My
Design Guide

Solving problems and challenges with a design focus

The Design Process

DISCOVER | DEFINE | DEVELOP | DELIVER
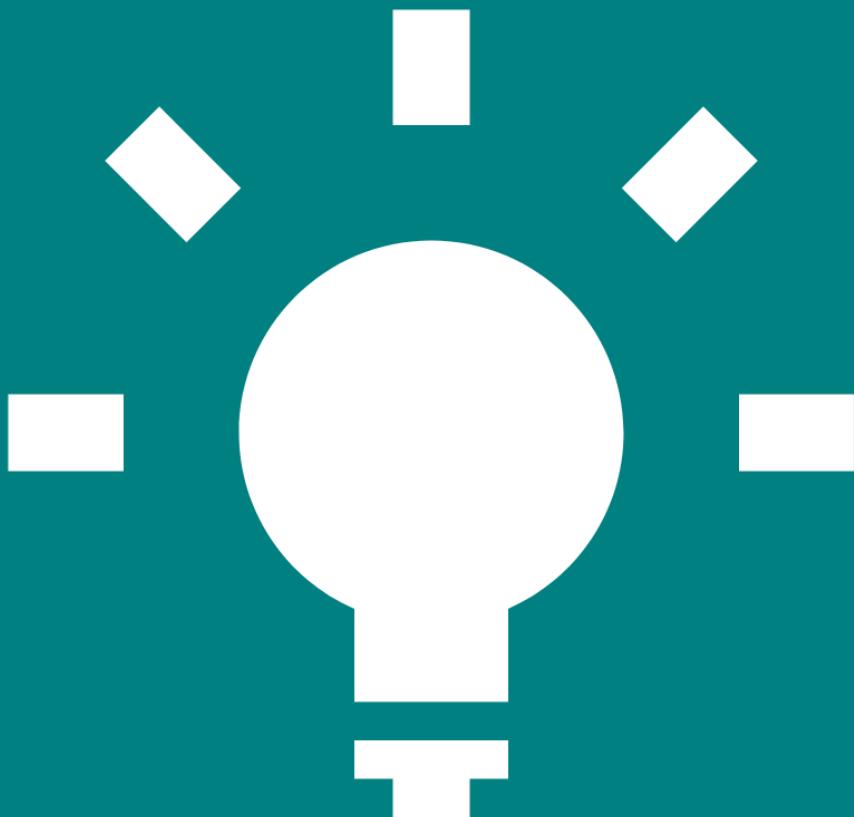
Think broadly | Make decisions | Think broadly | Make decisions
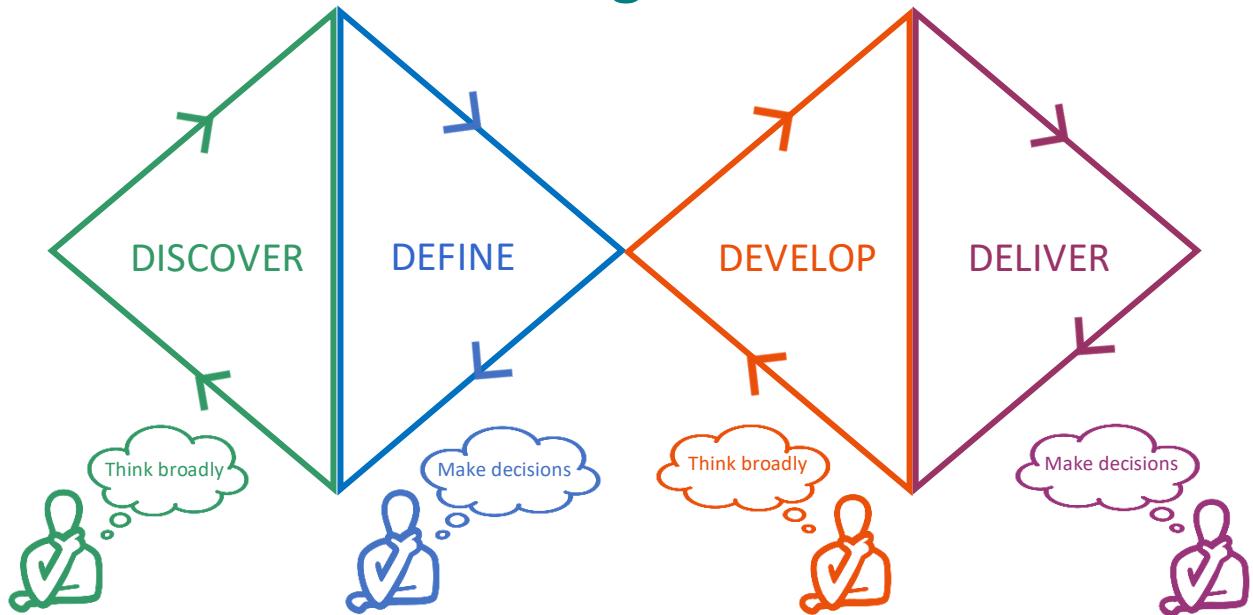
What is the design process?

