

A TEN STEP GUIDE TO RUNNING A DESIGN WORKSHOP



Advice for design and technology
teachers in secondary schools

INTRODUCTION

This 'How to' guide takes you through 10 easy steps to running a design workshop and includes advice on what materials you will need, how to push the students to think bigger and better and how you can tailor workshops to fit the time you have to spare.

A design workshop will help you take your pupils out of the classroom and into more complex contexts on an assignment that's focused on identifying opportunities for design improvement, understanding user needs and working in teams to create products and systems that solve real problems and improve the quality of life.

It will help you as a teacher make links between your design classes and other subjects and areas of the curriculum, especially ICT for research and idea development, and other subjects like science, maths, geography or history that take pupils out of the classroom. It will also help you make cross curricula links with citizenship and sustainability teaching.

The workshop format will get students researching problems in their local community and the wider world then let them take these findings back to the classroom where you can help direct the students to use their practical and intellectual skills with their newly acquired understanding of:

- AESTHETIC
- TECHNICAL
- CULTURAL
- HEALTH
- SOCIAL
- EMOTIONAL
- BEHAVIOURAL
- ECONOMIC
- INDUSTRIAL
- ENVIRONMENTAL

issues that they have directly experienced.

It will help you develop their design skills including: generating, developing, modeling and communicating ideas to each other and people with design needs.

It should be noted that these 10 easy steps are suggestions and that, if used, they should be adapted to fit a particular class or group of children as appropriate.

A design workshop and the secondary school curriculum

A design workshop will help teachers give key stage 3 and 4 pupils skills in 6 key areas of curriculum:

- 1. Understanding the user and using their needs to justify design decisions**
- 2. Creating design briefs from their own user research**
- 3. Generating design ideas**
- 4. Developing design ideas through a range of modelling techniques**
- 5. Communicating design ideas to different project stakeholders**
- 6. Evaluating design ideas against their own targets and from different perspectives.**

ESTABLISHING THE CONTEXT

The first stage of the workshop is to look for problems anywhere outside (or inside) school. Before you and the students go out of the classroom you can set the scene and explain that during the design workshop the students will be using design skills like user research, brainstorming and voting to solve real life problems.

Your students will need to pay attention to things that they see aren't working while they are out of school. Once they identify a problem, like a waitress finding it difficult to serve people in a crowded cafe or an older person taking too long to cross the road, you want them to talk to the people who are affected to find out what they feel. They could also draw a sketch or take a photograph of the person they have spoken to and of the problem they have identified.

At this stage it is important to work fast and spot lots of different problems, because each is a potential design opportunity that the students can discuss and design to solve when they are back in the classroom.

What is a problem?

During a design challenge workshop held at the V&A's Sackler Centre for arts and education in London during Shine 09 Design, pupils aged 8–19 identified problems they'd encountered on their journey to the workshop. These problems included: slow trolley service on the train, running late because of a bad hair day, nowhere to put suitcases on the bus and forgetting when to get off the tube.



1. TAKE YOUR CLASS ON A TRIP OUT OF SCHOOL TO IDENTIFY OPPORTUNITIES FOR DESIGN IMPROVEMENTS.

Perhaps you could work with another subject teacher who is already taking the class on a field trip. You could use this opportunity to get your pupils to take photographs or sketch pictures of problems they encounter on their journey there.

