

Teaching Design Thinking as Practice

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Abstract: As awareness of the designed experience increases, so does the desire to apply the process of design thinking to a wider range of scenarios. There is an assumption that by applying the methods that designers use to solve problems, any business or productivity challenge can be analysed and resolved in a new, insightful, invigorating manner. With hundreds of books dealing with this topic, there is a general awareness that this process can be explicitly taught and applied. This paper demonstrates how one university design school is merging design thinking strategies with well established visual research techniques to develop a process that combines the best of both approaches.

Design Thinking Variations

The term Design Thinking embodies another design method, that called “The Design Process”. For most modernist-based western design schools this refers to the rational design process promoted by the early 20th Century designers, publicly demonstrated by the Bauhaus, and succinctly described by Simon (1972), and Pahl and Beitz (1996) as:

1. designers attempt to optimize a design candidate for known constraints and objectives
2. the design process is plan-driven
3. the design process is understood in terms of a discrete sequence of stages.

A common iteration of this organised approach is known as Analysis – Synthesis – Implementation. The general understanding is that by analysing the problem sufficiently, enough data or insights will emerge, that will then provide content for the combining of results, or synthesis. At this point, it is assumed that the correct direction to solve the original problem will be clearly revealed. The argument against this process is that this logical approach discourages lateral thinking and limits the opportunity for inspired invention. The Action-Centric Perspective (Ralph 2010) argues that the design process takes a different path:

1. designers use creativity and emotion to generate design candidates
2. the design process is improvised
3. no universal sequence of stages is apparent – analysis, design and implementation are contemporary and inextricably linked

Within design education and design research, variations of both of these approaches processes abound. Gray and Malins (2004) state that “we learn most effectively by doing – by active experience, and reflection on that experience”. This fits nicely into the constructivist model, encouraging students to “engage in active exploration of the research process in relation to practice and the context of research”. Gray and Malins’ comprehensive overview of design research methodologies flows through five phases : contextualising, orienting and situating, applying appropriate methodologies, evaluation and analysis, and reflection and knowledge transference. Although aimed at high level design research study, this mix of rational and action-centric approach is typical of current thinking.

Noble and Bestley (2004) refer to design research (and inherently the design process) as both an analytical and practical tool that “establishes the role of critical thinking as a support to the development of an engaged design

practice.” Instead of presenting a single design process, Noble and Bestley present a variety of processes, all adapted to a variety of situations. All of these processes integrate similar components of design thinking such as; analytical and propositional methods, semiotics, auto-ethnography, audience and message, social, cultural and political contexts, experimentation and exploration, iterative processes and action research.

The design organisation IDEO present design thinking as an optimistic, fun, energetic way to solve real-world problems. With key values such as Human-Centeredness, Collaboration, Optimism and Experimentation, IDEO present design thinking as a system of overlapping spaces rather than a sequence of orderly steps. (Brown & Watt 2010). IDEO’s first stage is stated as Discovery, followed by Interpretation, Ideation, Experimentation and Evolution. This is not to say that the rational school of design is forgotten, rather, it is embedded – the rational components of analysis and synthesis can fit into any one of those stages.

These short examples illustrate how Design Thinking, which includes the Design Process and Design Research Methods, are all wrapped together under a common attitude. This attitude is to use whatever tools and techniques are best suited, appropriate, or at hand, or can be found, to address the design need. Design Thinking as a term has over-taken the term Design Process, because the emphasis is now on how the participants *think*, not so much *what* they do nor when they do it.

Students Practicing Design Thinking

When students are first introduced to this approach to design, there is often a hesitancy, as the student grapples with this loosely defined process. This way forward can appear un-marked, especially if they are more familiar with the step-by-step stages in skill-based classes, where they are given the problem, which requires particular skills, to achieve a pre-determined solution. Design Thinking is open ended. Once the student selects a topic, the next question is “Now What?”

The following selections from students’ projects will focus on how the students applied Design Thinking to explore a topic. In all cases the students had little or no knowledge of the topics they had chosen. Their first task was to ascertain how to find that knowledge.

Overall structure

To create an overall structure within which the students can operate, the course uses six terms: Seeking, Exploration, Ideation, Synthesis, Presentation and Reflection (Figure 1). Each stage has a range of tasks attached, some more specific than others. E.g. for seeking, students seek out their topic using a range of techniques, whereas for Presentation, students are given specific instructions on the function and format of a poster. Being that this is an educational assessment environment set within 12 weeks, some time managed structure is required.

Topic and Exploration

Students use a wide range of methods to select a topic. Some are informed by personal experiences (e.g. arthritis in youth), whereas others seek to solve specific problems (e.g. marketing a little known brand). Topics cover a very wide range, including social, media, product, experiential, theoretical, narrative, instructional and hypothetical. Supervisors assist student with topic selection if required.