This design process is a tool to guide you through a project and to ensure that you think about all the key areas of a project. There are several versions of the design process, this version *The Double Diamond* process is just one, but they all follow the similar stages. This process starts with either a very general idea, a specific problem or a design brief. Each stage of the process uses questions to learn more about the idea or problem and to bring solutions to life.

How do I use the design process?

There are four stages, broken into two diamond shapes. You can go forwards and backwards through stages at any point, particularly if you don't fully understand a part of your project and you need to learn more. For example; if you think of a design idea but you are unsure how it could work, move back into the first stage and use the questions to complete more research. Take time to reflect at each stage and be prepared to make changes. Good solutions take time to develop and a final design is often very different to where it first began.

Why should I use the design process?

This process is used by designers, engineers and in business to help plan, manage and organise projects. It encourages you to ask lots of questions and to experiment with design ideas. Using the design process will help you to create exciting and unique design solutions.

Do I need to answer all the questions in each stage?

No, every project is different. Use as many questions as you like to help you to understand and engage with your project.

RESEARCH – The search for new knowledge

Discover

Think broadly

Some questions you might use to help you think…

WHY?

Why does this problem exist? Why is a solution needed?

Why has it not been solved already?

Why is it designed and made in this way?

WHAT?

What do you need to know more about?

What is it used for? What problems exist?

What other solutions exist? Are they effective?

What materials and components are currently used?

WHEN?

When is it used?

Can it be used at a different time, for a different purpose?

WHERE?

Where is it used?

Can it be used at a different location, for a different purpose?

Where can I look for more information? Are there other sources?

WHO?

Who uses this product, service or system and what are their needs?

Are there reasons why more people can't use it or interact with it?

Are users happy with it? If so how, if not why.

HOW?

How does it work? How is it made? How is it controlled?

Are there other materials, components and processes which could be used to create a solution?

How might I create a better solution?

Tips for…
Better Research
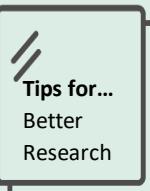
Ask Questions. Be curious. Be open to new ideas. Test and experiment with new ideas.

Use a broad range of primary and secondary sources. Reference your sources and question whether they are reliable sources

Sketch any ideas or solutions that come to mind all the way through your project, no matter how basic.

Look at people and notice how they use and access the spaces and products in the world around them.

RESEARCH – Reflection Point

Think broadly
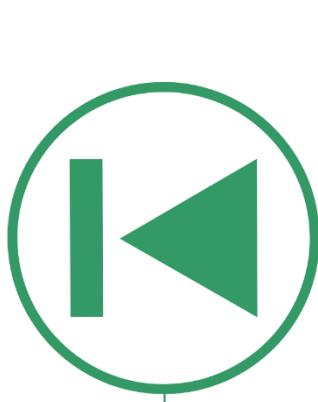
Looking back …

What did I already know about this topic / problem / challenge?

What did I think about this topic / problem / challenge?
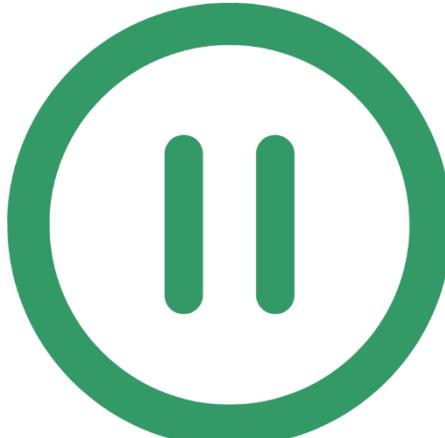
Pause and reflect

What do I know now…? What have I learned from my research?

Has my opinion changed? If so, how and why?

What conclusions can I draw from my research?

Is the information I have gathered reliable and of high quality?

What next…

What research is important for my project?

How might I share my research with others?

How can I move my project/idea forward?

Tips for… Better Research

Use a learning log to sketch and record any design ideas, thoughts, conversations with your teacher and others about your project and possible solutions.

Capture everything, no matter how basic! Some of the best ideas come when you are least expecting, and all ideas can be tried and tested later.