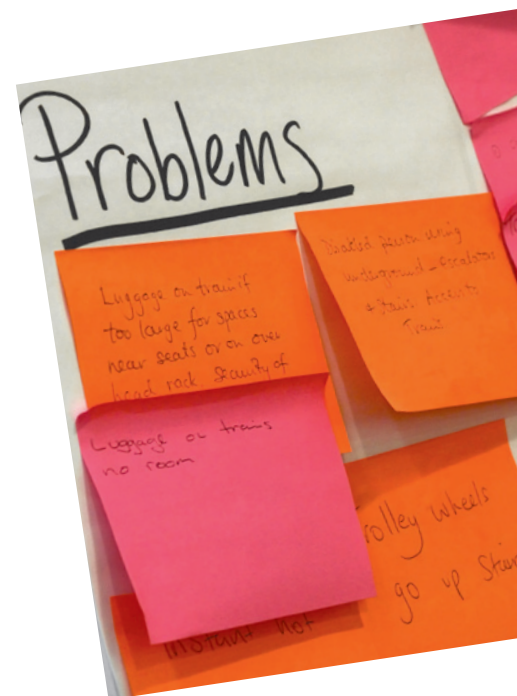
This is the first stage of research which any designer would undertake before developing a brief for designing a product or system that meets real user needs. This is an opportunity for the students to capture a lot of useful information and inspiration, and to use interviews and questioning techniques to identify end user needs.

2. IF YOU CAN'T GET THE CLASS OUT OF SCHOOL, GET YOUR PUPILS TO LOOK FOR PROBLEMS ELSEWHERE.

Ask students to browse through copies of the local newspaper and discuss stories about things they think are problems. Or you could ask them to talk about their journey into school that morning and identify problems they experienced along the way.

Explain that this workshop is all about designing something which meets real user needs. So the students have to think of themselves as designers but also as clients in the sense that they are using a product, or a service or a space and experiencing problems with it. They have to think about how their age, physical ability and the amount of money they have may have affected how and why they feel there is a problem.

Analysing existing products and services can reveal opportunities for improvements, so reading newspaper stories or observing how people interact with products during their everyday life is one way to think about the things you take for granted a bit differently. Your students may find it helps them find problems if they think about the human factors involved in product use: for instance should a person's physical or psychological characteristics affect the ergonomics of the product ?



Problems identified during a design challenge workshop at the V&A during Shine 09 Design

3. THINK ABOUT WHAT IT'S LIKE TO BE SOMEONE ELSE.

Remind your students that this workshop is all about using design to solve a problem that real people experience. A focus on user needs is crucial for any good design project.

To help your students understand the point of view of the people who are experiencing a problem, the best way is to get them to talk to these people and find out what affects their point of view.

Students often find it easier to talk to people if they are in groups or have a dictaphone with them to show what they're doing is legitimate, so make sure they feel like they have all the equipment they need.

If the students can't get out of the school to see problems happening for themselves, they can still think about what informs their own perspective after they have identified problems from newspapers or from remembering their journey to school.

Perhaps they could create a simple user persona picture with some notes alongside to show the age, gender, likes and dislikes of the sort of person they are going to be designing for.

A user persona can be as simple as making up a character with a name, drawing their picture then talking through what sort of characteristics this person has. All these characteristics will be informed by the discussion the class has about this person's perspective.

As well as asking people questions, observing them can reveal interesting insights and unarticulated needs. For instance designers have helped make it easier for people to find their right house key after watching them struggling to figure out which is their front door key and which is the back door key. They created simple coloured rubber tops which anyone can put over their keys to remind them which key they need when.



Students interview each other about the problems they're addressing during a design workshop at the V&A

ASKING THE RIGHT QUESTIONS

You could dedicate a class before the field trip to explaining why it's helpful when you're designing to understand other people's point of view. The class could work together to design a short questionnaire that will help them capture information they think will be helpful when they get to designing.

Some things they may want to think about are:

- What age and gender are they people they speak to?
 - What most affects how they act: money, physical ability or perhaps fashion trends?
 - How important do they think it is that you try to design a solution to the problem you've been talking to them about?
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CREATING A USER PERSONA

The class may decide their user persona is a girl, aged 13 called Tracey. Tracey likes clothes more than music so she doesn't think her iPod is as cool as her best friend does. She prefers music to clothes. The problem Tracey has when she loses her iPod is she can't really argue with her parents to buy her a new one because they know she doesn't use it that much anyway. But it's so un-cool not to have an iPod. What she really needs is some other way to use her iPod other than listening to music.

