

How to Design in 24 Hours

As a team, discuss in advance the design process and methods you would like to use, and think about how long they might take. The following Mini Challenges are all optional but can win you ‘bonus points’ with the judges. You may complete the Mini Challenges at any time during the 24-hour challenge, but we suggest you complete them in order in the first few hours of the challenge. These methods are intended to help you think through the problem and generate some alternative designs.

If you prefer to use different design methods, that’s absolutely fine. Be sure to photograph and document your design methods and outputs – we will want to read about them in your written paper.

Contents

Mini Challenge 1: Literature Review	1
Writing the Paper	3
Mini Challenge 2: Brainstorming	5
Mini Challenge 3: Magic Machines.....	6
Mini Challenge 4: Storyboards	8
Prototyping.....	8
Reflection	10

Mini Challenge 1: Literature Review

Reviewing current literature is an important part of the research process. It allows us to find out work that has been done before (to avoid reinventing the wheel), to understand the design problem and to prompt new ideas for solutions.

Before you complete this Mini Challenge, you should download the recommended reading included with the Design Brief.

Step 1: Recommended Reading

Examine the title and abstract of each of the recommended readings. Start with the papers that seem most interesting, and allocate one paper per team member.

Set a timer for 25 mins. Team members complete the Lit Review Template for the paper they have been allocated.

Step 2: Review and Plan

When time is up, discuss what you have learned from your readings. Consider using post-it notes or a whiteboard to gather and organise your ideas.

Identify three to six important terms (keywords) which relate to ideas you would like to investigate further.

Step 3: Literature Search and Review

Use combinations of your selected keywords to search Google Scholar or the ACM Digital Library (dl.acm.org) for additional literature relevant to the topic. From the results of this search, identify at least two additional papers that your team will review.

Step 3: Additional Paper Review

Complete the Lit Review Template for the additional papers you have selected.

Lit Review Template

Below is a suggested template to assist with reviewing literature:

Title and authors:

What is the main argument of the paper?

Why is the work important? How does it relate to the design challenge brief?

What research methods were used?

What further opportunities for design interventions could you explore?

Writing the Paper

Each team will submit a written paper in the specified academic format. This gives teams experience of writing in academic style using standardised referencing, and provides a common format, which helps us compare and review all the submissions. It also makes it easier for finalists' entries to be prepared for publication format.

It is essential that you include in-text citations and a complete bibliography. We want to know where your ideas come from: references persuade the reader that your solution isn't just based on assumptions. For example, you could use academic papers to support your claims about users' needs, existing problems, or specific design goals. Whenever you use someone else's ideas, you should include a reference.

It is a good idea to start working on your paper early. In particular, you can start in the first hours collecting references, adding photographs of brainstorming outputs and sketches (Background or Ideation), writing about your design process (Methods) in the first couple of hours. Don't leave it to the last hour! Start early, and fill in content as you go along using the structure below.

You should include full author information and contact details in your initial submission. Don't worry about filling in the **CCS CONCEPTS** and **KEYWORDS** sections. Keep the heading and sample text from the initial template, and we will help the finalist teams to choose CCS concepts, keywords, and suggested reference for their submissions. Don't worry about changing the document header.

The structure of your paper might look something like this:

Title

Make sure your title is not too generic, for example don't make it simply "Designing for sharing with others". If your solution is a specific application with a name, it's a good idea to include the name in the title and then specify what it does. *You might find yourself revising this up right up to the last minute!*

Abstract

Write a short abstract (up to 150 words) that summarises the design problem, your design process, your solution and the rationale for your design concept. *You will probably write this last.*

Introduction

Briefly describe the specific design situation and problem you have identified. This should summarise what you have learned through your research into the problem so that the reader knows what problem you are setting out to solve. It should also make clear to the reader why this is an important issue that needs to be addressed. The last sentence or two should summarise how you have responded to this issue. *You can outline this section early on but maybe finalise it after the Design section is done.*

Related Work

Include a brief review of relevant literature and prior work. Outline any existing attempts to address the problem, and why they are not sufficient. You can also summarise any relevant research from other contexts that you want to apply in your design. *You can probably write this first.*

Method

Outline the approach you took to the challenge and describe the design methods you adopted. Consider including at least one reference justifying your choice of methods. Remember that for this challenge we ask you to not use methods such as interviews and surveys with external participants. *Start writing this section early, include photos, update it as you go.*

Design

First, describe the specific design objectives / goals or requirements you identified which are necessary in a solution for the problem. Next, present your design solution, including photographs. Describe specific features that address the design objectives. If appropriate, provide some technical detail to explain how the system will work, or how it will be used in context. *This section can be written while you are prototyping.*

