

COLLECTION

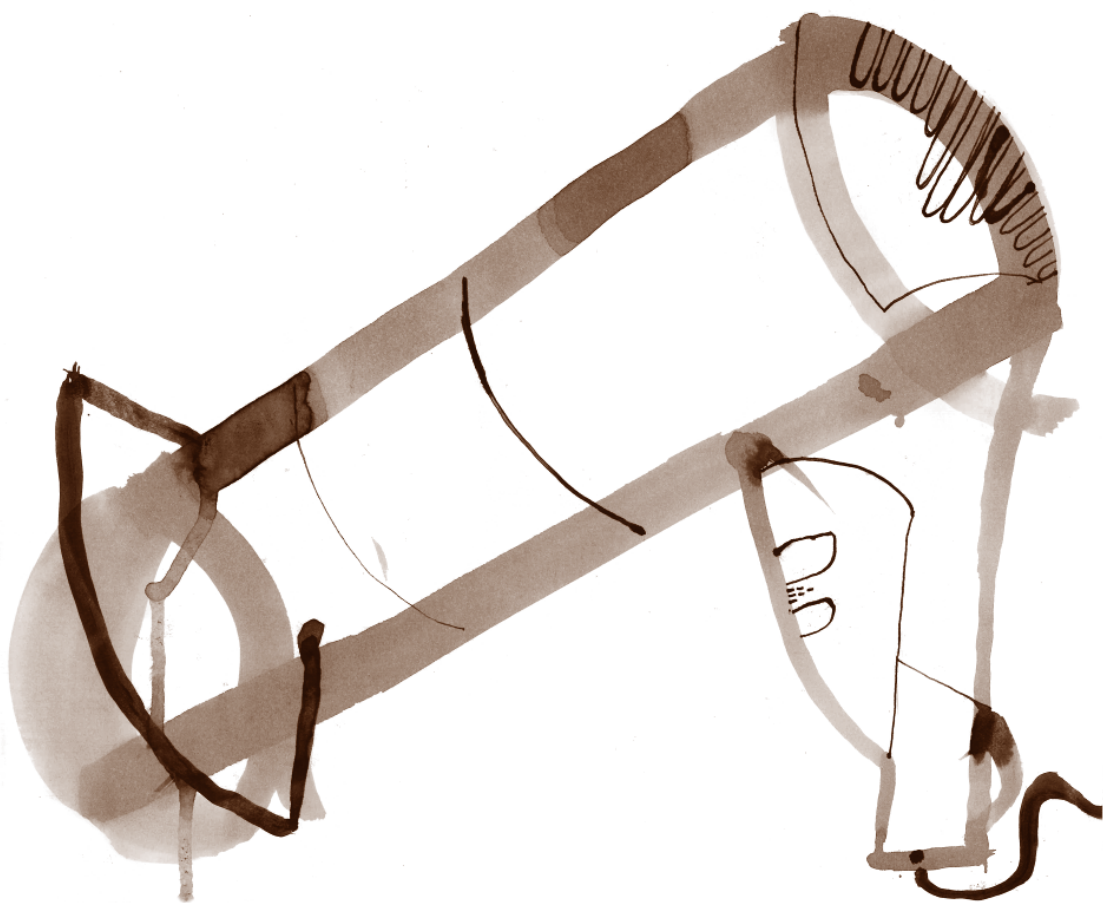
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Educating Designers for Embedded Creativity

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Educating Designers for Embedded Creativity

Abstract

This paper describes the key ideas behind a new Open University course in Design Thinking.

The paper shows how the creative skills of students can be consciously developed, and deliberately applied outside of the creative industries in what are termed 'embedded' contexts. The distance learning model of education pioneered by The Open University requires careful integration of self-study learning materials, especially for online environments, and especially for teaching design. The paper notes that it is the diversity of Open University students from a wide range of backgrounds and ages that provides the creative engine for an online design course. However, as with face-to-face design courses, that engine still requires regulation through the practice-based expertise of design tutors. The paper concludes by noting the success of the course in catering for the market in embedded creativity, suggesting that in the future many courses will take a fundamentally more cross-disciplinary approach to design education¹.

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Educating Designers for Embedded Creativity

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Introduction

One of the main findings of a 2008 National Endowment for Science, Technology, and the Arts report on the UK creative economy was that: “more people work outside the creative industries than inside them”². Based on census data collected in 2001 the report identified 1.9 million people (7.1% of the UK population) in ‘creative employment’. This figure breaks down to the number of people in the creative industries being 552,170, the number indirectly employed by the creative industries – for example in accountancy or business – 690,641, and the number outside of the creative industries, ‘embedded’ in other industries being 645,067.