A model helps participants bring their user persona to life during a design workshop at Shine 09



4. GET THE STUDENTS TO SHARE THE PROBLEMS THEY IDENTIFIED WITH THE REST OF THE CLASS.

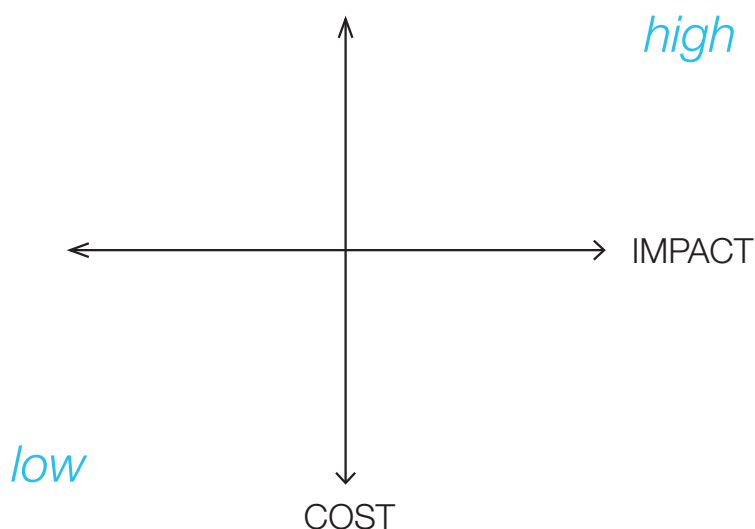
Divide the students into small groups. Get every group of students to write down on individual sticky notes the three most memorable problems they came across on their trip out of school.

Now get the class to nominate one person to be a problem sorter. The problem sorter will help order all the sticky notes on a big problem board.

ORDERING PROBLEMS

You may want to use a set of axis to organise problems according to: the number of people they affect, the cost of things not working properly, the anticipated cost of solving the problem or how important the class feels the problem is.

Discuss with the class where the problem sorter should position the problem on the axis you've chosen. Is it a problem that affects lots of people? Group it with other problems which affect similar numbers of people. Does the problem feel really important to the class? If so, put it up high on the board to show it's of high importance to the class.



A problem sorter arranges problems according to their impact (high or low) and the number of people it affects during a design workshop at the V&A

This is the student's opportunity to start refining their brief. They have to decide what factors they use to order their ideas (cost, number of people it affects etc) and judge the importance and impact of the problems they have identified. This section of the workshop should involve lots of discussion about user needs and get the students thinking about the problems from another perspective.

5. GET THE CLASS TO VOTE FOR WHICH PROBLEM THEY WANT TO USE DESIGN TO ADDRESS.

Now your elected problem sorter has helped you arrange the sticky notes describing all the problems the class identified, the whole class needs to choose one that they think they can design a great solution to.

There are a range of different approaches professional designers take to their projects. They may have an emotive reason or, through analysis, they may have made a decision based on almost scientific information. Help your students understand different motivations for pursuing a design project and be aware of this as they make their decision of which problem to address.

SHINE 09 DESIGN

The problems that won student votes at the V&A Shine 09 Design challenge workshop weren't always the most serious. One group of students voted to solve bad hair days even though they had discussed finding it difficult to get through train station barriers with heavy luggage and had seen homeless people moved on by police from the shelter offered on a station platform.

6. BRAINSTORM INITIAL IDEAS FOR WAYS TO SOLVE THIS PROBLEM.

Give the students five minutes to work out, in their groups, one thing they could design which would help solve the problem they've all voted for. Get them to write down notes about this on a big bit of paper, or start to sketch out their ideas. Be strict with time.

After five minutes ask the groups to think about another solution which uses a different design technique to address the problem. So for example, if their first thought was to design a poster to make people aware that crossing the road could be dangerous could they now think about a product that would do the same thing? Or if they thought a product could make recycling easier on public transport, could they think of an incentive scheme as well?



