RSA

Pupil Design Awards

Teacher resource pack 2022–23

The Pupil Design Awards has been a positive way for pupils to connect with their own stories and communities.

Teachers, Pupil Design Awards

Contents

Introduction

The RSA was established in 1754 at a central London cafe by a group of people who were determined to find practical and creative ways to address big, complex issues and put their own dissatisfaction into action. They joined forces and advocated for the new mindset and hopeful ideas that addressed the challenges of their time. Today, centuries later, we continue to build on their determination and do the same. The challenges we are facing as people and planet have urged us to create a new mission: Design for Life. With it, we aim to unlock the potential in human, social, and natural capital to achieve a more resilient, rebalanced, and regenerative future for all.

The RSA Pupil Design Awards aims to encourage young people and their teachers to join us in this mission. The Awards' vision is one in which young people develop creative self-efficacy through engaging with real-world problems and leave school with the agency and capabilities which enable them to flourish in their personal lives and contribute to the flourishing of their communities. We do this by:

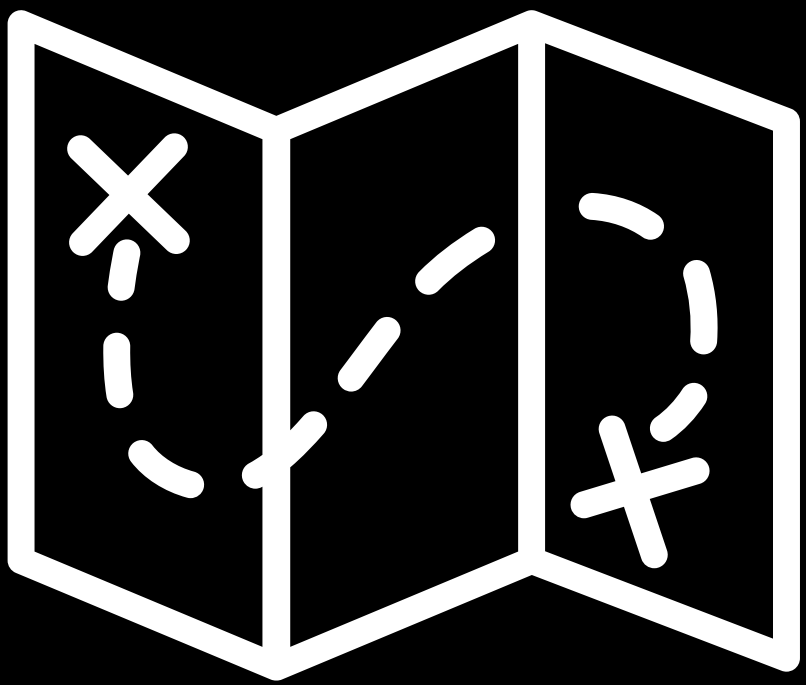
- Broadening teachers' and pupils' knowledge of how **social design** can be applied and understood through challenging, relevant briefs and comprehensive judging criteria.
- Introducing s**ocial design thinking** to teachers and pupils through interactive workshops delivered in collaboration with design education experts.
- Connecting schools to their local communities and enabling pupils to design solutions to local and global contemporary challenges.

The Pupil Design Awards is modelled on the RSA's prestigious Student Design Awards for university students. It is a national design awards programme for secondary school and sixth-form pupils aged 11-17. Whilst we have in the past run the awards as a competition, this year the emphasis of the awards will be on celebrating the design thinking process that all participating pupils and teachers go through. We provide a range of briefs related to important social issues and ask pupils to develop innovative proposals to problems they identify themselves. The design process requires pupils to identify different design opportunities and refine ideas through research and development. Proposals are submitted towards the end of the academic year and are then reviewed by an expert panel who provide invaluable feedback to pupils. All pupils completing the programme will receive an award and special commendations will be invited to an awards day celebration at RSA House.

This Teacher Resource Pack has been designed to support you in delivering the RSA Pupil Design Awards. In the pack you will find a suggested seven-week scheme of work, supported by activities and resources from our partners, design education specialists, Fixperts.

The 2022-23 RSA Pupil Design Awards are brought to you by The Comino Foundation with additional support from Fixperts.

PART 1
TEACHER OVERVIEW



Awards timeline

November

Awards launch

New briefs and resources are uploaded on to our website, and registration is live.

Nov - Dec

Education engagement

We will offer a range of engagement opportunties, design sessions and teacher workshops.

Feb - Mar

Mentor visits

Support on your proposals from professional designers and former winners of the Student Design Awards.

Late March

Submissions open

Engagement opportunities including teacher workshops.

Late April

Submissions close

Online submission platform closes. We will provide updated timelines as the year progresses.

May

Evaluation

All entries will be reviewed by experts who provide invaluable feedback to students.

June

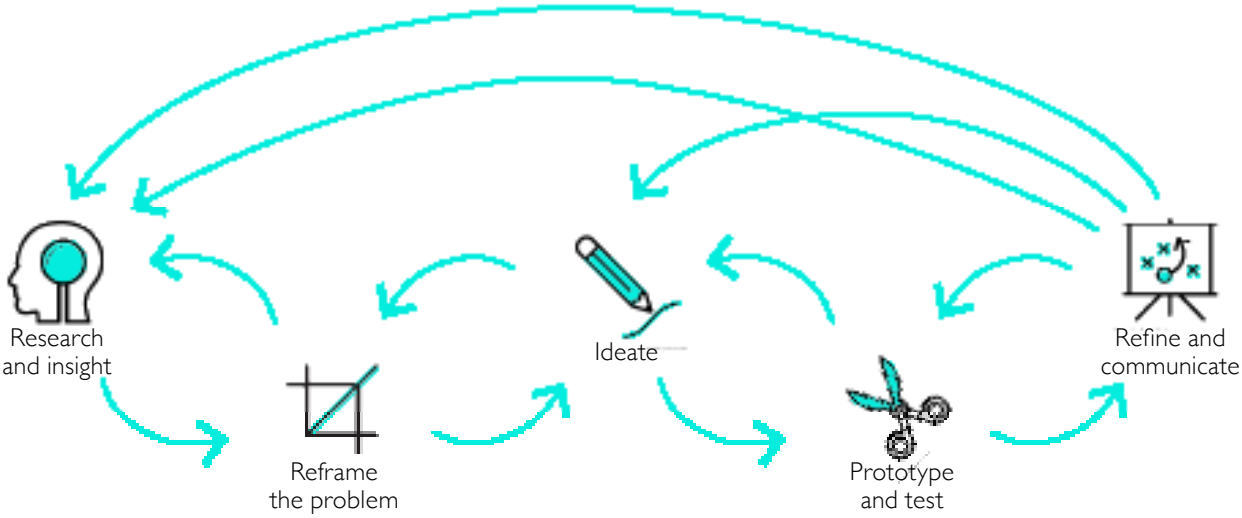
Awards ceremony

All entrants will receive an award and special commendations will be invited to an awards day celebration at RSA House.

Design thinking

We believe that design is about more than making beautiful things. Design can be used to solve problems and improve people's lives. This is what we call **social design**. This pack aims to support you in encouraging your pupils to develop the mindsets that are integral to arriving at innovative, impactful ideas. The RSA Pupil Design Awards is about pupils going on a journey through the design thinking process, that builds their ability to creatively solve problems with insights from their peers and the world around them.

The non-linear design thinking process



Through the Pupil Design Awards we describe **design thinking** as a process and a mindset used to tackle complex problems. It can help pupils explore new alternatives and to imagine and bring to life ideas that didn't exist before. It offers an opportunity to design with communities, to deeply understand the people they're looking to support, to be creative, and to come up with new answers that respond to people's needs and motivations. It is a flexible and non-linear process, where pupils can go back and forth as many times as they need to reach an idea that addresses the problem they have identified.

Evaluation criteria

Your proposals will be evaluated based on the following criteria:

1

Social and environmental impact:

- How does the proposal make a positive difference for people and/or the natural world?
- How does the final proposal consider diverse needs and equitable ways to meet those needs?
- How does the proposal engage with the local community in its chosen context?
- How does the proposal consider using materials, processes, and resources in a sustainable way?

2

Rigorous research and compelling insights:

- Has the pupil/team undertaken first-hand research by identifying the needs and motivations of people affected by the problem in your brief?
- Has the pupil/team conducted research into the wider context of the problem on the internet or through reading material?
- How does the proposal build on key insights grounded in people's needs and motivations, and gained through wider research?
- How does the proposal incorporate feedback and testing through prototyping and iteration?

3

Viability:

- Has the pupil/team considered how the proposal will work in practice?
- Has the pupil/team considered the cost of the proposal and how it might be funded and sustained?
- Has the pupil/team identified any potential barriers that might prevent the proposal working in practice? How might these be overcome?
- Has the pupil/team considered how they would measure the success of their proposal if it became a reality?

4

Creativity and innovation:

- How is the proposal different from existing solutions? How might it be better or more useful?
- What unexpected or surprising elements are included in the proposal? What value do these add to the idea?

How to submit your work

You may work as a team or individually. To submit your work into the RSA Pupil Design Awards you will need to present your proposal on **six A3 boards.** These six boards need to tell the story of your design thinking process from research to final idea. The experts will be looking for the story of how your design developed over time. When the experts first look at your work, you won't be there to explain it, so your six boards need to do all the explaining for you!

The six boards:

1. Research

- What design brief are you tackling?
- What research have you done to investigate the challenge and understand how the people/environment are affected?
- How did you conduct some primary research to understand the issue better?

2. Findings

- What is the specific problem you are focusing on?
- What were your key findings from your research?
- What were your insights from your research?

3. Ideation

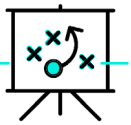
- How have you explored potential ideas?
- What ideas did you decide to explore further?
- What was successful/unsuccessful about them?

4. Testing & Development

- How did you test your idea?
- Who did you ask for feedback?
- How did you incorporate feedback into your proposal?

5. Impact

- How could your proposal work in the real world?
- What could be the challenges you might face when putting your proposal into the real world?
- What positive impact will your proposal have?



6. Final Idea

- Tell us about your final idea in one statement.
- Who is your proposal aimed at and why?
- What makes it different to existing solutions?

Scheme of work

Week 1

Objective	Outcome	Resources
To (i) introduce design thinking, (ii) explore social design, and (iii) introduce the awards briefs.	**1** Pupils have formed their groups or decided to work indivdually. **2** Pupils have read the brief pack and chosen a brief. **3** Pupils begin to have an idea of the challenges they will research further.	— The three awards briefs — Fixperts 'Brief Hunting' activity

Week 2

Objective	Outcome	Resources
To (i) research information for the chosen brief, (ii) identify a target audience, and (iii) delegate research responsibilities amongst the team.	**1** Pupils should understand how to select research relevant to their context. **2** Pupils should be able to identify areas where further investigation is needed before developing design ideas. **3** Pupils should be able to identify, explain the characteristics of, and justify their choice of target audience in relation to their chosen brief.	— Pupil Response Sheet — Fixperts 'Customisation' activity

Week 3

Objective	Outcome	Resources
To (i) plan the research pupils will carry out with real people / organisations, (ii) devise research questions.	**1** Pupils should understand how to plan primary research activities, and should have a plan for carrying out user research independently after this lesson. **2** Pupils should be able to analyse successes and weaknesses in interview technique and apply this knowledge to carrying out their own interviews.	— Researching with people worksheets — Fixperts 'Levels of Listening' activity — Tell Stories activity

Tip: Encourage pupils to start their boards as early as possible, they should be an evolving document that they revisit throughout the design process!

Tip: Support your pupils to make their boards visual. Judges won't have time to read through a lot of text, so they need to consider the communication design of their proposal.

Week 4

Objective	Outcome	Resources
To (i) identify initial ideas for the project based on research findings and (ii) describe or visualise ideas.	**3** Pupils should be able to use their research to develop their ideas, demonstrating that the idea is clearly linked to information gathered during research activities. **4** Pupils should be able use a variety of methods to help generate a wide range of ideas. **5** Pupils should be able to communicate their ideas to someone else in different ways.	— Fixperts 'Idea Generation' activity — Examples of mind maps and product design sketches

Week 5

Objective	Outcome	Resources
To (i) test ideas against target audience feedback, (ii) develop initial ideas towards a single, final idea.	**6** Pupils should demonstrate a critical approach to testing and evaluating their ideas. **7** Pupils should use the feedback of others in addition to their own opinions to test and evaluate their ideas. **8** Pupils should apply the result of their testing and evaluation to identify clear ways to develop their ideas further.	— Fixperts 'Designing the Detail' activity — Fixperts 'Sticky Storyboard' activity — Fixperts 'Brief Specific' activities

Week 6

Objective	Outcome	Resources
To build, refine and complete final idea.	**9** Pupils should take action based on feedback from their target audience and peers. **10** Pupils' proposals should clearly reflect the needs of their target audience.	— Examples of previous submissions

Week 7

Objective	Outcome	Resources
Create final portfolio by completing submission boards. Refining presentation until pupils are confident in their submission.	**11** Pupils should be able to use advice and success criteria to make decisions about the communication of their project. **12** Pupils should be able to communicate effectively by telling a story visually through their boards.	— Evaluation Criteria

Teacher insights

As well as inspiring young people to engage in social change through design thinking, we also hope to create a community of teachers who can learn, collaborate and connect with each other. Many of you will be new to the Awards, but we are also fortunate enough to have many schools that return each year. We've collected some key insights from some of these teachers to support you with planning and delivering the Awards in your own classroom.