Remember the following quotation through your research, design and in completing your project:

"Ever tried. Ever failed. No matter. Try again. Fail again. Fail better." Samuel Beckett

From your research, think about the information you have gathered.

- o   Select the research which links directly to your project.
- o   Use some of these questions to help you to decide what exactly you want to focus on in your project and what is achievable in the time available.

What area do I want to focus on and why?

Why is a design solution needed?

Can I solve the main problem, or should I focus on one part for this project?

What materials and resources are available?

Who am I creating solutions for?

How much time is available for the project? What can I focus on in this time?

How might I organise my project and record the decisions I make?

What else could my design solution do?

Are there other features it could include?

What must my design solution do to function?

Are there any features it must include?

What are the final outcomes for this project?

How might I complete the project to the best of my ability?

What skills might I need and use to create a solution?

Do I need to develop new skills?

Tips for...
Making Decisions

Filter your research. Think about the research that matters to this project. What are the essential points to communicate?

Have you asked all the right questions?

If not do more primary and secondary research. Become an expert on this topic or area!

Think about what you have noticed and how you might improve this area or product for all.

How might I share and communicate my research with others?

- o Highlight the key points from your research and think about all you have learnt.
- o Explore how you might present this research to share it with others.
- o Discuss your research with others. Ask for feedback and record the feedback.

  This will help you to design the best solution for your project.

Possible ways I could present and share my findings

Presentation of images with my comments.

Slideshow of my key points

A Report or Learning Log.

Discussion with others

Or any appropriate media

Include your comments, observations and conclusions

I could write an *Individual Design Brief* if I have made key decisions from my research which change the direction of my project.

- • My design ideas will focus on …. for …. who need…. to ….

  Or
- • My design is for…. who need …. because….

Essential	Desirable
My design **must**…	My design **could**…
My design should…	My design might …

I could create a table to record key decisions from your research. This will help me when developing design ideas.

Essential criteria (Things my project must do / have / should include)

Desirable Criteria (Things my project could do / have / might include)

Use a learning log to sketch and record design ideas, thoughts and solutions at any point in your project… no matter how basic!

Move back and forward through the design stages to reach the best solution for your project in the time available. Keep asking the six questions: *Who, What, When, Where, Why and How?*

DESIGN IDEAS – Explore solutions

Think broadly

HOW DO I START DESIGNING?

Start anywhere!

Look back at my research and see are there any solutions that are obvious. Start with these solutions and make them relevant to my project, my skills and my experience.

Think Big! **Sketch** all possibilities and use **notes** and **sketches** to record my design thinking.

All ideas are valid at this point

HOW CAN I THINK OF MORE THAN ONE IDEA?

Generate lots of ideas and sketches. Don't get stuck on one idea. Every idea is valid at this point no matter how basic.

Always keep in mind **who** I am designing for, **what** they need, why it is needed, **how** it might be used, **where** and **when** it might be used.

Share my ideas at every stage of their development. Don't wait until an idea is final. Let it grow and change as you learn more about it.

Discuss my designs with others, share my concerns and what I like and dislike about my design ideas. Listen to feedback and if it's useful make improvements.

Look for and listen to feedback

HOW CAN I BRING MY IDEAS TO LIFE?

Sketch and make prototypes (rough model of the final product). Both will help explore the scale of my ideas, test how they might work, how components might fit together and how they might be assembled.

Make rough models at any point to learn more about my design ideas and to make quick changes.

If my design idea changes, sketch more and try make a new prototype or adapt the first model.

To learn more about my design idea, try to include and test any movements, electronics or control systems I am thinking of using.

Sketch & make prototypes to communicate

Tips for … Designing & Prototyping

Use a range of drawing materials to sketch and communicate your design thinking.

Choose a method to quickly record your thoughts and key decisions you make as design ideas develops.

Further Research – When you start exploring design solutions you might find that you need to research more about materials, components or control systems. Note how this research has helped you develop your final solution.

How might I share my thinking and design ideas with others?

- o Pause and think about your design ideas and the focus for your project.
- o Use some of the following reflection questions to communicate the background to the idea and to explain your thinking.

Pause & Reflect

Questions you might ask …

- o Are my ideas and/or solutions clearly understood by others?
  - o **Why** is the design needed?
  - o **Who** is the design for?
  - o **What** is the design idea?
    (Use notes/sketches to explain all aspects of your thinking)
  - o **When** and **where** might it be used
  - o **How** might the design idea or solution work?
  - o **How** will I realise (make) my solution?
- o Have I communicated my thinking and my decisions?
- o Do I have the time, materials, equipment and skills to bring my ideas to life?
- o What have I learnt from my prototype designs?

