
Making
(5 min)

Reflection and
Planning
(15 min)

Total Lesson Time: 50 Minutes

Notes:

LESSON 7

Lesson steps

1. Introduction (5 min): Gather the students in a room, arranged by their working groups.

2. Review Notes (10 minutes): Ask students to review their notes from the last meeting to recap their progress.

3. Reflection and Planning (15 minutes): Facilitate a discussion for students to reflect on their learnings and the potential for more improvements for their solution.

4. Decision Making (5 minutes): Consult the Design Thinking framework to decide the next steps each group will take— do they need to go through another iteration phase (refine idea, prototype, etc)? Or are they ready to move on?

5. Implementation (10 minutes): Depending on the decision made, students begin their work, whether it's iterating the prototype or drafting their elevator pitch.

6. Checklist Review (3 minutes): Revisit the Should, Could, Must list to ensure compliance with requirements established at the beginning of the project.

7. Preparation for Next Lesson (2 minutes): Groups begin thinking about how they will present their project in the final lesson. If they have already begun planning their presentation, ask them to plan how they will use the final lesson to improve it and rehearse as a group.

LESSSON 8

Ideation phase: Creating your pitch

LESSON 8

Lesson Overview

Students will focus on effectively communicating their solutions through an elevator pitch, learning how to articulate the problem they are solving and how their solution addresses this.

Learning Intentions:

- Understand components of an effective pitch.

- Develop presentation skills

Success Criteria:

- Create a 6-slide pitch deck.

*Demonstrate the ability to clearly and effectively communicate their idea.

General Capabilites

Personal and Social Capability

Critical and Creative Thinking

LESSON 8

Preparation for teachers:

- Be prepared to introduce Canva Classroom for collaborative work. We recommend using Canva Classroom, so multiple students can work on a single presentation simultaneously, making group projects more efficient. They can also leave comments, making the feedback process seamless.

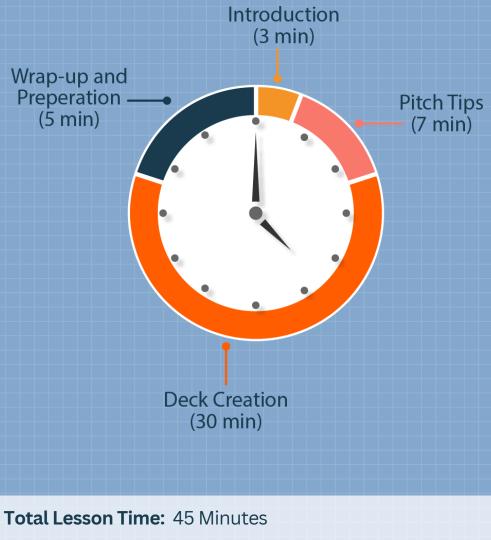- Have some presentation tips at the ready.

Materials

- Paper
- Pens
- Texters
- Access to computers
- Canva Classroom

Resources

- Article: How To Create an Elevator Pitch (With Examples)
- Web page: Design Kit
- Canva Classroom

LESSON 8

Lesson overview

Introduction
(3 min)

Wrap-up and
Preperation
(5 min)

Pitch Tips
(7 min)

Deck Creation
(30 min)

Total Lesson Time: 45 Minutes

Notes: _____

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LESSON 8

Lesson steps

1. Introduction (3 min): Briefly introduce the concept of a pitch deck and how they will use Canva Classroom to create one.

2. Pitch Tips (7 minutes): Share tips on creating an effective pitch.

3. Deck Creation (30 min): Students work on creating their 6-slide pitch deck on Canva Classroom containing:

- Slide 1: Cover

- Slide 2: Attention grabber (image, stats, question, etc)

- Slide 3: Introduce the problem (be specific)

- Slide 4: Present your solution

- Slide 5: How it solves the problem

- Slide 6: Finalize with a call-to-action

4. Wrap-Up and Preparation (10 min): Instruct students to review and practice their presentations in preparation for the final lesson

LESSSON 9

Testing phase: Presenting your solution

LESSON 9

Lesson Overview

In this capstone lesson, students present their solutions to a panel of industry experts for evaluation and constructive feedback. This provides an authentic audience and a real-world context for their work.

Learning Intentions:

- Understand the value of presenting and testing solutions in a real-world context.

- Develop communication skills in articulating their solution clearly and effectively.

Success Criteria:

- Successfully present the solution to a panel of experts.

- Engage in a constructive dialogue with experts to refine their solution.

General Capabilites

Personal and Social Capability

LESSON 9

Preparation for teachers:

- Confirm the attendance of industry experts well in advance. They don't need to be the same people from the project's start, but ensure they are briefed on the problem statements of the student projects. After each presentation, have the experts start with positive feedback about the solution. Then, let them provide thought-sparking questions to help students fine-tune their ideas.

- Prepare students for constructive criticism and reassure them that the focus is on learning and improving. They don't have to excel with their responses to every question but consider and value the feedback. Remember, stumbling and learning from it is all part of the Design Thinking journey!

Materials

- Students' presentations
- Projector

Resources

- None required for this lesson, but the feedback received here will be an invaluable resource for students' future endeavors.

LESSON 9

Lesson overview

Wrap up and
Acknowledgement
(2 min)

Room set up
and Introduction
(5 min)

Student
Reflections
(3 min)

Expert Closing
Thoughts
(5 min)

Expert
Introduction
(5 min)

Presentations
and Feedback
(30 min)

Total Lesson Time: 50 Minutes

Notes:

LESSON 9

Lesson steps

1.Room set up and Introduction (5 min): Ensure the room is set up for presentations and have students take their seats.

2. Expert introduction (5 min): Invite the industry experts to introduce themselves and share a bit about their backgrounds.

3. Presentations and Feedback (30 min): Allow each student group around 5 minutes to present their solution, followed by 2-3 minutes of feedback from the experts.

4. Expert Closing Thoughts (5 min): After all presentations are complete, let the industry experts offer some collective insights and suggestions.

5. Student reflections (3 min): If time allows, let the students ponder the feedback and chat about tweaks they would make if they kept pushing forward with the project.

6. Wrap-Up and Acknowledgement (2 min): Close the session by acknowledging the hard work and resilience shown by the students throughout the project.

Developed with support by