Structuring the Awards:

I have run the PDAs as both a formal classroom-based activity and as an extracurricular club. I found the issue with classroom activities was the time constraints which prevented the students from really investigating the brief for a longer period of time.

We make links with employability skills such as strong communication and working to deadlines and we have always linked the competition heavily to teamwork. We try to take a step back with decisions like which team member is responsible for certain elements of the work and encourage them to prepare presentations themselves.

I have always run the PDAs in either the Art lesson or PSHE lesson. Historically, I have always had Years 7 and 8 taking part in the brief. When I have completed the planned lesson time and marked/ evaluated the work I have then used lunchtimes to complete/tweak the work before submitting it.

Using the PDAs resources and support:

For mentor visits we tend to book a room at school for the afternoon and take pupils involved off timetable for the session. During this time the pupils all present their progress so far and each group feeds back including the mentor. The mentor visits are not only a good opportunity to hear from each of the groups but also a rare chance for pupils to hear from older students who are used to going through a design process.

I have used the support material as a loose guide. However, having exemplar work was really useful. The student mentor visits were an amazing experience which really helped progress the pupils' work.

Managing the project timeline:

So that pupils do not get preconceived ideas for the brief, I start with a mini project which they then can use within their research. That mini project starts in January. From the information from the brief you give us, I would look at the background and 'what needs to change' part and basic a lesson that covers the main points mentioned. If they are in their Art or DT lesson I would do a design task around it or if in PSHE I would do a discussion task. Then after 4-6 weeks I would introduce the design brief and start the project.

We try to launch the briefs ASAP to give them the opportunity to spend time on research without the pressures of other deadlines/homework that they may have.

We also offer all of the briefs to our students so each year we have groups who are working on lots of varied and unusual project ideas. We have pretty much run the competition from November to April with drop-in sessions for support.

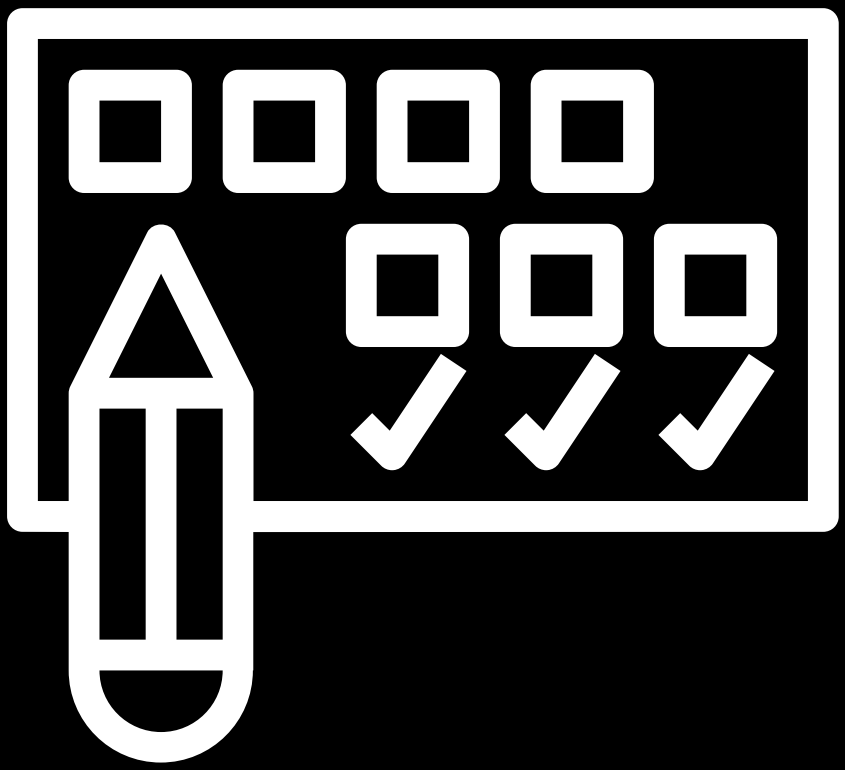
Top tips:

It's not all about the fancy presentation, it's the ideas that matter. I was worried that because we do not have great IT facilities, we wouldn't do as well as others. But that was not the case.

Encourage research as much as possible and try to give the groups time to reflect on the research before designing. Students should not be jumping into designs too early.

Tip: Don't forget you can always contact the RSA team for further support and guidance on how to run the Awards in your school by contacting education@RSA.org.uk.

PART 2
LESSON PLANS



Lesson Plan:
Week 1

Forming a group & choosing a brief

Objective	Outcome	Resources
To introduce design thinking and social design. To understand that design can be used to solve problems. Introduce the awards briefs.	**1** Pupils have formed their groups or decided to work individually. **2** Pupils have read the brief pack and chosen a brief. **3** Pupils begin to have an idea of the challenges they will research further.	— Pupil Design Awards animation — 'The Power of Design' video — 'How to Approach a Brief' video — The three awards briefs — Fixperts 'Brief Hunting' activity

Ideas for Starter Activities

Pupils to brainstorm: how has design improved the way we live in today's world? Examples might include: clothing, internet, telephones, fridges, water bottles, etc. When taking feedback from class, explore ideas such as: what problems did the creator respond to, what role design might have played in the process, what mindset might have been needed.

Introduce the Pupil Design Awards: defining what a brief is, how pupils will be working using design thinking, and the submission deadline in March.

Show two videos:

1 Watch the Pupil Design Awards animation, created by SDA alumni Leanne Dooley, to kickstart your pupils projects and introduce the design thinking process.

2 The 'Power of Design' video from Student Design Awards alumni Emma Southgate, who reflects on the way design thinking can be harnessed to tackle problems ranging from household needs to big, social challenges.

Follow this with a Q & A session on the key mindsets and attributes of designers.

Ideas for Main Activities

Many pupils will want to jump straight into creating design ideas. It's okay to reward some of these ideas. However, don't jump straight into final proposals. At this stage we want to get them thinking about identifying challenges to solve - not jumping straight into ideas for an unidentified problem:

You could: show 'How to Approach a Brief' - a short video about tackling new briefs by Andrew Grant RDI.

You could: run the **Fixperts 'Brief Hunting'** activity with the class to get them comfortable with identifying problems before generating ideas.

Introduce **the three briefs** to the class: these can be read aloud from the Competition Pack.

Pupils can work in groups or pairs to **mind map** a summary of each brief, and the potential issues or problems that could be relevant to each brief.

Appoint one person as the scribe and at the end of the session ask another group member to present back to the room the challenges that they identified.

Ideas for Plenary Activities

If working in a group, pupils to record who is in their team members, which brief they will be responding to, and what their discussion has been during the lesson – including what they already know about the issue, initial ideas around who they might want to speak to for further research, and possible ideas they might have started to think about.

Encourage pupils to question their assumptions about the challenges they have identified. This will allow them to start thinking about what they want to explore further.

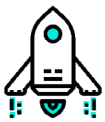
Note: it would be useful to keep a record of which groups pupils are in (or whether they are working individually) and which brief they have chosen.

Lesson Plan:
Week 2

Secondary Research: Finding Information and an Audience

Objective	Outcome	Resources
To research information for the chosen brief. To identify a target audience. To delegate research responsibilities.	**1** Pupils should understand how to select research relevant to their context. **2** Pupils should be able to identify areas where further investigation is needed before developing design ideas. **3** Pupils should be able to identify, explain the characteristics of, and justify their choice of target audience in relation to their chosen brief.	— A computer room or access to computer for each group. — Pupil Response Sheets — Fixperts 'Customisation' activity

By now, pupils will have chosen which brief they will be working on and completed mind maps that explore the various challenges they could focus on for their project. This week is about researching appropriate information to learn more about the issues.



Ideas for Starter Activities

Pupils to brainstorm, individually: (i) what brief are they focusing on, (ii) what issues will they need to research or learn more about, (iii) what are the different sources of information available to them?

Teacher to take feedback, defining 'secondary research' and the range of sources it might include - e.g. textbooks, newspapers, specific internet sites, published data.

Ideas for Main Activities

Based on insights gained in the starter activity, pupils should decide which secondary research activity they will each carry out.

Pupils should spend time researching more about the brief they are responding to and what possible solutions already exist.

After carrying out secondary research, pause to discuss how this can be used as a basis for primary research, and introduce the concept of a target audience.

Pupils should discuss who their target audience is and what characteristics they have.

Conduct secondary research: findings can be recorded on the Pupil Response worksheet, which requires notes on:

- General research on the issue: where the information has come from, what has been discovered.
- Identifying opportunities: who might the target audience be for this brief? Who could pupils talk to find out more? E.g. from their local community, relevant organisations, or within school.
- Possible proposals: generating different ideas that could be developed further.

Discuss with the class how desk-based research can be used as the basis for effective primary research (or user-focused research). Pupils should be able to identify their target audience and what opportunities might exist to learn more about them.

Use Fixperts 'Customisation' activity to explore designing for different users and understanding different users' needs. *Note: this activity is designed to take 1.5 hours.*

Ideas for Plenary Activities

Pin these worksheets (and any other ways ideas have been recorded) to an 'ideas board' that has been set up in the classroom to capture your pupils' thinking.

Lesson Plan:
Week 3

Planning Primary Research

Objective	Outcome	Resources
To plan the research pupils will carry out with real people / organisations. To devise research questions.	**1** Pupils should understand how to plan primary research activities, and should have a plan for carrying out user research independently after this lesson. **2** Pupils should be able to analyse successes and weaknesses in interview technique, and apply this knowledge to carrying out their own interviews.	— Researching with People worksheets — Fixperts 'Level of Listening' activity — Tell Stories Template

This next phase of research will build upon the previous session, where pupils will now identify people they can arrange to interview or places where they can undertake visits in order to observe, question and experience. Consideration should be given to practicalities of interviewing, especially when interviewing off school premises.

Ideas for Starter Activities

Pupils to brainstorm: thinking back to their secondary research, create a list of potential people they could speak to learn more about the issues in their brief. It might help to think about (i) within school, (ii) in the local community, (iii) regional or national organisations who might focus on the issue.

Ideas for Main Activities

Use the '**Researching with People' worksheet** so pupils can start to translate some of their insights from research into questions they want to explore further when they are conducting human-centred research. They also need to consider the best form of communication to reach their interviewees; e.g. face-to face interview, telephone call, Skype, WhatsApp, Facetime, letter, text, email etc.

Run the **Fixperts 'Levels of Listening' activity** to help pupils develop their primary research skills and learn how to get the most useful information out of a conversation with someone in their target audience.

Pupils complete the **'Tell Stories' worksheet**. They will need to complete this sheet after each interview to help them summarise their research findings. Capturing what they have learnt and what they would like to explore further will be key in developing their designs and communicating their design journey on their submission boards.

Ideas for Plenary Activities

Pupils to create a list of questions to ask their target audience, which will help them to understand these people's experience of the challenge students are seeking to address.

Pupils to write down who will conduct interviews (if in a group), when they will be conducted, and how they will record responses.

Lesson Plan:
Week 4

Developing Initial Research

Objective	Outcome	Resources
Identify and form initial ideas for the project based on research findings. Describe or visualise ideas.	**1** Pupils should be able to use their research to develop their ideas, demonstrating that the idea is clearly linked to information gathered during research activities. **2** Pupils should be able use a variety of methods to help them generate a wide range of ideas. **3** Pupils should be able to communicate their ideas to someone else in different ways.	— Fixperts 'Idea Generation' activity — Examples of mind maps and product design sketches

Depending on time available: teachers may choose to use the Fixperts 'Idea Generation' techniques to get pupils developing and exchanging ideas in a design context. This can be particularly helpful to get pupils to develop ideas to issues they have identified. The activity is designed to take one hour.

Ideas for Starter Activities

Pupils to summarise the key themes, ideas, or issues they have found from their primary research on one large sheet of paper.

Ideas for Main Activities

Design sprint! Can the pupils come up with five ideas in ten minutes for one or more of the challenges they have identified from their research so far?

To help to define initial ideas, visualise them in an appropriate manner i.e. storyboard the idea if it is a campaign or service, use drawings or sketches if it is a product.

Pupils can present back to the class, and the class can suggest ideas back.

Pupils should now spend time developing their idea, writing down and brainstorming: (i) what are the main features of the idea, (ii) how does the idea connect to their research findings, (iii) what impact might the idea have in the real world and how/why (iv) what will success look like with this idea, (v) what challenges might the idea face in the real world.