Gather Feedback

Questions you might ask …

- o What do you like and dislike about my design idea/solution?
- o What would you suggest I try? AWE (And What Else…)
- o How might I improve my idea? *(You might focus this question on a key area of your project)*
- o Have you any questions about what my design is, why it's needed and how it works?

Evaluate

Make Changes

Move Forward

Evaluate the feedback …

- o Listen to the feedback from others. Think about what area you wanted to focus on, for whom and what you learnt from your research

Think about making changes …

- o Are there any changes or improvements I could make to the design? *(Keep in mind the time, materials and equipment available for the project and your skills and experience)*
- o Refine/Modify my idea to reach a final solution.

Move forward with your design idea…

- o What can I do next to bring my final design idea to life…?

Think about the details of your final design.

- How might I make my final design or complete my project solution to a high standard using the time and resources available?

PLAN

Check the resources that I can use for this project.

Do I have the skills and experience to use these resources?

Produce any drawings / plans I need to complete my project.

Plan the stages to make my solution.

TIME

Have I time to make my solution? How can I plan to use this time efficiently?

Develop a timeline for the stages of manufacture of my project.

Track my progress and timing during the making stage.

Ask for help and learn from others in my class.
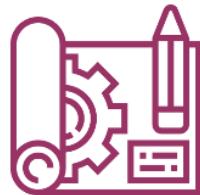
MAKE

Have I chosen the best way to process my materials?

Have I chosen the best way to assemble the materials I've decided to use?

Have I chosen the best way to assemble the components I need to use?

Am I working safely? Do I need to ask for help to make sure I am always safe?

Do I know how to use the equipment correctly?

Have I chosen the best way to finish my project to a high standard?

Tips for … Completing a project

💡 Don't delay in starting to make or solve your final design or solution!

💡 Be organised! Think ahead to your next lesson and what you might need.

💡 Talk to your classmates and your teacher about your project and how it is progressing. Ask for their opinion and listen to their advice.

💡 Record the stages you go through in making your project or solution. When things don't go to plan, record why and how you solved the problem. Making mistakes and learning from them is

Think about your journey through this project. Think about the start of the project, what you have learnt and how you responded to the design brief.

- o In your learning log reflect on the successes and challenges of the project.
- o Use some of the following questions to guide your thinking.
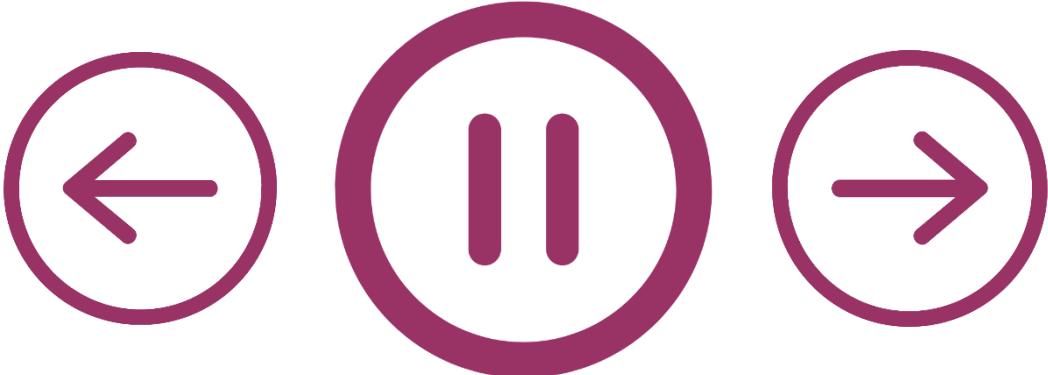
Looking back …

- o What did I already know and think about this topic / problem / challenge?
- o What appealed to me about this project? What was I unsure about? What was I excited about learning?

On Reflection …

- o Have I created a solution that meets the needs of this project / brief? If so how? If not, why?
- o Has my finished solution worked out as I had planned? If so how? If not, why?
- o Did I face challenges during my project? How did I overcome these challenges? What did I learn?
- o Did I have the necessary skills to manufacture the solution I designed?
- o Have I completed my project within the given time? Did I use my time effectively?
- o What changes did I make during my project? Why did I make these changes?

I have learnt …

- o What have I learned while making the project?
- o How has my thinking changed about this area/topic?
- o Have my knowledge and skills developed? If so, how and what have I learned?
- o What aspects of the project did I enjoy and find challenging?

Moving forward …

- o If I had more time I might …
- o To improve my skills and understanding I would like to learn more about …
- o To improve how I approach my next project I could focus on …