Following the selection of their topic, students are asked to explore the topic using the most appropriate tool. In most cases a group-based mind map exercise is the most helpful. (Figure 1) With a mind map, the students map out the extent of their current knowledge, the knowledge they need to gain, techniques on how to get that knowledge, and ways to engage the topic experientially. The mind maps sometimes are simply to-do lists, other times they become extensive mappings of a vast range of associations with the topic. Sometimes students have difficulty moving on from this stage, and so need guidance on how to group the concepts, pull out the key information, and move forward to explore the topic directly.

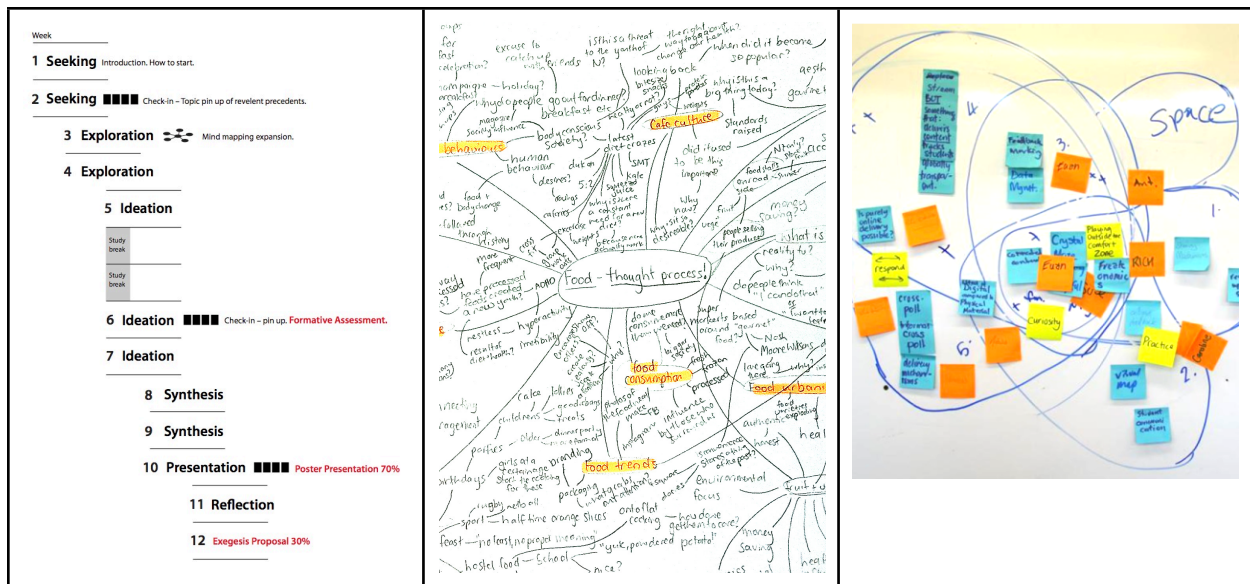


Figure 1: Course stages and mind maps

Exploration

Exploration of the topics takes many forms. The emphasis at this stage is twofold: 1: Gain existing background knowledge of the topic. This usually means finding existing research and data, and performing some analyses. This is often a conventional research process, the main challenge being sourcing the best information. 2: The second emphasis is to find original data first hand. The simplest, and very popular form of this, is to conduct surveys. While relatively effective, students are also encouraged towards action-centric research. So instead of asking people what they think of a certain food, the students are encouraged to go to the food store, and watch what people purchase. (Figure 2) They could also talk to the shoppers and store owners. The students soon realise the value of dealing directly with their subjects, generating original data, and working in a user-centric manner.