Ideas for Plenary Activities

Pupils prepare and deliver a one minute mock presentation that discusses the idea and the research that led to the idea being created.

Each team or individual records the feedback they receive from teacher and peers.

Lesson Plan:
Week 5

Testing & Development

Objective	Outcome	Resources
To test ideas against target audience feedback, developing initial ideas towards a final one.	**1** Pupils should demonstrate a critical approach to testing and evaluating their ideas. **2** Pupils should use the feedback of others in addition to their own opinions to test and evaluate their ideas. **3** Pupils should apply the result of their testing and evaluation to identify clear ways to develop their ideas further.	— Fixperts 'Designing the Details' activity — Fixperts 'Sticky Storyboard' activity — Fixperts 'Brief Specific' activities

After this lesson, it is important that pupils go back to their target audience and get feedback on their idea. This will enable them to iterate their design further in the next sessions. As a result, it's important that pupils leave this lesson with a clear plan for how and when to get feedback.

Ideas for Starter Activities

Ask pupils to summarise three things they can remember from the Brief Pack about testing and developing ideas. Explain that incorporating the lessons they have learned from research into revised designs is central to creating better proposals.

Ideas for Main Activities

Class discussion: building on the starter activity, ask pupils to revisit their initial ideas and think about how they meet the needs their primary research identified, test these assumptions with the teacher and peers in other groups. Give pupils 10 minutes to revisit and discuss their ideas (focusing on how their ideas are addressing the specific issues they have identified) and then ask each group or individual to share with the class for feedback.

Note: at this stage you could use the Fixperts activity called 'Designing the Detail'. This is a one hour activity and the focus is design thinking. Pupils are encouraged to prototype ideas and work iteratively on their projects.

Pupils to create a rough draft of the stories they want to tell on their submission boards.

Note: use Fixperts activity 'Sticky Storyboards' to support this if you have time.

Ideas for Plenary Activities

Discuss and review findings in groups from the testing that has happened so far.

Create a plan for gathering feedback: if working in groups, who will be responsible for getting feedback, when will it be done, and how will it be recorded?

Lesson Plan:
Week 6

Final Idea

Objective	Outcome	Resources
Build, refine and finalise design.	**1** Pupils should take action based on feedback from their target audience and peers. **2** Pupils' ideas should clearly reflect the needs of their target audience.	— Examples of previous submissions

Ideas for Starter Activities

Each group or pupil summarises the main bits of feedback they have received from their target audience (everyone should have at least three pieces of information).

Looking at the feedback - identify any changes/ refinements needed in final design development based on feedback from research.

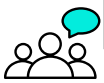
Ideas for Main Activities

Pupils to work in groups and carry out the refinements to their ideas, based on the feedback collected since the last lesson.

Work on the final submission boards.

Each team or individual completes a one minute mock presentation that presents the final idea and the research that led to the idea being created. The teacher can then provide four minutes of feedback.

Note: if you did not have time last week, you could use the Fixperts 'Sticky Storyboards' activity here. The focus of this activity is to support pupils with presenting their work.



Ideas for Plenary Activities

Peer review final idea and record feedback.

Lesson Plan:
Week 7

Presenting Your Work

Objective	Outcome	Resources
Create final portfolio by completing submission boards. Refining presentation until pupils are confident in their submission.	**1** Pupils should be able to use advice and success criteria to make decisions about the communication of their project. **2** Pupils should be able to communicate effectively by telling a story visually through their submission boards.	— Judging Criteria

Ideas for Starter Activities

Discuss and review the judging and assessment criteria in groups. How can this be applied to their own projects? What were the comments from their mentor - have these been incorporated into the design and the presentation of their idea?

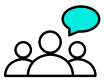
Ideas for Main Activities

Compile final submission boards ensuring the design process is clear, well annotated and presented in line with the judging criteria.

Check for the narrative of each submission - do the six boards tell a story of how the design was created and why it will be an effective proposal?

Give pupils copies of the judging criteria and each group or individual can peer assess other entries before giving feedback.

Make sure work is clean and neat. Do not add the name of the school on the submission boards. You will provide this information using the online submission form.



Ideas for Plenary Activities

Presentation to peers of final submission sheets. Use this experience to practise for the presentation to judges if selected.

PART 3
LESSON RESOURCES

WEEK 1

Duration, Location and Materials

30 minutes

Any classroom – no specialist equipment needed

Plain paper, pens and pencils, category labels

Brief hunting activity

This short activity asks students to use their critical skills to evaluate potential design briefs and responses by identifying opportunities for design though observation and personal experience.

Learning objectives

Finding a brief
Students will learn how to use observation to identify real and relevant problems to solve.

Human-centred design
This activity teaches a human-centred approach to designing, starting with people rather than products.

Time

5

Introduction:

As a class, discuss the idea that designing is a form of problem solving, and useful products are designed as a response to problems people have. Designers are often presented with a problem from their client, and must use this to develop their design brief.

5

Activity 1:

Using the 'What's your problem?' template, students should list all the problems, annoyances and irritations they have experienced during the day so far. e.g. tangled headphones, soggy cereal, crowded public transport.

5

Activity 2:

Swapping problem sheets with a partner, students should create a design solution to one of the problems identified. These ideas should be annotated to explain design decisions.

10

Activity 3:

Students should present their solutions to the class, so that everyone can see the variety of approaches people use to solve problems.

5

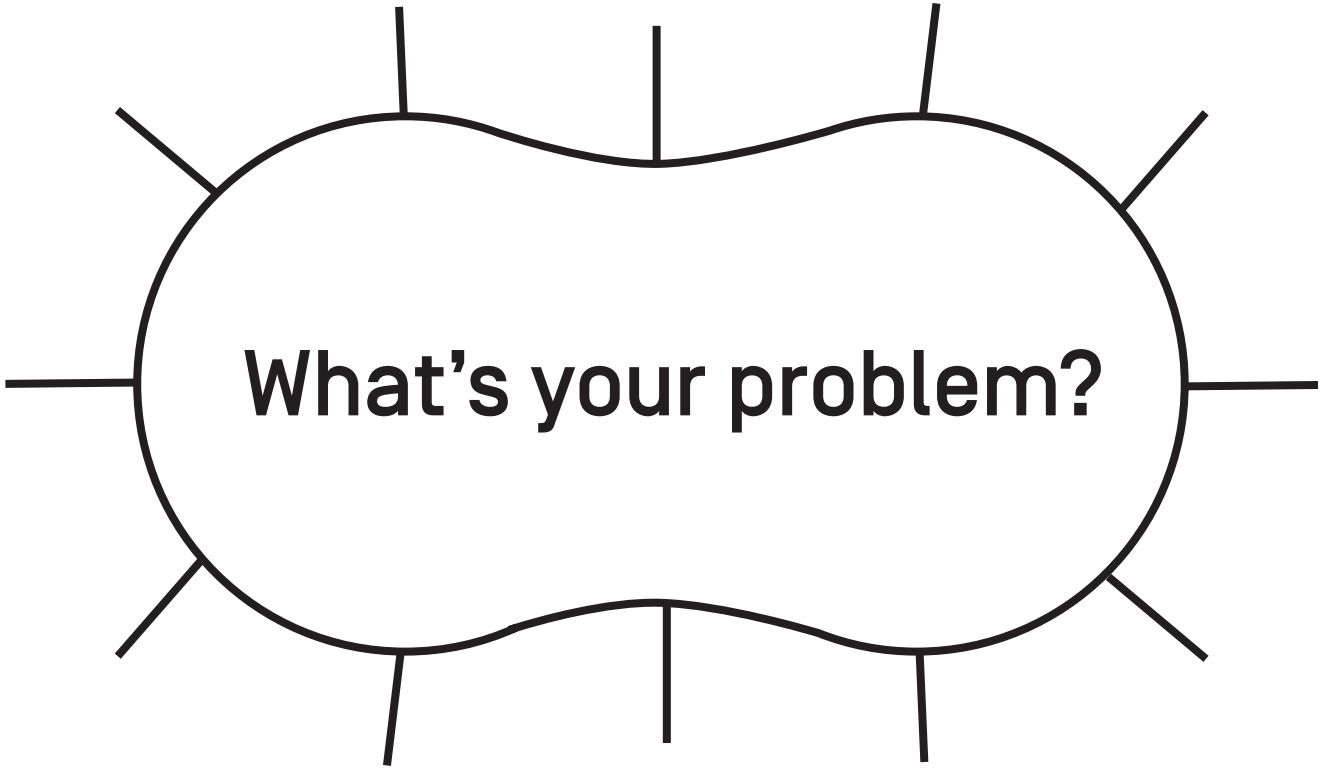
Plenary:

Using the category labels, ask students to place their ideas into one of 3 piles:
- Lifestyle changes
- Products – could make in school
- Products – need further expertise/facilities to make

Explain that all are valid design responses. When teaching as part of a full Fixperts project, explain that Fixperts should aim for design briefs that fit into category 2. This will allow them to learn the most and achieve the most during their project.

Stretch and challenge:

Students may be aware of the concept of 'life hacks'. Discuss this as a form of human-centred designing. Can students identify any life hacks that have become commercially manufactured products?



Lifestyle changes

Products
- could make in school

Products

- need further expertise/ facilities to make

WEEK 2

Pupil Response Sheet

1. Research on brief subject

Where I did my research

What I have discovered

2. Identify opportunities

Other people we can talk to to find out more

3. Research Possible Solution: Could it be a product, service or campaign?

My findings

Duration, Location and Materials

Minimum 1.5 hours (ideal to split over two 1-hour lessons)

Workshop with access to tools (ideally power tools, but hand tools are sufficient)

Introduction to fixing presentation and Customisation presentation

Customisation activity

This workshop explores the concept of human-centred design by thinking about the needs of a specific user, and applying that in a real-world context by customising an existing product to meet those needs.

Learning objectives

Exploring contexts
Highlight the importance of designing for different users.

Real-world design
Customise an existing product to meet the needs of a specific user.

Hacking culture
Students will explore the concept of hacking, learning to evaluate the properties of different components.

Practical skills
Work together to create fast prototypes of design ideas.

Communication skills
Articulate thought processes clearly and reflect on design decisions through short presentations.

Time

10

Introduction:

Watch the Introduction to fixing presentation together. With each slide, direct questions to the class – What's the image? What's the fix? Show a Fix Film which demonstrates the concept of Fixperts.

Context

Understanding types of fixing e.g. repairing something broken, solving a problem, improving a product, customising something to work better for a specific use or changing the user's behaviour.

5

Activity 1:

Product analysis

Divide the class into teams of 3-4 students. Each team is given a simple wooden broom. The basic design of the broom hasn't changed in years. Spend 5 minutes creating a quick analysis of the broom – how it's put together, how it works, why they think the design remains unchanged. Would they change or improve anything? What would that be?

15

Activity 2:

Introducing the user

Offer each team a user profile from the presentation. They should read the description carefully and discuss how the broom could be customised, modified and hacked to meet their user's needs. Each team should develop a proposal for their unique broom design, and an idea of how they would like to execute it.

At this stage encourage students to use drawing and annotation to communicate and develop their ideas. Use large sheets of sugar paper so all team members can contribute simultaneously.

Use the broom inspiration presentation as needed, showing relevant images when a team seems stuck on one idea or is too cautious to depart from the original broom. The slides can also play in a loop in the background for students to engage with as they choose.

40+

Activity 3:

Workshop

Prototyping

Encourage students to prototype their idea first, test it and decide any changes before adapting their broom. Emphasise to students they only have one broom to work with so should make sure they know what they would like to do before they make any irreversible changes to it.

Students work independently on prototyping their broom design. Encourage teamwork, role allocating and sharing of tasks so everyone is involved. Make sure students are using equipment correctly and safely.

5+

Activity 4:

Summing up

Presentation

Students can use the project summary worksheet provided to sum up their broom design and describe the process. This can be done by one or two students while others finish up the prototyping. Based on this, teams should plan a quick presentation, no longer than 3 minutes, of their design to the rest of the class.

15+

Activity 5:

Presentation

Each team presents their design to the rest of the class, introducing their user, and explaining their approach to customising the broom to fit their needs. Restrict this to maximum 3 minutes (use a timer!).

Sum up, highlighting the importance of understanding the user's needs when designing.

*Time as available or as required according to number of students

Target user descriptions

Your user:

Teenager

Has to sweep once a week or she doesn't get pocket money. Hates it because she thinks it's a waste of time, can't be bothered to bend down, can't use her phone to listen to music or message her mates while sweeping. She doesn't see the point as the floor gets dirty again anyway.

Nursery school carer

He wants to encourage the children to play a role in keeping their space clean. Young children love to play but get easily distracted if a task is boring or repetitive. Children are more likely to engage if the activity is fun, rewarding and playful, perhaps challenging but not too difficult.