If this market for ‘embedded’ creativity is equally as big as the market within the creative industries we might speculate that an equal proportion of graduating students would go on to work in this ‘embedded’ mode. In turn, however, this raises the question as to why we primarily educate designers in specialist areas – product design, graphic design, interactive design – when it appears that at least half will not go on to practice in those areas.

The argument for the productive application of design and creativity methods to a wider range of work-based situations has found traction in both business schools and forward thinking design schools through the area of ‘design thinking’. The main thrust of this approach is to show how using methods of design can add value to a business³. There is, however, an alternative approach

to design thinking that places less emphasis on the benefit to business and more on designing as a way of empowering a wider range of ‘non-designing’ people that goes beyond business⁴. This distinction could be crudely characterised as the difference between indirect change

– design and business becoming more efficient in getting people to consume to enhance their lives,

and direct change – empowering people to enhance their own lives directly through designing. Broadly, this is the approach that The Open University has adopted in a new course titled ‘Design Thinking: Creativity for the 21st Century’. This paper describes key ideas underlying the new course in Design Thinking and brings together research showing the impact it has had on students and staff. A final discussion considers the potential of producing designers specifically for embedded contexts.

Teaching Design at a Distance

Three recent developments, all dependent on the ubiquity of the internet and increased broadband speeds, have made a different kind of design course possible, allowing the Open University, a distance learning institution, to not just teach students *about* design, but to teach them *to* design. Importantly, it teaches them to design in ways that are difficult to teach in a face-to-face institution, and means they are naturally learning the skills of embedded creativity.

The first development is of a more social creativity. Web 2.0 has brought together people in ways amenable to demonstrating creativity through ‘usable’, configurable and media-rich websites. For example, the photo-sharing website Flickr reveals a huge range of approaches to photography, from the amateur to the professional, that combine and influence each other in a creative social network.

The second development is that the distinct disciplines of design have become more ambiguous, blurring boundaries that were once distinct. Effectively presenting product portfolios online, for example, now means that an understanding of graphic and interaction design is necessary. This means that design has become more oriented towards communicating design possibilities rather than producing objects that fit into well-defined categories, be they buildings, vehicles, products, sounds, or fonts.

The third development is that conventional design education has become more ‘distanced’. Students are spending more time working at home, sending in their work electronically, and communicating online with fellow students and staff. The studio-based educational model of the

² Higgs, P., Cunningham, S., Bakhshi, H. (2008) “Beyond the Creative Industries: Mapping the Creative Economy in the United Kingdom”, NESTA Technical Report, <http://www.nesta.org.uk/library/documents/beyond-creative-industries-report.pdf>.

³ Brown, T. (2008) “Design Thinking”, *Harvard Business Review*, June, pp 85–92; Brown, T. (2009) *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, Collins Business; Lockwood, T. (2009) *Design Thinking: Integrating Innovation, Customer Experience, and Brand Value*, Allworth Press, US; Martin, R. (2009) *Design of Business: Why Design Thinking is the Next Competitive Advantage*, Harvard Business School Press.

⁴ Ambrose, G. and Harris, P. (2009) *Design Thinking*, Ava Publishing.

past is slowly being eroded as design education progressively becomes more of a virtual activity.

These developments present problems for a design education premised on the transmission of expertise through face-to-face discussion between teacher and student over a progressing design—an approach beautifully described in Donald Schön's seminal book *The Reflective Practitioner*⁵. At the heart of reflective practice, Schön suggests, and arguably at the heart of creative practice, is the process of framing and re-framing; being able to see one thing as another. An expert practitioner is able to 're-frame' a problem so a student can both move forwards in the process of reaching a solution *and* understand the importance of framing and reframing itself. How can these two forms of learning still take place when the amount of face-to-face discussion time is diminished?

A possible answer to the question, and one that builds on the three developments outlined above, comes with the new course in Design Thinking offered by the Open University. Rather than adopting a reflective practitioner model of design education, a one-to-one transmission of expertise or knowledge, the course adopts something that we might refer to as a *social* practitioner model, where expertise comes from a diverse peer-group of students working in online environments. The word 'diverse' is important here in that it suggests a wide range of expertise and experience that can potentially feed into the design process. This aspect of the new course, combined with the traditional features of an Open University education—self-study course materials and support from a regional tutor—provide the basis for a different kind of practice-based design education.

Design Thinking: Creativity for the 21st Century

In February 2010 The Open University launched 'Design Thinking: Creativity for the 21st Century', a 60 credit first-level course or module. During the first presentation 355 students, 18 based outside the UK, studied part-time for 36 weeks, sending in a portfolio of their design work for their final grading. Table 1 shows the age profile of students who registered for the course. These students were supported by 16 regional tutors. For the second presentation in 2011 the number of students

had increased to 555, with an additional 8 tutors recruited.