Discussion

Reflect on how successful your design has been in addressing the stated objectives. What are its strengths and weaknesses? Could it be useful in other contexts? Does this design work contribute new knowledge and innovation to the HCI / design practitioners? Is there a risk of unintended consequences? You may suggest some possible future work that could build on your design concept. *This section can be written after the design.*

Conclusion

Summarise the key points and the main big ideas from the paper. *Make sure your conclusion ties in neatly with the introduction. Don't introduce any new ideas in the conclusion.*

References

List your references using the required referencing style. Examples of this referencing style can be found on the Paper Template. Remember to include the URL of your submitted video. *Start to add to the references as soon as you start your literature review. Make sure you include in-text citations for all of the references.*

Mini Challenge 2: Brainstorming

Before you tackle this Mini Challenge, you should have done some reading and reflection on the challenge topic, and some limitations of existing solutions.

Step 1: Personal brainstorming

Think about your own experience of a problem situation related to the challenge topic. Try to reflect on a specific occasion or scenario.

Think about:

- Who was involved?
- What types of interactions with other people, objects or data were involved?
- What were the issues or frustrations encountered?
- How was technology positioned (or not) in the situation?
- The outcomes for you and for other people involved?
- Outcomes for the broader community and the environment?

Collate the team's responses through e.g. post-it notes or white-boarding

Step 2: Other perspectives

Repeat the above process, considering how the situation you thought of might play out for someone who is different from you in some way, such as:

- age (older adults, children?)
- sensory or mobility impairment (visually impaired, deaf or hard of hearing, wheelchair user?)
- language fluency (non-native English speaker?)
- availability of time (time poor, or a parent managing small children?)
- availability of funds (cash poor, lack of service such as mobile internet?)
- professional and personal interests
- cultural background
- cognitive differences
- future generation (ecological pressures and climate change? changing social habits?)

Step 2: Create a visualisation of your response to the problem scenario

The visualisation can take any form you choose, including a mind map, a rich picture, or other diagram.

Submit your Mini Challenge visualisation to your team area and email sd@ozchi.org when you have completed it.

Mini Challenge 3: Magic Machines

Before you start this mini challenge, look through the outputs of your brainstorm. You should have plenty of material which you can use to identify some specific problem situations or issues related to the challenge topic. You might list out some alternatives and discuss them as a group. Select one problem situation that you will respond to through your design.

This mini challenge aims to help you find different ways and ideas to address your selected problem situation. You will use an adaptation of the “magic machine” design fiction method to develop new design concepts to solve a problem, by creating absurd solutions from lo-fi materials. See:

Blythe, M., Andersen, K., Clarke, R., & Wright, P. (2016). Anti-Solutionist Strategies: Seriously Silly Design Fiction. In CHI2016 (pp. 4968–4978). ACM. <https://doi.org/10.1145/2858036.2858482>

Magic machines are imaginary devices that can do anything that you imagine, even if it is not realistic or feasible as a real technology. For this mini challenge, your team will create a magic machine to solve the problem situation you have identified.

Step 1: Define your problem situation in one sentence or two.

Step 2: Create a lo-fi prototype of the “magic machine”

Imagine a magic machine that can solve this problem. Show us this magic machine through a sketch or two, by constructing a model (e.g. cardboard, tape and string) or by repurposing existing objects.

If you are stuck for ideas, consider existing solutions. Think about products used to solve comparable problems in different domains or contexts.

Step 3: Document and reflect on your magic machine

- Prepare a document to describe your machine in a couple of sentences and include some photographs.
- List out the things that you like about the magic machine (how does it help solve your problem?)
- List out the things that you DON'T like about your magic machine (what new problems does it introduce? Potential negative impacts?)
- What have you learned from this magic machine that could contribute to your solution?

Submit your Mini Challenge document to your team area and email sd@ozchi.org when you have completed it.

Magic Machines Example

Problem: Sometimes a person needs to make important decisions that can affect his/her partner, and it is not possible to get the other person's opinion on that moment.

Magic machine: This glasses-gloves set can make you take control of your partner's movements. The glasses allow you to see in real time everything that your partner is seeing. The glove allows you to take full control of the partner's right hand movement.



Photos taken with an iPhone, collage made with the Photo Collage Editor app on Android.

Things we like: Real-time connection. Real-time influence

Things we dislike: Privacy issues. Too much power for who controls movement

Things that could contribute to our solution: Real-time awareness of opinion. It would be good to find a way to subtly communicate opinions in real time

Mini Challenge 4: Storyboards

By this stage of the challenge, you should be starting to get an idea in mind for your final design intervention.