School cleaner

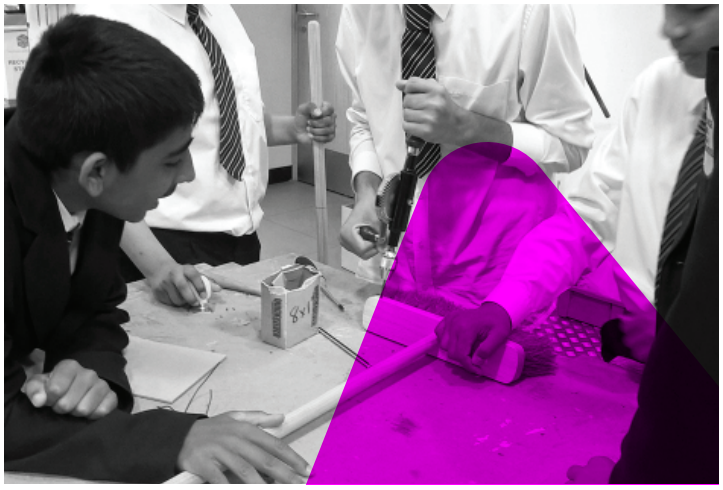
She has to clean a very large space daily. In addition to a broom, she often carries a dustpan, rubbish bags, keys and dust cloths. The building has no lift; so she has to climb up and down stairs lugging her equipment around with her.

Older person

He is living alone and is independent; he wants to remain as independent as possible. He can't bend down comfortably as bending both his back and knees are painful. He tires easily when physically active and can't stand for long periods.

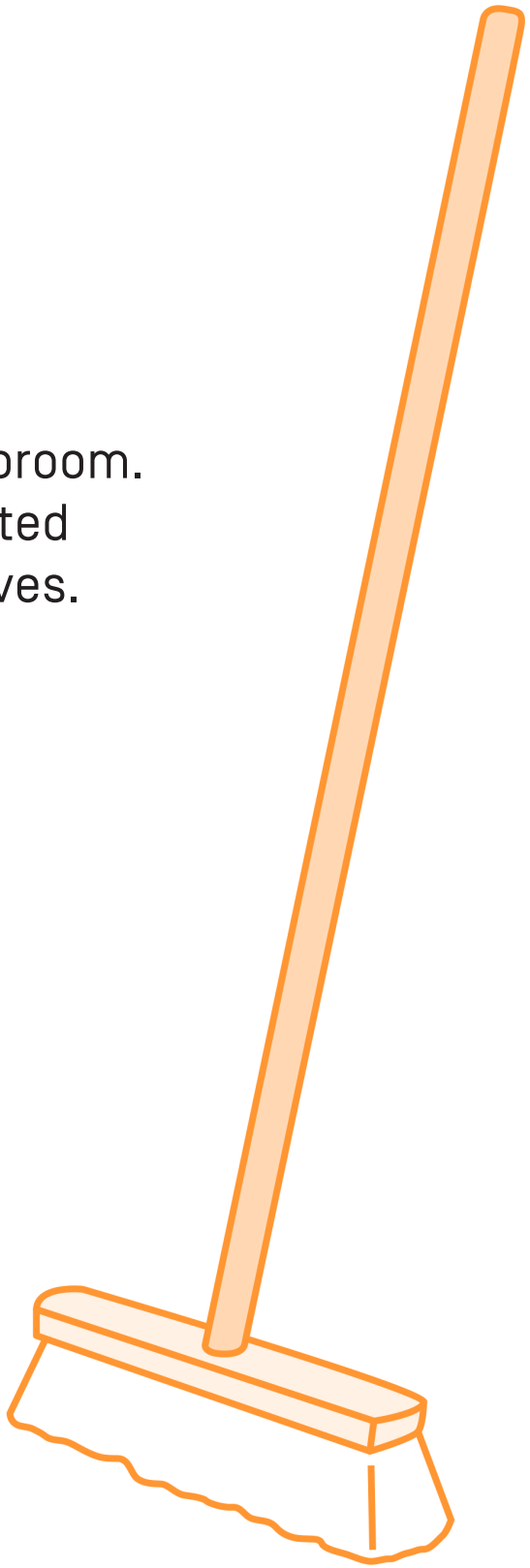
Fitness fanatic

She's very health-conscious and uses every opportunity to exercise. She's a total technology geek who likes to measure activity levels, heart rate and calorie burn. With a busy lifestyle, she doesn't have a lot of free time.



Customisation: shopping list

Here are some suggested materials for customising a broom. These can easily be substituted with your preferred alternatives.



Simple wooden brooms (1 per team)

Materials for customising brooms:

- Knives, cutting mats & safety rulers, scissors
- Glue guns & refills
- Adhesive vinyl
- Elastic bands
- Cable ties
- Webbing
- String
- Hinges & fixings (screws/bolts)
- Cup hooks
- Dowel (square & round section)
- Tubing
- Wheels
- Corrugated card
- Foam
- Drawing pins
- Plasticine
- Masking tape (or duct tape)
- Sellotape
- String
- Wire
- Acrylic paint & brushes
- Access to workshop hand tools and machines

Materials for sketching

- Paper (A4 / A3, sugar paper for team idea development)
- Pencils
- Markers

Customisation: project summary

Use this worksheet to record your design process.

Our team:	
Our challenge was... Describe your design brief	**We are designing for...** Describe who your user is and what their unique needs are
We explored different ideas... Show some of your sketches and models	
Things that didn't work so well... Show examples of things that didn't work and explain why	**We think this is our best design...** Show/sketch your final model and explain your idea

WEEK 3

Duration, Location and Materials

30 minutes

Any classroom – no specialist equipment needed

Levels of listening presentation, awkward scripts handout, paper and pens for note-taking

Levels of listening activity

This activity explores the complexity of carrying out good interviews. Developing this skill allows students to go on to identify opportunities for design though conversation and observation later in their Fixperts project.

Learning objectives

User research
Students will learn how to use primary research skills to identify the needs of a user, encouraging them to start with people rather than products when designing.

Empathy
Learn how to gain the most useful information out of a conversation with a user / client / Fix Partner, developing their understanding, insight and empathy.

Time

5

Introduction:

Introduce the idea of a conversation as a form of research. What forms does this come in? (i.e. interview, survey, focus group). This activity teaches researchers to listen to more than just the content of what is said during an interview.

10

Activity 1:

Put students into groups of 4. **Each one has a different role:**

1. Interviewee
2. Observe the language used
3. Observe body language
4. Listen to the meaning

Use the presentation to explain what should be done for each role. Using the script, roles 2, 3 & 4 should take it in turns to ask questions from their chosen script, making notes during the interview.

15

Activity 2:

After the interviews, ask the interviewees to feedback to their groups about how they felt and whether the questions were good. Ask the observers what was said (content), what type of language was used, what body language they noted. Did the language used and body language 'match' with the content? What did they learn about their interviewee's experience?

5

Activity 3:

Ask the class: were the questions helpful, or did they confuse the conversation? Pupils often stick to the questions they've planned in an interview, even if they can see the interviewee is struggling. Discuss how the interview could be adapted to gain better results from the interviewee. Problems to address might include the interviewee giving stereotypical rather than truthful answers, not having an answer so making something up, or saying what they think you want to hear. How would you adapt the scripts or interview technique to improve the experience for the interviewee? Record the class discussion in a spider diagram on the board.

5

Plenary:

Introduce the concept of an interview being research 'data'. What is the impact of inaccurate research data when it comes to developing design ideas? How can they can ensure they get the most accurate data when carrying out interviews in future?

Stretch and challenge:

Set the same interviewing challenge to have a conversation with someone the student doesn't know, such as a member of the school staff or community. This pushes them outside of their comfort zone, practising their professionalism, as well as making it harder to interpret the conversation.

Awkward scripts handout

Clothing questions:	Correcting mistakes questions:
-Explain your level of interest in fashion and clothing. -Have you ever had a clothing malfunction (trousers ripped, skirt tucked in, broken heel, chewing gum on clothes, etc.)? -Where were you? -Who was around you? -How did you deal with it? -How did you feel?	-Do you get frustrated when other people make mistakes? -What kind of mistakes annoy you? -Have you ever tried to correct someone's mistake and been wrong? -If so, how did they respond? -How did you deal with the situation? -How did this make you feel?
Losing questions:	**Forgetting questions:**
-Give an example of a time you have lost (a game, a competition, a debate, etc.) -What was the cause of losing? -Was it more about skill or luck? -Did you let anyone down? -How did it make you feel? -What would you have done differently to win?	-Explain the last time you forgot something really important. -What was the impact on other people? -What was the impact on you? -How did you deal with it? -How did you feel? -Has it changed what you do to help remember things now?

WEEK 4

Duration, Location and Materials

Minimum 1 hour for full workshop including 3 of the 5 possible activities. Individual activities can be run in isolation

Any classroom – no specialist equipment needed

A4 paper, A3 paper, pens and pencils, modelling materials, selection of images for activities 2 and 4, SCAMPER presentation

Ideas generation workshop

This workshop explores a range of ideation techniques to suit different learning styles, allowing students to develop and loosen their creative thinking skills. It encourages a constructive relationship with feedback and criticism.

Learning objectives

Ideas generation
Experience a range of ideas generation techniques including brainstorming, collaboration and analogy.

Agency
Develop the confidence to generate design ideas by exploring different techniques to suit diverse learning styles.

Time

5

Introduction:

Ideas don't just appear. Coming up with ideas can be challenging and sometimes frustrating too. Discuss with students different methods they may have used in the past to help generate ideas. Question what is most difficult about coming up with ideas – where do they usually get stuck?

15

Activity 1:

Crazy 8

This is a quick exercise designed to free inhibitions when coming up with ideas, loosening up thinking and forcing students to be less precious about their ideas.
The focus here is on quantity not quality!

Method:

- Everyone gets a blank A4 sheet of paper, and folds it in half, and in half again, and one more time to get 8 equal panels.
- Set a simple design problem or question to the entire class. For example: carrying a baby, housing a pet, crossing a road safely, improving visibility of a cyclist in traffic.
- Set a timer for 5 minutes – everyone needs to generate 8 different ideas in this timeframe – that's about 40 seconds per idea! Sketches will naturally be very rough, which is good. If stuck, encourage students to draw the same idea with one variation.
- Share a few ideas from each table.

15

Activity 2:

4x4

This activity explores developing ideas collaboratively. Hand out images of products paired with images of restricted movement. For example: products: a pen, a paper clip, toothpaste tube. Restrictions: broken arm, arthritic fingers, people with limb loss.

Method:

- Working in groups of 4, each student gets their own blank sheet of A3 paper and folds into 4 quarters.
- Set timer to 2 minutes. For each pairing, each student should draw a quick design improvement in the first quarter of the page. E.g. A spade and a broken arm = a spade that can be used with one arm (handle for hand, pressure rest for elbow).
- Once the time is up, each sheet of paper and scenario moves to the next person in the group, and the timer is set again. They may alter one thing in the product, e.g. ergonomics, how it solves the problem. This aims to bring the group together, to let people feel free with ideas and to show how far an idea can progress.
- Repeat to fill all 4 quarters of the page, then return sheet of paper to first team member for discussion. Compare the 4 solutions and question which is more appropriate – encourage analysis and criticism of each idea. Ask how it feels to relinquish ownership of an idea so that it can be developed further. What's the benefit of working in a team to develop ideas? What mindset do you need to make the most of this teamwork?

15

Activity 3:

Everyday scenarios

This activity helps with finding a starting point. It looks at breaking down daily activities to find opportunities for improvement, e.g. brushing your teeth, tying your hair up, putting on clothes, making tea, changing the bedding.

Method:

- Everyone is given a scenario and 2 minutes to map it out through words and sketches, perhaps a comic strip or diagram.
- Working in pairs, take 5 minutes to consider the scenario using only one hand. What would the problems be? Try to think about each stage in the process of carrying out the scenario.
- Pairs suggest an idea to fix one of the problems they've highlighted and present back to the class.

15

Activity 4:

Analogies

Problems are often solved by using inspiration from seemingly unrelated situations, such as sonar navigation (inspired by communication between marine animals), the take-off ramp on aircraft carriers (inspired by ski jumps), or Velcro (inspired by plant burrs transported on animal fur). This approach is called 'Design by Analogy' – the transfer of an idea from one context to another.

Method:

- Set a simple design problem (as before). Hand out images of familiar objects, for example: escalator, telescope, parachute, porcupine, dolphin, sycamore seeds.
- Give students 10 minutes to sketch or model an idea to solve the problem, inspired by one of the objects given.
- Present solutions in small groups.

15

Activity 5:

SCAMPER

This activity aims to broaden students' creative approaches to designing. Introduce the SCAMPER excercise using the powerpoint presentation. Taking the favourite idea generated during any of the other activities completed so far, see what happens when SCAMPER is used.

5

Plenary:

In pairs, discuss if there was a favourite method of generating ideas experienced during the lesson. Ask students to explain how these methods might help with the issues they identified at the start of the lesson, and how they can be used in their Fixperts project.