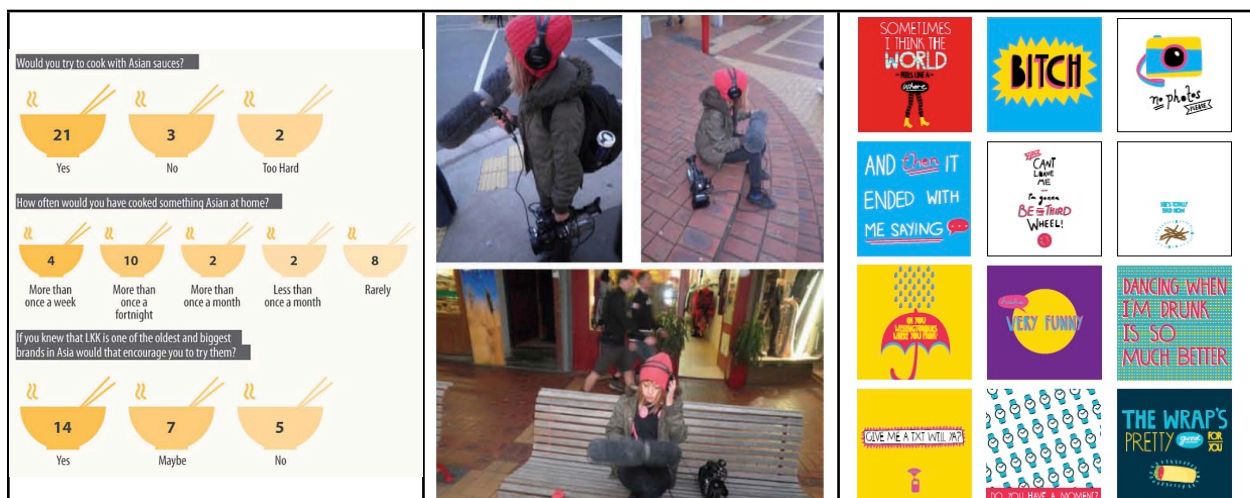


Figure 2 : Exploration. A survey, recording street conversations, and the graphic illustrations of those conversations.

Ideation and Synthesis

Following the exploring stage comes Ideation and Synthesis. The purpose is now to look at answering some of the questions posed by the topic and revealed through the exploration. Testing is encouraged at this level, and several iterations of design suggestions are likely. Unlike the exploring stage, the students are now trying things out: they are not just seeking, they are now suggesting. Similarly to all stages, student activity at this point is widely varied. Some may be trialling super-thick arm bands that demonstrate the disability of arthritis, (Figure 3) whereas others may be testing colour theory extremes on labelled jars. This is an explorative stage, and while suggestive of solutions, the aim is to find, through iteration, where the answer may lie.

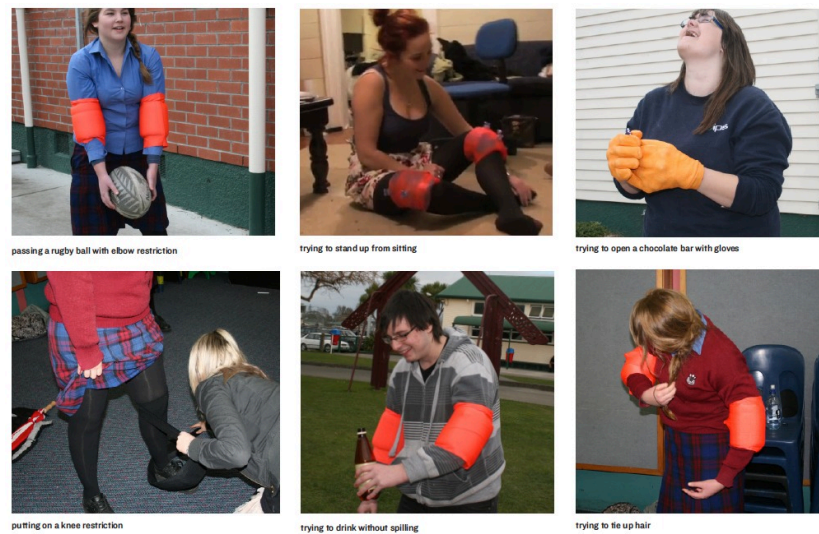


Figure 3: Students experience the disability of arthritis.

Presentation, Reflection and Execution

Two weeks prior to the end of the course, the students present a research-style poster. This poster describes their topic, their explorations and experiments, and suggests design directions for further work. The poster presentation provides a valuable assessment point and a date to conclude the design exploration – ideation – synthesis process. Following the poster presentation there is one final step before the course concludes; that of a written reflection document. As described by Schon (1983), reflection allows for the entire process to be evaluated, discussed, and revisited. In the following semester, students resume the design journey, continuing with synthesis, evaluation, testing, implementation and prototyping.

Summary

In the School of Design we are finding that this way of working encourages energy, enthusiasm and a mature level of independence. The stronger students tend to surge ahead, adapting their processes as required. The less strong students require more intervention and guidance from supervisors, although once they find a process that suits them, tend to gain motivation and move through their project successfully. Supervisor sessions are a mix of team brainstorm, reflective group critiques, and one-to-one advising as required. Working in teams is encouraged, and used for all group brainstorm and discussions, but is not enforced for project implementation.

Of course, it is natural that a design process would work successfully in a design school. Does this approach work in other disciplines? When the visual design attributes are taken away, what is left is a design thinking process. Most of the projects are not specifically visual design problems. Although our students solve them in a visual design manner, these topics are simply problems that need a solution, and the design thinking approach, regardless of the discipline, offers unique, creative and innovative solutions.

References

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Figures : All examples are from the program Visual Communication Design, in the School of Design, Massey University, Wellington, New Zealand

Figure 1: Left: Course stages for the course Visual Communication Design Research and Development

Mid: Group work mind map

Right Group work mind map

Figure 2: Left: Daven Lim, Advertising Major, 2011.

Mid: Ly Nguyen, Digital Media Major, 2011.

Right Lisa Martin and Natahsa Godetz, Digital Media and Advertising Majors, 2011.

Figure 3: Lisa Martin and Natahsa Godetz, Digital Media and Advertising Majors, 2011.