Students brainstorm ways they could address the problems they spotted on a journey to London's V&A Sackler centre for a design challenge workshop

7. VOTE AGAIN.

Get the students to vote for which sort of design solution they are going to pursue. This time they could put stickers against the idea they like best.

The vote should reflect the research the students did while out of school. Their final design has got to meet the needs of the people they interviewed or of their user personas. Design here is not about what's cool or looks great. It's about creating a solution that really meets user needs.

To help them decide on the best solution, the whole class will need to listen again to the recordings made when they were out identifying problems. If the class wasn't able to use Dictaphones to record the answers of the people they interviewed ask each team of students who spotted the problem to give a quick one minute run down of the answers they got to their questions. The things people said should affect the class's decision about which design idea is the most appropriate solution.

For instance, the students may really enjoy using modern technologies, but the problem they are addressing mostly affects people aged 60 and older. Is the best solution to the problem actually the website they've just come up with, or would a series of low tech devices like postcards or posters be less frustrating for older people to use?

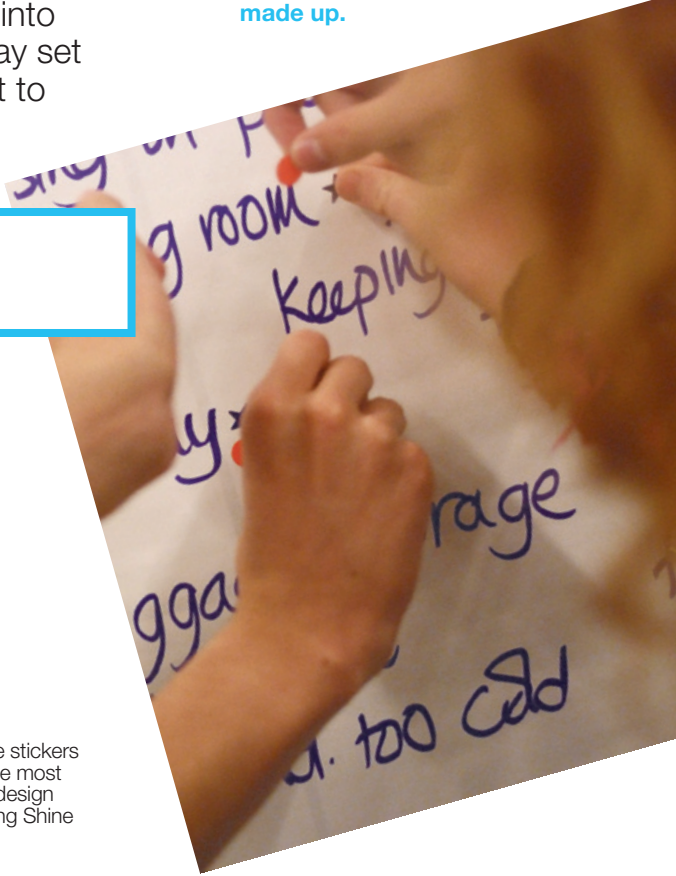
Before they vote the students have come up with a huge number of potential ways forward. They need to use this vote to think about which ideas are achievable and take into account the resources available. Perhaps the teacher may set a limit to how much the end product or service could cost to deliver as a way to help the students refine their ideas.

The results of this vote should help to establish with the students an understanding of a designer's moral and ethical responsibilities.

SHINE 09 DESIGN

At the Shine 09 design challenge workshop secondary school students came up with budget busting ideas for portable storage lockers on trains that were also tickets because they realised many people who used trains to travel long distances with luggage found it difficult to carry their luggage and feed a paper ticket through the machines which let them onto the platform.