WEEK 5

Duration, Location and Materials

1 hour

Classroom suitable for messy activities

Paper cups, scissors, glue, pens and pencils, masking tape, card, modelling clay

Designing the detail activity

This activity takes a deep dive into the iterative design process, teaching an approach to development that can be applied to any design project. During this activity, students investigate the potential of inclusive design thinking.

Learning objectives

Human-centred design
This activity explores inclusive design, considering how to design for people with additional needs.

Iterative designing
This activity necessitates fast modelling and testing of ideas, repeated multiple times to refine the final product.

Prototyping
Students will learn how to use a prototype effectively both for testing a concept and for gaining user feedback.

Resilience
By developing and testing ideas, students build their resilience against failure and learn to use failure to positively improve their work.

Innovation
Students will see how creating many iterations of an idea leads to innovation in their work.

Decision making and critical thinking
This activity encourages students to use critical thinking skills to make design decisions to improve their work.

Time

10

Introduction:

Students should work in pairs. One student should simulate a hand restriction by taping several fingers together and try to carry out everyday activities (such as writing, drinking and eating, or tying shoes). The other student should make observation of the challenges and annoyances the restriction brings. They should then swap roles.

15

Activity 1:

Students are tasked to redesign a paper cup to make it easier to use with their hand restriction. Set a timer for 5 minutes.

After the time is up, students should test and evaluate the function of their cup.

15

Activity 2:

Students should now take another 5 minutes to improve their cup design based on the results of their evaluation.

After 5 minutes, discuss with the class the emotions related to the usual aesthetics of inclusively designed products. Students may identify that they can often look like baby products with extra handles, rubberised parts and bright colours.

Give students time to evaluate the aesthetics of their cup in light of this discussion.

10

Activity 3:

Students now have a final opportunity to improve and refine their cup design. As they are using modelling materials, they may wish to sketch their aesthetic developments to communicate their ideas clearly.

10

Plenary:

Ask each pair to demonstrate using their cup. As a class, discuss how it felt when their ideas failed. Ask them to recall their original ideas in comparison to their final design, facilitating a discussion about failure, resilience and innovation.

Stretch and challenge:

Discuss with students the difference between ‘inclusive’ and ‘exclusive’ design. Inclusive design accommodates many users. Exclusive design is only suitable for a specific user (customised or bespoke products are often exclusive). Debate whether one approach to better than the other, and where and if both approaches are needed.

Duration, Location and Materials

30 minutes

Any classroom – no specialist equipment needed

Rolls of stickers, pens and pencils

Sticker storyboard

This short activity teaches students to develop a reflective mindset, focussing on editing and refinement.

Learning objectives

Reflection
Students will learn to identify their successes and where they could improve. The reflective mindset developed in this activity is used throughout the Fixperts project.

Editing
This activity teaches students to refine their ideas by editing down to the key elements needed to communicate successfully. This transferable skill is also used in design development, such as simplifying a design idea to achieve maximum function with minimum materials.

Sharing
The stretch and challenge part of this activity introduces the idea of 'open source' within the design community. Students will see the similarity between sharing their own Fixperts project on a small scale through making a Fix Film and open source design.

Time

5

Introduction:

Storyboards are used to plan films, organising what scenes to include, the order and the type of shot. As a class, discuss how the process of a design project can be told as a story.

10

Activity 1:

Give students a story to tell in a visual format. For older students, ask them to explain a social or cultural topic in a documentary style. For younger students, familiar stories such as fairy tales could be used.

This activity can be done in groups or individually. Students should use a roll of stickers to create their story. Draw each part of the story on a new sticker on the roll, so that the story can be read by unraveling the roll one sticker at a time.

5

Activity 2:

Edit the story by removing stickers which don't contribute to the core understanding.

10

Plenary:

Present ideas in groups of 4. Within each group, vote for the biggest risk taker.

Stretch and challenge:

Explain the advent of 'open source' approaches to software as well as other examples of open source design such as sharing design processes openly, and sharing digital design files to make products using CNC machines and 3D printers. Why might this approach appeal to the design community? What are the implications? How do Fix Films fit into this culture?

Open source allows for adapting and customising a design to fit a specific situation or person. It also means direct access between designers and users. It allows for open innovation where development happens between versions (i.e. software) and the knowledge is shared. This kind of sharing is sometimes called and done through Creative Commons which is an alternative to IP intellectual property. Open source is also associated with creating and allowing access to people that would otherwise not be able to afford the information or the product which might improve their life quality.

WEEK 6

PREVIOUS SUBMISSIONS


everyone deserves RESPECT !!!
... AND NIC...
LEARN
TO
Belong
BY, FINLAY...
... EWAN...

Online Research

In April 2019, the government announced new regulations for teaching Relationships and Sex Education in England.

Every young person deserves to see themselves, their family, and the full diversity of our world reflected in their curriculum. This includes teaching about LGBTQ+ identities and issues. While we've made huge strides towards LGBTQ+ equality in recent decades, Nearly half of all LGBT pupils still face bullying for being who they are – and in order to change, it's essential to deliver a curriculum that encourages all children and young people to respect those around them and appreciate difference.

Half of LGBT people (52 per cent) said they have experienced depression in the last year.

Some people when they come out to their parents of being LGBTQ+ they take them to a place to see if anything is wrong with them.

High school can be challenging for any student, but LGBTQ+ youth face additional obstacles of harassment, abuse, and violence. Lesbian, gay, bisexual, transgender and queer bullying is alarming. In fact, 9 out of 10 LGBTQ+ students reported being harassed and bullied last year.

94% of LGBTQ youth reported that recent politics negatively impacted their mental health.

Only 12 percent of LGBTQ+ youth received information about safe sex that was relevant to them as an LGBTQ+ person.

Human Based Research

Questionnaire .

What do you think of LGBTQIA+? .

They can be who they want

Your born what you are

Guff/ Way out of hand

Nice work

Rubbish

Normal

100% fine

Its Fine

Do you know what it stands for? .

13/23 people knew what it stands for

What is your sexual orientation? .

Pansexual

Genderfluid

+Human (they didn't know what it was)

Ally, and have many friends who identify part of LGBTQIA+

We asked a teacher: "What is it like to be gay in high school" .

"My old school had a club to be open"

Its still hard in some schools to be openly gay

Depends on the school you go to

- when we asked the questions to the class below us and the same class there were one or two people who thought lgbtq+ was over rated or rubbish/guff.
- when we also asked the question a lot/most of the class said "you are what you are" and It's fine to be ~~what~~ apart of the lgbtq+ community".
- when we asked what sexual orientation they were one person said pansexual and genderfluid and quite a few people said Ally as they had lgbtq+ friends.

Mental health problems such as depression, self-harm, alcohol and drug abuse and suicidal thoughts can affect anyone, but they're more common among people who are LGBTIQ+.

40% of people who are part of the LGBTQ+ community have considered suicide yearly.

86% of LGBTQ+ pupils regularly hear phrases such as 'that's so gay' or 'you're so gay' in school

53% of LGBTQ+ young people don't feel there is an adult at school who they can talk to about being gay.

An estimated 2.7% of the UK population aged 16 years and over identified as lesbian, gay or bisexual (LGB) in 2019, an increase from 2.2% in 2018.

Ideas

GAY DATING WEBSITE

- 1: we thought of this as sometimes its hard to find someone
- 2: we thought that doing this would be safe
- X: We Researched and found it wasn't our age appropriate and slightly unsafe

ONLINE LGBTQ+ MEETING POINT

- 1: This was great for LGBTQ+ Members to advocate and express their opinions and char

ONLINE LGBTQ+ THERAPIST

- 1: At first this was a great idea for LGBTQ+ member with depression.
- X: But this would include quite heavy employment and further psycological research

Thinking Through Our Idea

We looked apps like discord, zoom, Teams and others as we liked there design style

So now all we had to do was pick colour and style

Then we discussed how we should design and present our very own website...

...?

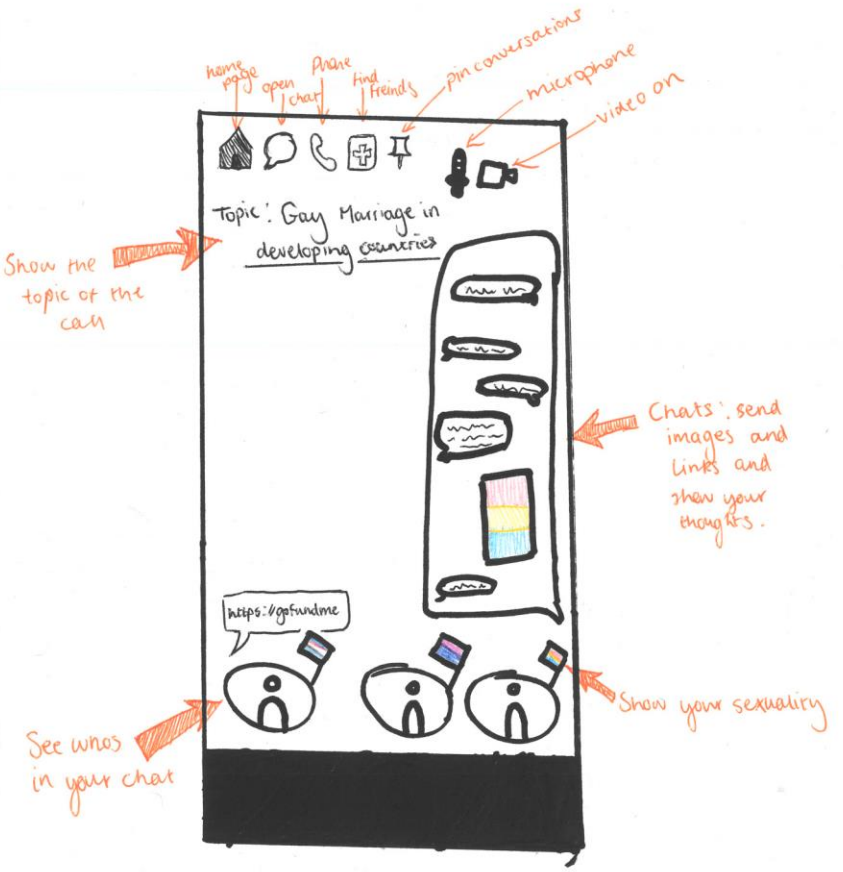
we thought about how we should lay it out like a chat or a chat and voice

we decided that we would like

- video chat
- voice chat
- written chat
- and jpeg transfer

...

Our Final Design



Our app is named ... FreeForLife

We Found Inspiration from...

Zoom

... ...

and...

discord

GREEN STREETS

How might we restore nature to urban spaces to ensure that people and planet thrive together?

Collaborative brainstorming

who? Humans, elderly people, physically or mentally disabled people, children,
what? Animals, insects, the environment, bees,
why? To improve mental and physical health, biodiversity, social interactions, interactions between different age groups,
how? By educating the population, improving community spaces, insentivising planting in private gardens and land, rewilding urban spaces
where? Motorways, window sills, abandoned urban spaces, roadsides, private and public gardens
when? Dependant on seasons, weather, etc.

Broad research

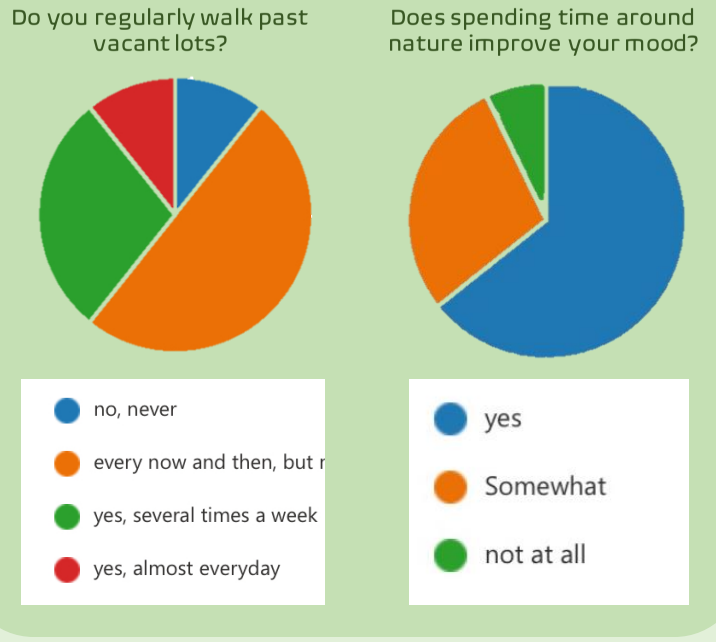
Although I decided to focus on the green streets of London, I researched solutions all over the world.
Rewilding: many urban areas have been encouraging nature to take back their city; including Singapore, Nottingham, New York, and Melbourne. The process of rewilding reintroduces plant and animal species to places they'd been exterminated from, allowing for areas of woodland oasis within heavily polluted areas.
Nottingham wildlife trust: This organisation aims to take over a local abandoned shopping complex and turn it into a woodland for local wildlife.
La Marjal floodable park: can store up to 45000 cubic metres of water to reduce the impact of flooding, and recycle water for drinking and irrigation, as well as providing wetland habitats for animals.