Table 1.

Age Profile of students completing Design Thinking

AgeRange	Number of Students	%
Under 25	76	21
25 - 29	63	18
30 - 39	100	28
40 - 49	82	23
50 - 59	27	8
60 - 64	4	1
Over 65	3	1
Total	350	100

At the beginning of the course students receive a creative welcome pack through the post (figure 1). This is designed both to provoke their natural creativity, by asking students to play creatively with familiar objects, and to promote early engagement with other students doing the course.

The educational environment of the course consists of three tailored elements; online self-study materials, an online design studio called OpenDesignStudio, and software for completing design assignments called CompendiumDS. This paper details the first of these elements below, as the self-study materials illustrate the conceptual basis of the course. Interested readers are referred to Lloyd⁶ for a detailed description of the latter two elements. All three elements are closely integrated to provide a coherent and complete learning experience for the student.



Figure 1.
Creative Welcome Pack

⁵ Schön, D. (1983) *The Reflective Practitioner*, Basic Books.

⁶ Lloyd, P. (2011) "Does Design Education Always Produce Designers?" In Bohemia, E., Borja de Mozota, B., and Collina, L. *Proceedings of 1st International Symposium for Design Education Researchers: Design Education Research, Cumulus/DRS*, Paris, 18-19 May, pp 210-227.

Self-Study Materials

The online self-study materials are presented within the Open University's Virtual Learning Environment (VLE). This is essentially a website that brings together different kinds of learning material for students to study on a week by week basis, for example academic concepts, practical skill development, activities for students to do, and course assignments. Figure 2 shows a screenshot of the course home page where the course content is structured in a prescribed order. This roughly equates to 15 hours of study per week for students.

There are four key concepts underpinning design thinking that are taught to students, both in theory and in practice, as they complete the course:

1. Problem-framing.

This is the idea that problems have to be defined at the correct 'level', independent of design discipline, before appropriate means of solving the problem can be identified. This is perhaps equivalent to saying that the solution to a product design problem isn't necessarily a product. The idea of problem-framing at different scales is reinforced by the four-block structure of the course which looks at themes of self, others, society, and world.

2. Productive dialogue.

Perhaps the most important aspect of design thinking is engaging in a *productive dialogue* as a way of progressing towards a design proposal ('proposal' is used here very deliberately in place of 'solution', as it suggests something incomplete, and open to further dialogue and development). Productive dialogues, for example over sketches and prototypes, are essentially a way of learning through doing. They naturally take place between people, but one can also think of a dialogue occurring with the self or, as Schön⁷ terms it in 'a reflective conversation with the materials of the situation'. A further aspect of a productive dialogue is the idea of 'play'; proposing something simply for the sake of finding out where it will lead.

3. Quiet design.

It is continually emphasised to students that design thinking is something that is all around them, in the many objects, environments, and organisations that Rich Gold refers to as 'the plenitude'.⁸ Quiet design refers to the tangible and intangible things that don't stand out as being 'designed' at all. Indeed, it also suggests that design can be about taking away things, rather than producing more things.

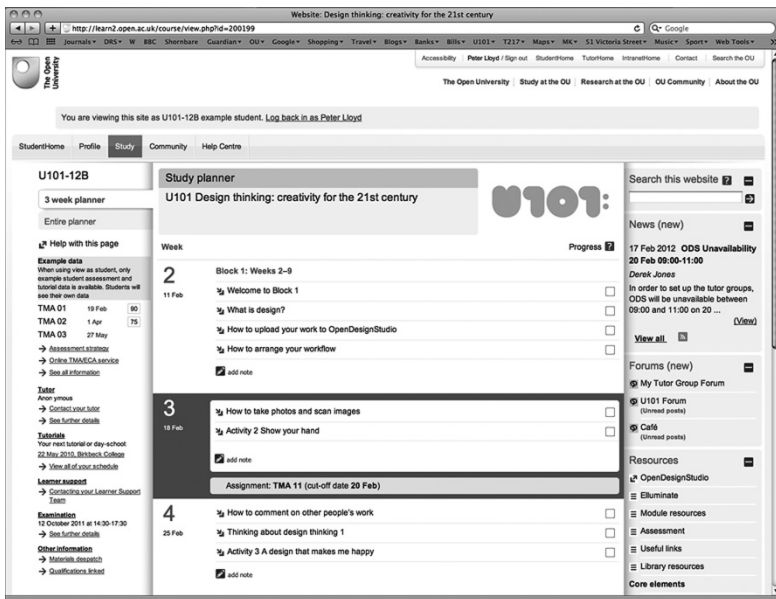
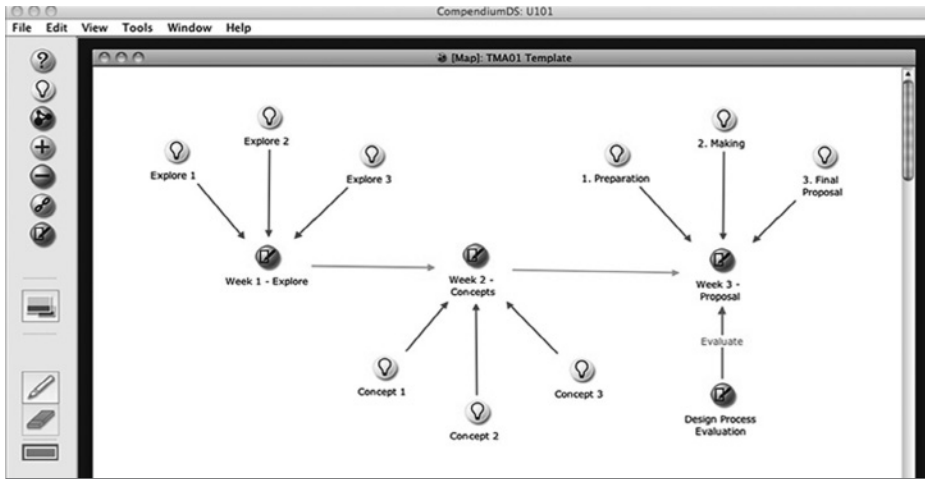