A group of primary school students came up with a cost-effective solution to the problem of not being able to tell what sort of sandwich they could choose from a selection at lunchtime. Their target user was someone like themselves who couldn't afford to pay more for the sandwich to be made for them individually and delivered by a waitress. So they came up with a labelling device that used helium powered balloons in the shape of animals or vegetables to show what each sandwich contained. This had the added bonus of keeping sandwiches floating in the air so the cafe didn't need extra display space to keep a wider variety of sandwiches made up.



Students use stickers to vote for the most appropriate design solution during Shine 09 Design.

8. REFINE THE IDEA BY CREATING MODELS.

In this workshop there aren't any specific making skills, like making hinges or improving the strength of a structure, to be learned. Instead the 2D or 3D models the students create will be a useful way to try out and visualise their ideas and the models will act as a prompt to help the students reflect on and discuss how their design meets user needs.

2D and 3D modelling should be the first activity for students, perhaps followed by work on CAD systems which will lead on to CAM modelling in foam or polystyrene. But designers use quick and dirty models as well as precise models so the students could make models with materials like card, lego bricks or tin foil, which visualise their idea rather than working as a test worthy prototype.

SHINE 09 DESIGN

During a design workshop at the V&A a group of secondary school students created a model of overhead lockers for trains and used balloons to represent people using the lockers.

And cardboard was used in another team to create a 3D model of a device that would help people find their way when travelling on the tube.

9. DISPLAY THE MODELS AND ASK PUPILS FROM OTHER CLASSES FOR THEIR FEEDBACK.

Take photographs of the class at work, or provide the students with cameras so they can take photos of themselves at work, during all stages of the design workshop so that these can be displayed alongside the final models they have created.

You may want to arrange these pictures of the students working at different stages of the design workshop on a diagram which explains the process they went through to get to their brilliant end result. See the following page.

Once the models are on display alongside photographs showing how the students came up with the ideas for these models, the class has the opportunity to critique their final ideas. With pictures reminding them of the people they are designing for, and evidence of how they arrived at their final product or system idea in front of them, the students may realise there are further opportunities for design improvements.