Mental health

As mentioned, access to green spaces significantly reduces mental health difficulties. The study shown below shows how dramatic the effect can be.
Several trials have revealed the beneficial effects on mental health by observing nature and viewing images of natural scenes. In a Japanese study, viewing plants reduced stress, fear, anger, and sadness, as well as lowering blood pressure, heart rate, and muscle tension.

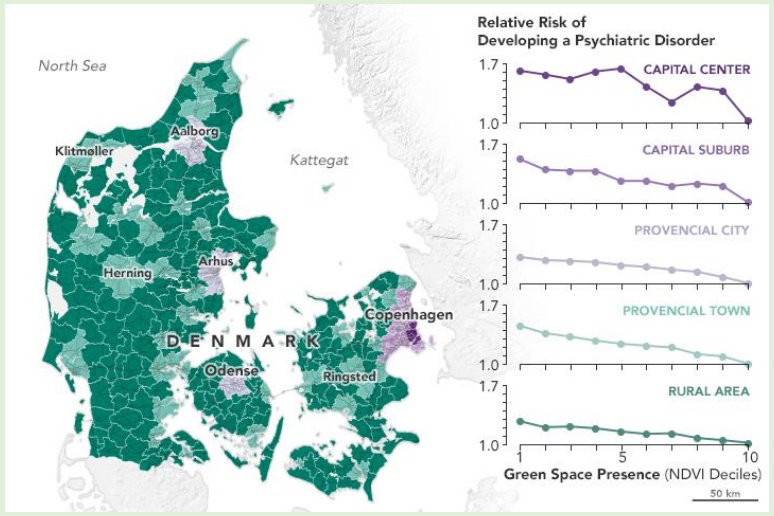
Questionnaire

I conducted a survey to gather public opinion on this topic, to make sure my product suits the needs of as many people as possible. In order to gather the most accurate information, I posted QR codes all over London and student forums to reach many different demographics.



Benefits of greenspaces

Whilst conducting broad research, I realised that the lack of green spaces is at the core of the green streets problem, so I decided to start more specialised research into this.
£2.1 billion per year could be saved in health costs if everyone in England had good access to greenspaces; for every **£1** spent on maintaining parks, there is a benefit of **£34** in health costs saved.
Access to green spaces improves mental and physical health: children under 10 who have access to wildlife have **55%** less chance of developing physchiatric disorders later in life. (shown in the image to the right)
(Via the guardian.com & ncbi.nlm.nih.gov)



What are meanwhile projects?

After realising how many derelict and unused buildings there are around London, I discovered a scheme called "meanwhile projects". This means using these spaces for temporary office space, charities, community parks, and art instillations. It's an efficient solution, maximising space and enriching the community. An example is this garden in white chapel set up by mental health charity "Core Landscapes", set up in a vacant lot. All plants, ponds, and everything else are in moveable containers so that the garden can travel to a new space when needed. The garden is open to the entire community, and many patients are referred by the NHS. I met with the manger of core landscapes, Nemone Mercer, to get more information.

Air pollution

Air pollution contributes to **6%** of deaths every year. Air pollution can lead to many health complications, such as **lung cancer, asthma, cardiovascular disease**, and even **blood poisoning**.(Via Nigms.nih.gov)

Derelict spaces

Space is a premium in London, with very high rent costs around popular areas, so it's hard to believe that so much of it is left to decay. Derelict spaces occur when developers run out of money part way through a project , abandon the space to waiting for funding, or individuals can no longer keep up with rent and maintenance costs. A central London think tank (bbc.co.uk) discovered that the floor space of unused buildings amounted to about 1.8 million square metres. These spaces could be used far more efficiently as "meanwhile projects".

Mental health benefits

Biodiversity

FINDINGS

Conducting and analysing my research to focus on a specific part of the problem.

Everything I've learnt from my research and interview with Nemone has emphasised how changeable these temporary spaces are, and how adaptable you must be. I aim to reflect this in my designs.

What is the problem I am trying to solve?
I'm trying to increase the amount of green space in busy cities such as London
Stakeholders:
Pedestrians, local wildlife, local councils, commuters.
My design brief
Design a structure that encourages natural growth and provides habitat for local insects, in the process improving mental health. Materials used shouldn't negatively impact the environment or people.
What is the impact I'm trying to have?
To improve the biodiversity and mood around London, while using space efficiently.
My specification
My product must increase the amount of nature around London, in order to improve the mood and health of passers-by and locals. It should make use of unused or abandoned areas, and use the principle of collapsibles to maximise space.

Key findings

Through my questionnaire and expert interview, as well as secondary research, I've explored different aspects of the title. I've discovered that London doesn't have nearly enough green space, although there are many abandoned areas that could be utilised. In addition, although **74% of participants** in my survey considered the extinction of bees as "**catastrophic**", not nearly enough is being done, such as the core landscapes project, to mitigate the damage.
Therefore, I will focus on providing habitats for insects in unused areas.

Interveiw with Nemone Mercer.

I met with the manager of the Core Landscapes charity, Nemone Mercer, to try and understand what is involved in running this kind of operation. Nemone outlines the main challenges as **"the speed at which permission can be gained. Once you've identified a site, you need to find the legal owner, and then negotiate with the local planning authority, and get funding for the relocation."**
Overall, she puts emphasis on the biodiversity of the project, that **"The whole remit of the project is to increase biodiversity and mitigate climate change."**

Insights from interview

Through this interview, I have learned much about what is currently being done towards the challenge of green streets, and the process through which this works. Firstly, the application process through which spaces can be acquired is complicated and lengthy, with a lot of red tape. Therefore, when designing my product I will assume that permission has been gained to avoid all of this. In addition, the mental health benefit that communities and individuals gain from nature.

Bee protection

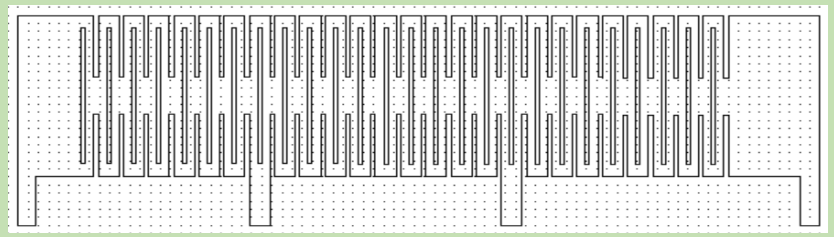
As seen to the right, over 74% of answers in my survey agreed that bee extinction would be catastrophic, and therefore I have decided to add an element of bee protection to my project. A recent law in Brighton dictates that all buildings above a 5 metres must include "Bee Bricks", nesting spaces for solitary bees that increase their chance of survival (seen below). There are about 270 species of bee in Britain, just under 250 of which are solitary bees. Changes in land use make it difficult for them to safely nest, which Bee Bricks hope to change. As Melissa Petruzzello writes on Brittanica.org, "Without bees, the availability and diversity of fresh produce would decline substantially, and human nutrition would likely suffer. Crops that would not be cost-effective to hand- or robot-pollinate would likely be lost". Humans are looking at malnutrition and a huge drop in biodiversity if bees became extinct.

Stakeholders

The problem I'm designing for impacts many different demographics, such as pedestrians, commuters, local residents, gardeners, animals, insects, and many more. Due to the way the project and my time management progressed, I was unable to find a specific stakeholder and instead based by designs and subsequent iterations on my research and peer/teacher advice. If given more time, I would find a local gardener to be my stake holder and give opinions on my designs.

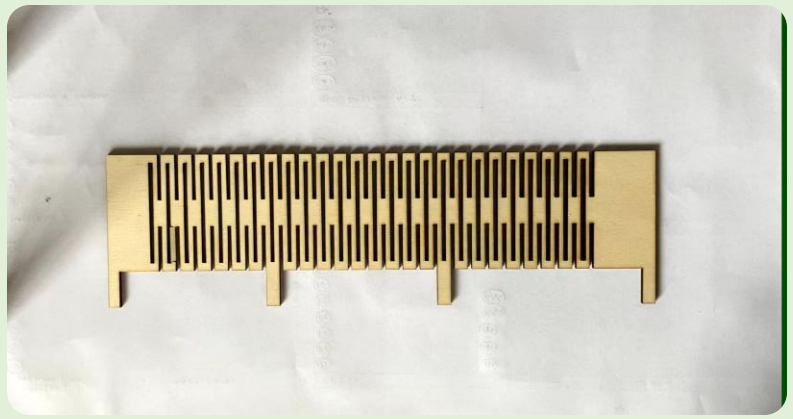
1. Living hinge

This idea uses the living hinge principle to create a more flexible version of the first.



This design consists mostly just of the living hinge, although I have also added posts at the bottom to be pushed into soil and hold the frame work in place.

Using the program 2D Design I drew up the template seen above and printed it onto 3mm plywood with the laser cutter.

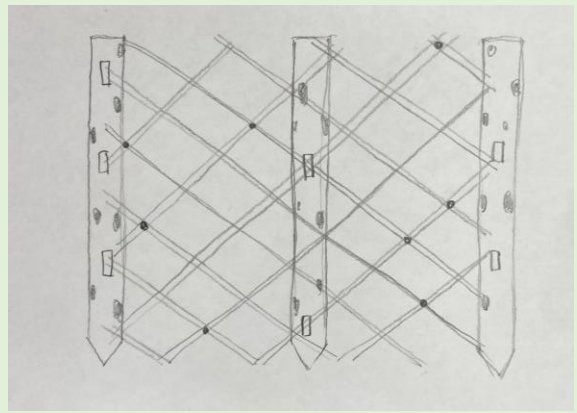


The flexibility of this design makes it adaptable to different spaces, as it's impossible to tell what state a meanwhile space will be in.

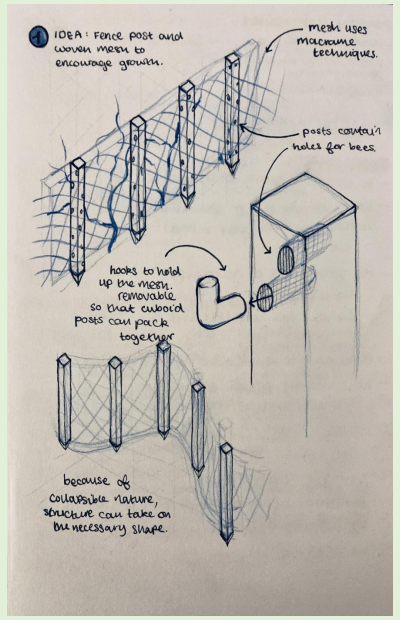
2. Fence post

This idea consists of dismantle-able fence posts and a mesh.

Here is my preliminary design.



This design consists of many cuboid fence posts made of wood, which are driven into the ground in the desired area. Then, a net is strung up between these posts to provide a frame for plants to climb.



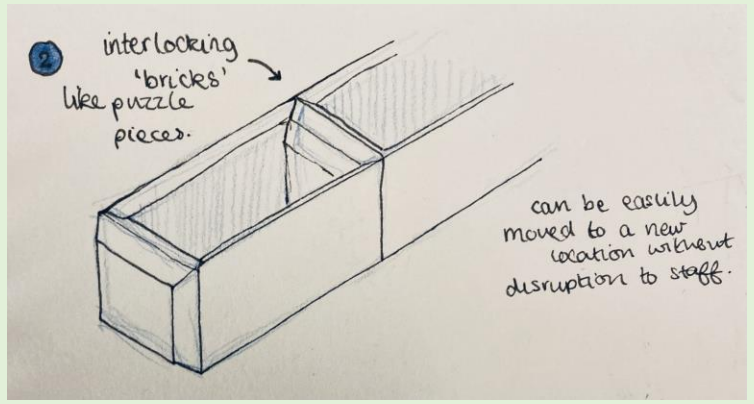
Here are my more detailed sketches for a design.
It fulfils the insect homing criteria, and is suitably adaptable to different environments.

As the design is made mostly from wood, it is easy to manufacture and treat to suit different environments.

3. Bricks

This idea consists of many interlocking bricks.

The interlocking system of bricks enables them to cover the required surface, but also to be stacked and moved easily. They can adapt slightly to different spaces, but are limited.



The design means that plants can be moved inside the bricks when the location is changed, which gives it a longer life span for growth.

At the bottom of the brick, I'll add a platform a few inches tall built with the honeycomb structure seen above. This will this provide a habitat for bees that mimics their natural one.

Evaluation

What are the faults? Which is most practical?

The living hinge is simple to produce and manufacture, which is important for creating a viable product. It uses renewable material and multiple designs could tesselate onto a single sheet of wood to minimise waste. However, although this design is simple and attractive, it doesn't provide any shelter for insects which was a part of my specification. Therefore it isn't the best suited for my brief.

