Design 4 Real People
The Campaign for Teaching User-centred Design

User-centred design
Teaching Aid for Year 9/10: Teacher's notes

Pick your Pocket

About this session

This is a session looking at the technology students have in their pockets, such as phones, MP3 players, e-book readers. Even in schools where such technology is banned, the students could be given a one day amnesty to participate, making the session a little special.

User-centred design is a process whereby the needs and wants of potential users are researched and understood from the outset. This is then fed into the design from an early stage and the design is tested and changed until the needs are satisfied.

This session would start with a simple 'show and tell' of modern mobile technologies which students are familiar with. These may vary from school to school based on the demographics of the catchment area, but could include basic phones, 3G/web enabled phones, tablet PCs (e.g. ipads), MP3 players, e-book readers, GPS units etc.

Post session the students will go home with what they came with and this provides the opportunity for continued thinking on the subject and homework if appropriate. This would also lend itself to a follow-up session looking at how students' views on the technology have changed, whether they've changed their usage, etc.

In practical terms the class could be split into groups, discussing each of the questions and feeding back to the class after each one. You could collect the ideas and put them up on a flipchart/board under the three headings of functionality, usability and aesthetics. Functionality and usability may be themes that are relatively new to the students so it might be a good for them to realise that they are thinking about these without realising.

The four questions below are designed to help students think logically about the design of their device, in terms of what they like and why, and how and why they might change some aspect of the design.

What's the best thing about your device?

Whilst it's probably the dislikes that will give us most insight into design, it may be best to start with a positive to get some engagement. What comes out of this may be broadly split into three categories:

- Functionality e.g. "I love texting"
- Usability e.g. "I love the touch screen" or "I make fewer mistakes with these buttons"
- Aesthetics/style e.g."I love the colour" or "It's the thing to have" or "All my mates are jealous!"

All three relate to ergonomics in some way, but it may be simplest to focus on usability issues and they're likely to be the focus of subsequent stages. Functionality can be a good discussion point however as it's about understanding user needs. For example, texting satisfies a need for communication, but it's instantaneous, 24/7 communication – this is not a need that the students' parents would have had at their age. So we need to meet needs, but also recognise that needs change. Technology can both satisfy needs and shape them. Ergonomics aims to ensure that 'real' needs of users are genuinely satisfied (but will also pick up the pieces of technology-generated need).

You could talk about what might have happened if someone pitched the idea of texting to TV's *Dragon's Den* before texting was widely available. It's likely they would have been laughed at!

Aesthetics is also about understanding potential users, but you could look at the relative importance of looks to different populations. For example is the colour of more importance to a style-conscious 14 year old, or a pensioner who has a phone in case they should fall and need help? It may be best to leave this idea of different groups until later, but it could be useful to introduce the idea before discussing usability so as to help with later discussions.

What would you change about your device?

Offer the option to change anything with no restrictions – no concerns about tarifs, purchase price, etc. This is a 'magic wand' scenario allowing maximum design flair. Even if students suggest that the one thing they'd change is the device itself, that still leads into the 'Why?' question and a discussion about the device they'd prefer. Again you're likely to get comments across the three areas of functionality, usability and aesthetics.

If a lot of usability comments don't come out, then ask a 'What's the best device for..?' question. The simplest may be to ask about texting as it's both important to 14 year olds and the 'lowest common denominator' with 'phones.

The 'Ahat's the best device for..?' question should both pick up on differences between devices, but also between students. From a physical perspective, you can start to explore anthropometry (body measurement), and from a cognitive perspective, things like familiarity and mental models. This means that you should be able to deal in different levels of complexity and get useful interaction from a range of student groups. You could even repeat the exercise with students as they develop (e.g. GCSE v A-level).

Why would you change it?

It's probably best to stick with a usability/usage issue by the time we get to this stage (but other factors could be considered with more advanced groups). Which aspect of the interface is sub-optimal and how could it be optimised for the particular user in question i.e. the student talking about their usage?

By this stage you should be able to talk about more 'concrete' design issues, so you should be able to pick up on things like size of keys, feedback from keys (tactile), visual feedback from the screen, auditory feedback, etc.

The 'why' should be about optimising the process, but if they come up with anything that won't optimise the process, then that will be a useful teaching point (it will no doubt relate to aesthetics).

Would your changes suit everyone that might use the device?

Some of this will have been touched upon as you've worked through this session, but thinking of design in a broader sense and/or looking at design in terms of end products and sales, you can work through concerns beyond that of the individual and the need for designs to accommodate a range of individuals.

This will relate to some of the more concrete design issues discussed in the previous 'why' stage, but can also consider variations in use and not just variations in user. So for example, a phone optimised for texting will not be the best for making phone calls, etc.

It will be best to start by looking at variations in users within the class, but then you can branch out to cover age groups, disabilities, etc. For more advanced groups this could lead into discussions about accessibility which could then touch on issues of legislation and other external influences on design.

For more information about Design 4 Real People, the campaign for teaching user-centred design, visit www.design4realpeople.org.uk.

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Teaching Aid for Year 9/10: Student's worksheet

Pick your Pocket

Choose your favourite device or gadget that can fit in your pocket and answer the following questions about it.

What's the best thing about your device?

What would you change about your device?

Why would you change it?

Would your changes suit everyone that might use the device?