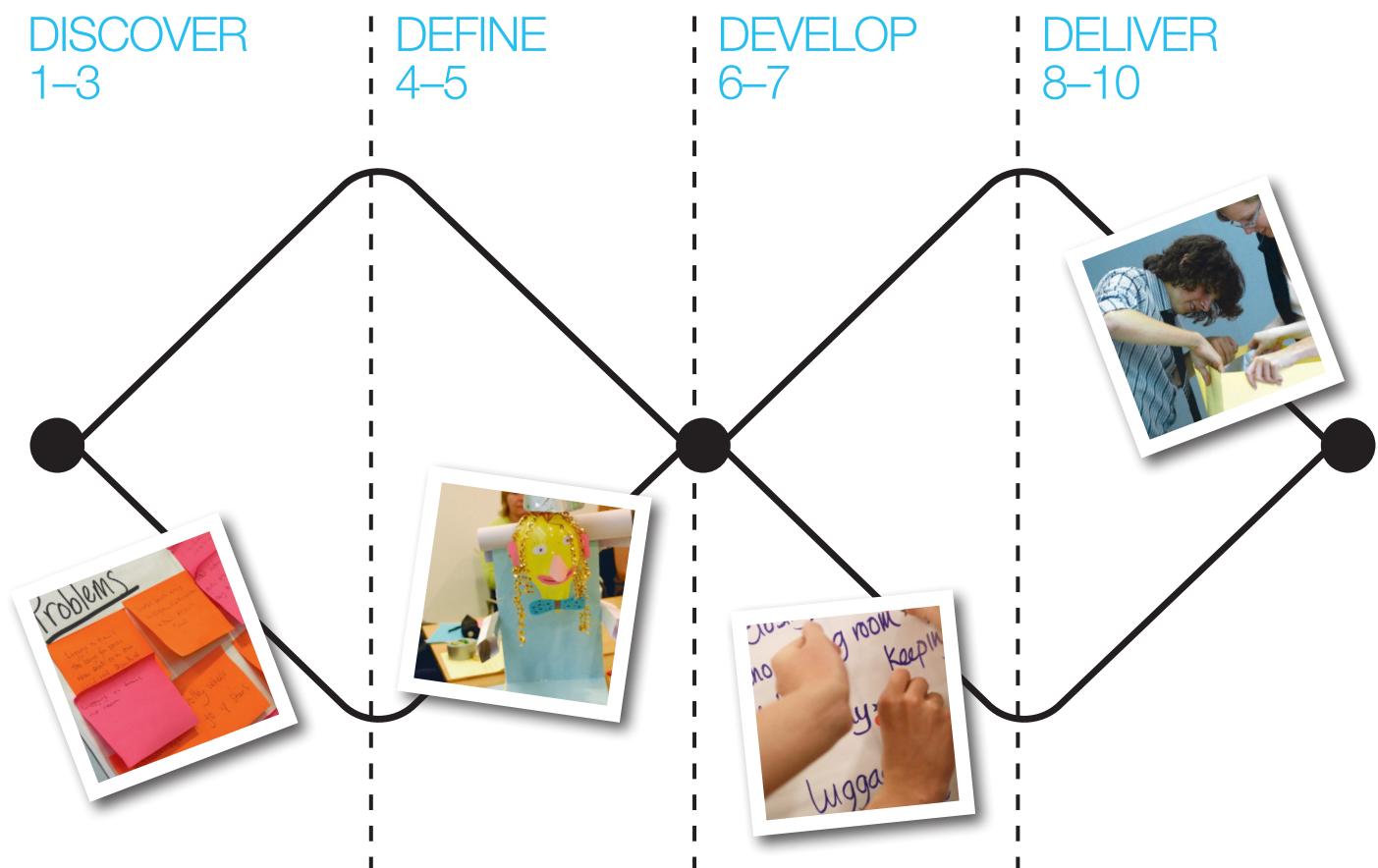
It is important that the pupils discuss for themselves where to put pictures of themselves at work on a map of the design process. Help them discuss the Double Diamond and establish whether it is the best model to represent their workshop project. Could they design a process map that better explains the value of their approach?



Students creating 3D models during the Shine 09 Design workshop at the V&A

DOUBLE DIAMOND

You could use this double diamond process diagram because it depicts how during stages 1-3 the class was getting lots of great ideas and opening up the scope of their design project. Then during stages 4-5 they started refining their ideas to decide on what problem to tackle. Once they'd done this, stages 6 and 7 got them coming up with many ways to address the problem, before they created models and did some user testing which helped them focus towards their final solution in stages 8-10.



10. ITERATE AND IMPROVE.

Having had the opportunity to step back and appraise their final designs the students now need an opportunity to make improvements. As they make final improvements ask each group to write down their thought process and communicate this to the rest of the class in a two minute presentation that will help them all give feedback to each other and perhaps begin to decide which final product is the most user focused and the best response to the workshop challenge.

Give the students the opportunity to evaluate each other's work and use this feedback to plan how they would take their model to final production (if they could). Ask them to plan what sort of further testing they would need to do to inform their design, how many people this would involve and plan how long this would take.

RESOURCES

- Access to computers for internet search engines, photo uploading, spreadsheets, word processing and CAD modelling.
- Brainstorming equipment including: Copies of local newspapers, colourful sticky note pads, big pens, large sheets of paper, cameras and Dictaphones.
- Voting equipment including hands raised in the air and stickers
- Modelling equipment including: paper, card, glue, masking tape, tin foil, balloons, stickers, pens, newspapers, scissors, staplers, rulers, pencils, Lego. Make sure you provide lots of different materials to enable the students to create their models. They will be able to see the creative potential in even frivolous seeming objects.



A student presents her team's ideas and asks for feedback from the audience during a design challenge workshop at the V&A during Shine 09 Design

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