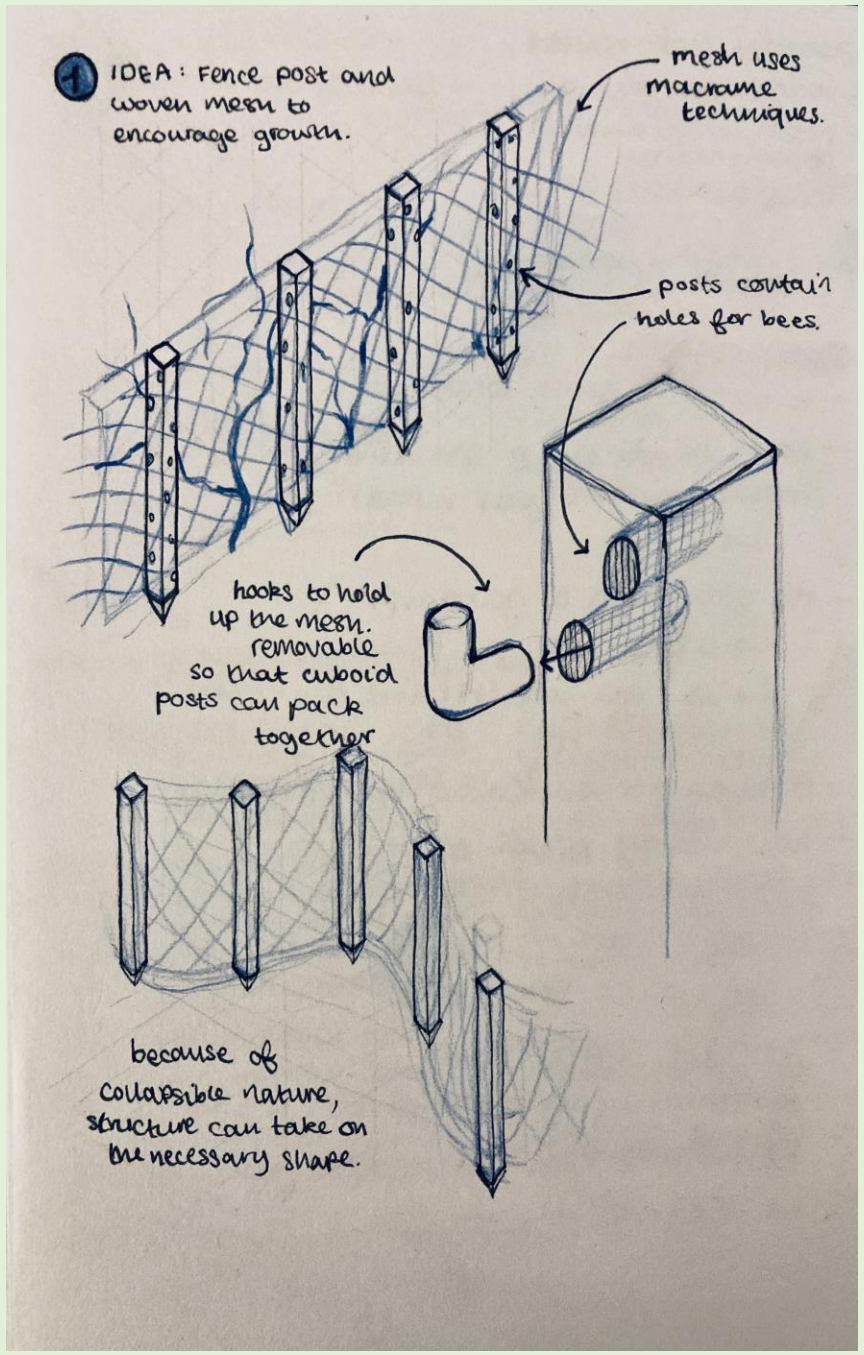
As already stated, the fence post design encourages natural growth and provides habitat for insects. In addition, design is collapsible and easy to transport and adapt which adds to its' convenience. Therefore, this design is the best suited and most practical design .

Although the design could support most of the specified features, it doesn't encourage natural growth as much as act like a plant pot, separate to the rest of the environment. In addition, although the honeycomb structure is ideal shelter for bees, it would be difficult to produce and would either take a lot of effort and waste to make out of wood, or use plastic injection moulding which doesn't use renewable resources.

TESTING & DEVELOPING:

What sets this product apart?

Naturally there are many other plant trainers available on the market, but the reason I think this design is necessary is due to its' insect homing quality and adaptability. Most products currently on the market are designed for domestic use, meaning they intended for a well kept garden. However, artificially colours may scare off pollinators, which is certainly counter productive, and not every potential garden is as well kept as a front lawn. This product adapts to and blends in with its environment, to simulate natural growth as much as possible. In addition, it is able to adapt to different circumstances and easily be moved from location to location.



In this prototype I have drilled holes in to mimic those in "Bee Bricks" and allow solitary bees a safe place to rest.

The cuboid shape of the posts allows them to tessellate in order to pack up neatly when moving.

In addition, the holes allow for right angled hooks can also be inserted to hold up the net.

I stained the wood dark to camouflage it and sealed with wax to protect from the elements.

The removable nature of these pegs not only allows the posts to pack neatly together, but also lends an element of customisability to the design, as pegs can be removed or added on all different sides in order to navigate turns and different obstacles in the landscape.

.

Materials, cost, and sustainability

The design should be relatively low cost to produce, and could be made from manufactured board which is more sustainable and easy to access.
MDF, or medium density fibre board, is made from wood chips, shavings, and sawdust that would likely otherwise be discarded, making it an environmentally friendly.

Although the netting shown in the photo is repurposed fruit packaging, when fully realised I intend to make it out of twine or similar through the process of macrame. This means the product is almost entirely biodegradable, in the event that it is forgotten about (although it is intended to be reused).

IMPACT

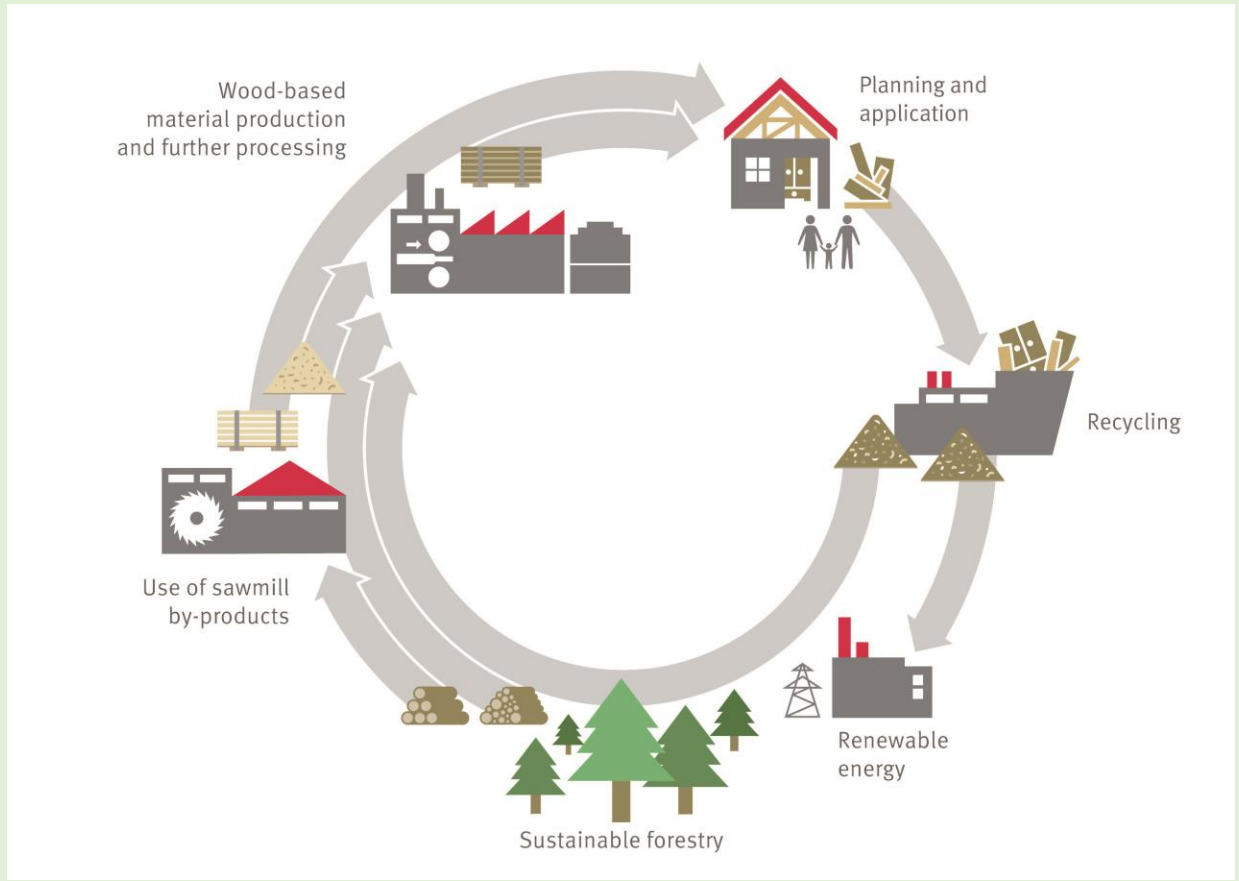
What sets this product apart?

Naturally there are many other plant trailers available on the market, but the reason I think this design is necessary is due to its' insect homing quality and adaptability. Most products currently on the market are designed for domestic use, meaning they intended for a well kept garden. However, artificially colours may scare off pollinators, which is certainly counter productive, and not every potential garden is as well kept as a front lawn. This product adapts to and blends in with its environment, to simulate natural growth as much as possible. In addition, it is able to adapt to different circumstances and easily be moved from location to location.

KEY THOUGHTS & FEATURES

- Self sufficient structure that biodegrades, contains nutrients and encourages wildlife growth
- Rewilding aim, encourages natural biodiversity.
- Inspiration; burial pods
- Includes collapsible in implementation process.
- banned bee-killing neonicotinoid pesticide

As previously stated, the point of this product was to encourage natural growth and provide shelter for insects. I believe this brief has been met. Not only does the product benefit nature, but by increasing the greenery around London, the populations health and mood will be improved. Although it seems such a small change wouldn't have much impact, there have been many studies



Sustainability should be at the forefront of all design thinking. This product takes this into consideration.

FINAL IDEA: *Green Homes*

KEY FEATURES:

- Self-sufficient structure that biodegrades, contains nutrients and encourages wildlife growth
- Rewilding aim, encourages natural biodiversity
- Includes collapsible in implementation process.

Lily Macaskill

Food for thought:
Food waste in family households

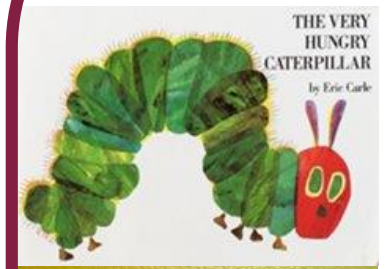
I discovered a massive problem of **food waste in households**, I aim to find a design solution/product that will enable or educate households (families with children) on how to be more conscious of the food that they have and are wasting, as well to prevent this now and in the future.

The UK throws away **9.52 million tonnes of food per year**. This emits 25 million tonnes of CO2 – more than Kenya's total annual emissions. One-third of food produced globally goes to waste

Households are the biggest contributor to food waste in the UK, they make up **70% of the total food waste**. Households throw away, on average, 1.96kg of food per day, in the Uk.

I thought about ways to encourage households and realized one of the key aspects of many households is family, so I decided to focus on how to encourage families to reduce their amount of food waste. I started to research different existing children's and family-based products.

Primary Research of Existing Products



The very hungry caterpillar- The book is well suited to the user; you can tell by the global success of the book, it suits its target audience through the aesthetics that are very clear, simplistic & colourful. The book efficiently integrates learning and a moral through a fun story for children and functions very effectively, while being good value (£5) for the user as it can be re-read. The book creates a source of entertainment as well as and educational experience.

M&S my little garden-
This product is very small and efficient with minimal waste packaging, the product is compact meaning it will not take up much space (It is only 6cm in height & 4cm wide); an advantage to people the it live in apartments without gardens. The drawings on the packaging bring together the aesthetic and makes the product seem fun and would engage children and families.
The product contains seed patches, compact soil and the biodegradable pot, I believe that this product is perfect for encouraging people to grow their own foods right in their homes and decrease their food waste by learning to grow what they need.

Educating children and the effects of parent/carers :

Children are much more impressionable and easily influenced, they can **easily create new routine**s and new ways of thinking, whereas **adults are more set in their ways** as they have already been in the same behavioral pattern of living for a longer amount of time.

By encouraging younger kids and getting them well educated and enthusiastic about their amount of waste as well as the impact it can have on the planet means they create good habits that they can continue when they are older. However, there will also be an impact on the parent/carers as the child's willingness to do something would give the parents, not only an incentive to it themselves; a personal encouragement and enforcement from the enthusiasm of their child.