In this challenge you will be tasked with developing a use scenario for your design concept and reflecting on the types of interactions and experiences that are generated through this design intervention, presented as a series of 3-5 storyboards.

The storyboards will help you have an idea for the creation of the video you need to do for the final submission.

Step 1: Think of a concrete use scenario for your design concept (even if this is not the final version of your design intervention, or the idea that you choose for your final submission).

Step 2: Draw a sequence of 3-5 graphical storyboards that illustrate the use of your design concept, and provide us with information about:

- The use context
- The people using the design
- The interactions and experiences of using the design
- Any positive or negative implications of the design concept for individuals, the community, and the environment

Your storyboards can be drawn using any visual style (e.g. photographs with text and speech bubbles, sketches, cartoons etc). This resource may help:

Pedell S. & Vetere F., 2005. Visualizing use context with picture scenarios in the design process. MobileHCI'05. ACM Press. pp271-274. [10.1145/1085777.1085829](https://doi.org/10.1145/1085777.1085829)

Submit your Mini Challenge document to your team area and email sd@ozchi.org when you have completed it.

Video

Your video will be the principal output of all your hard work. A good quality video will ensure your work receives the attention it deserves! Focus on showcasing your design. The video should first briefly explain your selected problem scenario. The majority of the video should present the design concept and main features, and perhaps show or explain how the prototype would be used in a specific scenario. Briefly reflect on strengths and limitations of your design. You do not need to include information about your design process, or introduce the team members, as judges will have access to the other components of your submission.

A well-edited video will achieve this in 2-3 minutes. Maximum video length accepted is 4 minutes. A good approach is to first prepare and record a script, then storyboard your video to synchronise with the script, gather the footage you require, and finally assemble the pieces.

Recording footage

As part of your preparation, ensure you have a location and equipment to shoot good quality footage. Use tripod or can keep the camera stable and level through other means. Lighting from windows or other diffuse light sources will help to avoid harsh shadows - if you don't have specialist equipment, consider making use of desk lamps and reflective materials to angle light where you need it. Record at the highest quality and resolution possible, and compress after editing.

Through the course of the challenge, try to capture segments of video which might be useful. Please avoid using stock footage and images.

Recording audio

Prepare your script and edit carefully to ensure clarity and avoid repetition. Ensure that you give yourself time to speak at a measured pace. Ensure that the pacing is appropriate, and avoid bombarding the listener with lots of complex concepts or jargon. Identify a quiet location to record voice over, and use a decent microphone with stand if possible. (Please do not use a computer-generated voice!).

If you include ambient sound or sound effects, it's best to record these as a separate track and then mix when editing. If you choose to use music, ensure you have permission to use it. Ensure that music doesn't compete with dialogue or voice-over, and try to find a piece which has not been overused.

Titles and Effects

Try to keep text, colour and effects simple. A well-paced video with well-considered scene cuts should not require flashy transitions, but fades can be effective.

Include a title slide with your team name, "OzCHI 2018 Student Design Challenge", and name of your prototype design if appropriate. You can include names of participants and institution name if you wish but this is not mandatory. A final slide should include credits for any third party content.

Prototyping

The mini challenges should have given you some ideas about what your design might look like. In particular, you might have some ideas about specific objectives or requirements that you will want to try to meet.

If you haven't already, get building! Start with 'throwaway' whiteboard or pencil sketches and low-fi designs: it's often better to iterate and improve several times than try to create one polished prototype! Your prototype will be the basis of your design submission, so try to create a final prototype which will come across well in photographs or video. Some approaches include:

- Sketching
- Paper prototypes
- Digital wireframes

- Projection and mixed reality
- Cardboard, tape and string
- Repurposing everyday objects
- 'Wizard of Oz'
- Role play and video prototyping

Reflection

For the Student Design Challenge, you won't be conducting an evaluation with external participants. But it's important to try to capture both the strengths and weaknesses of the design. Consider your final design with a critical eye; acknowledge its limitations and think about how they could be addressed. You can use methods such as *heuristic evaluation* or *expert review* if appropriate.

Discuss and evaluate:

- how successful do you think it is in addressing the specific aspect of the problem that you chose to work on - what are the weaknesses as well as strengths?
- if you identified specific objectives or requirements, how were they met (or not) by the design?
- what is new and innovative about your design?
- how might this design work might be interesting and useful for other HCI scholars and interaction designers working in a specific domain (and perhaps in other contexts / with other user groups): this is the 'contribution' of your work to the field of HCI
- consider possible unintended consequences (e.g. new problems introduced, social or ethical issues, impacts on the environment) and how they might be investigated or mitigated in future work.

The main ideas to come out of your reflection should be incorporated in the Discussion of your paper.