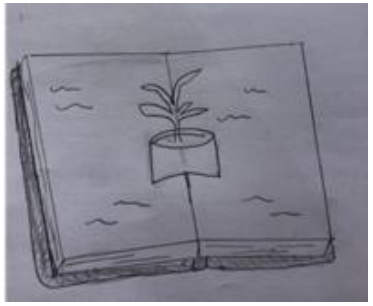
How to decrease family food waste.

Pop-up Garden-
This product at a first glance is very bright and there is an overwhelming amount of colour on the cover of the book- this is good as it is very enticing to children and would engage them. This product is unique as the design of the interior pages would set it apart from other books.
To make the pop-up book work the designers have used paper mechanisms so that the pages can open and close easily; this is produced through a use of paper engineering. The production process is difficult and as more resources are used per book it is usually more expensive, but this product is priced at £9.99.

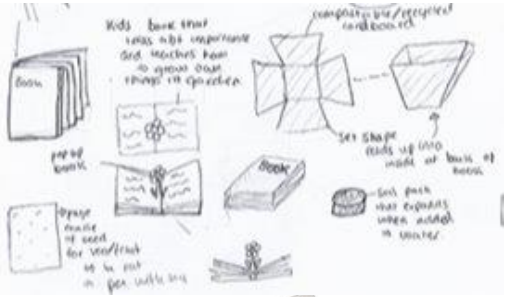
Unfortunately, as this pop-up book contains a vast amount of glue in most places they can't be recycled. (Although recyclable adhesives are available) however since these books can be re-used and re-bought or donated (ect), therefore it could still be considered sustainable.

I am going to take inspiration from these findings and existing products to tackle the problem of food waste in the household by creating a pop-up book with an added activity (seeds for growing own produce) to educate children and improve households individually and their attitude towards food waste.

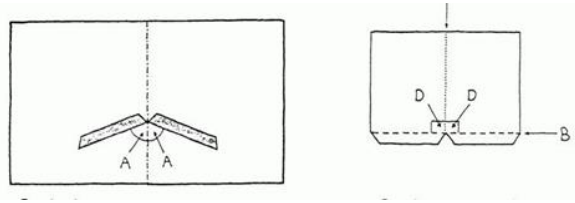
Design solution: Pop-up book

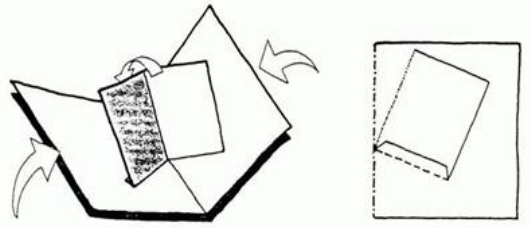


Due the problem of food waste in households I have created a design solution that would aim to educate children on the importance of food sustainability, doing this using a pop-up book that shows the progression of a growing fruit or vegetable.

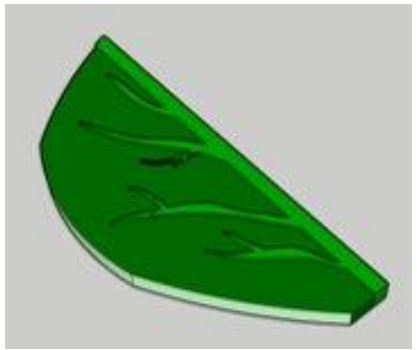


I have considered using **seeded pape**r so that when you are done with the book it can become the food and produce and reduce waste of paper, it's a new way to recycle the book at the end of its lifetime.

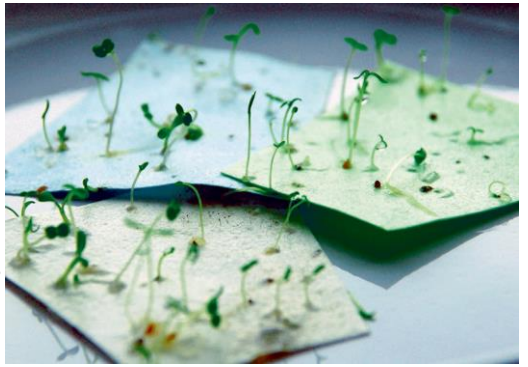




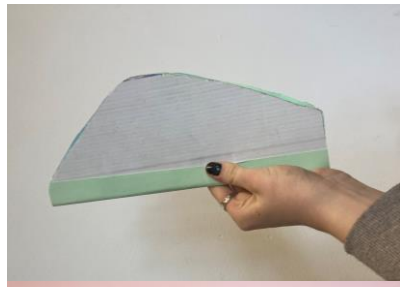
For the pop-up mechanism, I will design nets on 2D design so that it can be precisely laser cut in card, I will also use this for any of the additional pieces of card needed for the product.

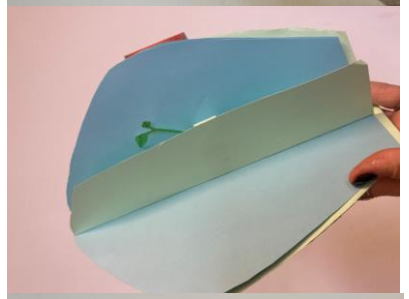


The book would have pop-up features and would aim to educate younger kids gently fueling them with ideas on how to be more sustainable form a young age and why it's so important.
This would have the idea of growing your own produce and would have a list of instructions and seedling packets at the back of the book along with a compostable set shape pot made of recycled card at the back for the vegetables to be grown in. It also creates a fun thing for parents to take part in with their young kids at home.



I want to try out different shapes of book to see what could be more engaging and on theme for children while ensuring that it still meets the needs of the products function. For example, the leaf shape; it sticks to the theme of the product and would make it more unique when compared to other pop-up books.



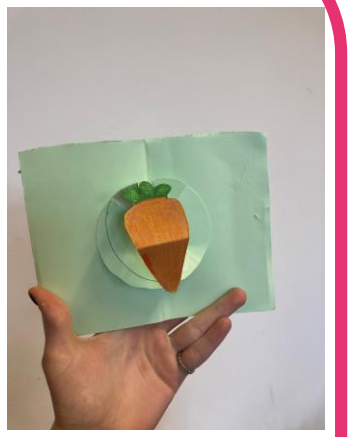


Models

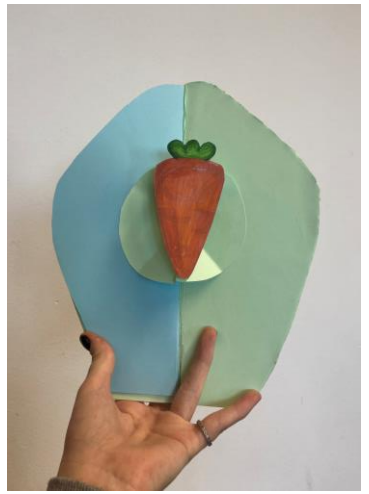
I spent time exploring different pop-up mechanisms that I could use to incorporate the process of produce growth; I didn't include the story-telling in the models as it would've been handwritten -not typed- however, the pop-up should be ablee to visually tell the story to ensure younger kids can enjoy it.

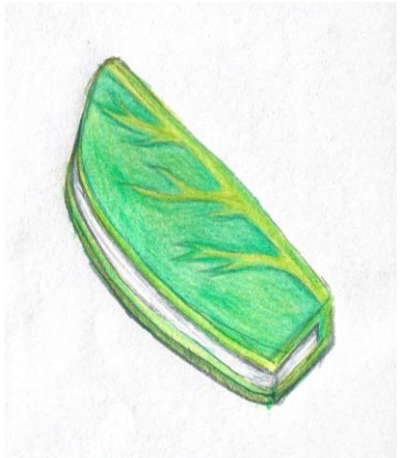
The pot will be formed by the user using a net that is in the back of the book that can be used to plant the seeds in. This would be made of a corrugated/recycled card.

First model



My first design was more simplistic, it was smaller and was a standard rectangular book.
I compared this to my previous designs and decided to try a new shape for the book in my next model to create a more aesthetic outer appearance.





The book when closed is half a leaf, creating a whole leaf when open.

Client Feedback

From a mother with a young daughter.

Would this be a product you would use with your child?
"yes, I think it easily encourages food sustainability and would engage my daughter and has a cute concept"

How much would you pay for this product?
"Ideally, no more than £20"

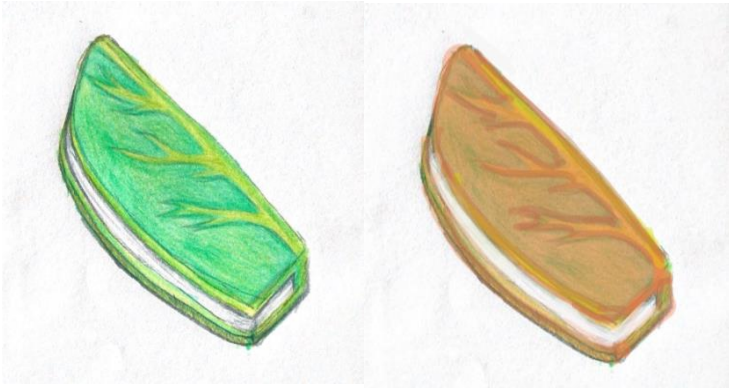
What size would you want the book to be?
"Around an a4 size."

What colours or themes (for the book) would make you more likely to purchase it?
"I would prefer seasonal colours as they would go nicely with the theme of watching the plant grow"

What would put you off purchasing the Product?
"I could be put off by the time and commitment and space that may have to go into growing and using the seeds after, but if it's easy to use and has an instruction booklet with tips to help grow the fruit or vegetables."

Is there anything you would change or add to the product?
"To make the book more interesting to my daughter, I think you could include more interactive or even textured parts within the book, making each page more unique and engaging to kids."

Client feedback made me expand my ideas about my product and different ways I could use it to encourage clients and family members to purchase my product. I could make my product collectable by doing different variations of book, for example release 4 books- one for each season- containing different seeds within each book to grow different fruit or vegetables.



Catering to the client's Needs:

Design features:

Cost
- Needs to be affordable but appreciate costs of manufacturing

Aesthetics
- Bright colours to keep child interested
- Simple layout so it's easy to follow

Materials
- Needs sturdy, thicker paper/card that is easy to fold
- Solid white board
- Seeded paper
- Recycled card
- bioglue

Sustainability
- Recyclable materials needed
- Glue used needs to be bio glue, this ensure the whole product can be recycled

Anthropometrics
- Needs to be able to held by a child
- Needs to have large writing so its easier to read
- Simple sentences for children's comprehension
- Relatively light

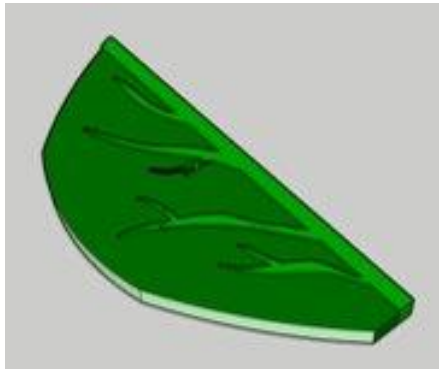
Pop-up Book Final Idea

Materials

I would use **solid white board** for the cover as it is strong, high quality and good for printing although, I could also use this card for the inner pages as they need to be sturdy for the pop-up book to work however, I am going to instead use a **seeded card** paper (like seeded card used in birthday card production) to ensure that once the client has no more use for the book it would be mostly decomposable and reusable, giving the product a new lifespan by becoming produce.

I would use **Jelly glue (protein glue)** as it is 100% non-toxic, recyclable, and decomposable, making it one of the most environmentally-friendly adhesives available to use in manufacturing.

For the miniature plant pot, I would make it out of a **recycled cardboard and paper combination** so that it is decomposable and recyclable like the rest of the book.



My final design solution is an interactive pop-up book, that will contain a story that encourages, excites and educates kids on the importance of not wasting food.
It will come with a compressed soil tablet, a buildable net of a decomposable pot, instructions on how to grow different fruits and vegetables, a vegetable seedling package and seeds embedded in the pages.
Not only will this product be 100% recyclable it is multipurposed so that when the client is finished with the book, it will not be thrown away and wasted; it will grow into food they can use, this will create a new experience for many families.
This product will tackle the problem in the long-term and short-term, this is as younger generations are easily impressionable and after getting into a routine at a young age will most likely continue these routines and habits later in life.

Here to help

If you have any questions, you can get in touch in the following ways:

1. With the RSA Pupil Design Awards team: pupildesignawards@rsa.org.uk
2. Once you have been assigned a mentor and they are preparing to visit the school, feel free to contact them with any specific issues regarding the design process that you would like them to address.

We look forward to seeing your pupils' entries!

The RSA Pupil Design Awards Team

> I feel that the skills I have learnt and the problems that we overcame have really benefited me in becoming more confident within myself.
>
> **Finalist,** Pupil Design Awards

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