Figure 2.
Screenshot of the U101 self-study homepage

⁰⁷ Schön, *op. cit.*

⁰⁸ Gold, R. (2007) *The Plenitude: Creativity, Innovation, and Making Stuff*. MIT Press.



4. Using expertise.

The collaborative aspects of design thinking are emphasised by considering the overall role of a designer as someone who can utilise the expertise of others in solving problems; someone who can marshal and manage resources, not necessarily someone who has a wide range of particular technical abilities or familiarity with a certain piece of software.

All four concepts focus on the more general aspects of designing, drawing on a number of different design disciplines for examples. In this way the student is able to build up skills independent of design discipline, skills that are valuable in an embedded context, and that also draw on the specialist expertise and experience that students bring to the course.

For example, one student, working on a problem that they'd framed as 'book storage and retrieval', proceeded to produce a prototype and uploaded an animation of that prototype to OpenDesignStudio, the online design studio environment. On coming across this prototype, another student, who worked as a librarian, was able to provide detailed information about her experience in helping to develop the prototype. That discussion, available for all to see and typical of many other discussions, has valuable consequences: it provides an opportunity for the tutor to emphasise a learning point, it provides an opportunity for other students to contribute, and of course it provides an opportunity for the first student to develop their design prototype.

Figure 3.

A knowledge mapping environment for design thinking. The menu on the left of the window contains different types of nodes that can be connected together to form linked structures.

The online design studio also provides an opportunity for students to use other students' work as inspiration. Indeed, students are actively encouraged to build on the work and ideas of others as this is considered to be another essential aspect to design thinking.

This results in pathways of connected creativity, where students have taken on an idea, developed it, and that development, in turn, has been taken on by someone else.

Assessing Process

Bringing all four of the above concepts together is an emphasis on *process*, not product. What the course seeks to teach is design thinking, with an emphasis on the 'thinking'. In teaching a general ability like this, one of the most difficult issues is how to assess a *thinking* process, rather than the product or outcome of that process. How can one see evidence that a thinking process is improving over the 36 weeks of the course? Students completing assignments for the course do so in a knowledge-mapping environment where different types of 'nodes' can be linked together to form a narrative of process, allowing the components of design thinking to be represented and hence assessed.

The knowledge-mapping environment is tailored for the course in that the different nodes form an iconography of the design process. For example there are nodes for ‘ideas’, ‘questions’, ‘decision points’, ‘links’, and a ‘diary’ node. Each node can have resources associated with it, for example images, or web-links, as well as notes. By combining nodes, a design process can thus be constructed that contains the reasoning – the *thinking* – for making decisions at regular points. A tutor assessing the design process can then access and assess the individual ‘moves’ that were made, without the student having to explain face-to-face what their design process was.

Figure 3 shows a screenshot of the first assignment template.

ibility is given for students to construct their own design processes. Figure 4 shows the template for the second course assignment.

The assignments themselves are general enough to complete in a range of ways, and without specialist knowledge: the first assignment is to produce a T-shirt, the second to frame and solve a self-defined problem, the third to design a game, and the forth to communicate a story about a design prototype.

As mentioned earlier, the three key elements of the course are tightly integrated. The course materials require regular uploads to the online design studio, as do key pieces of work during the design assignments. There is thus an intentional overlapping

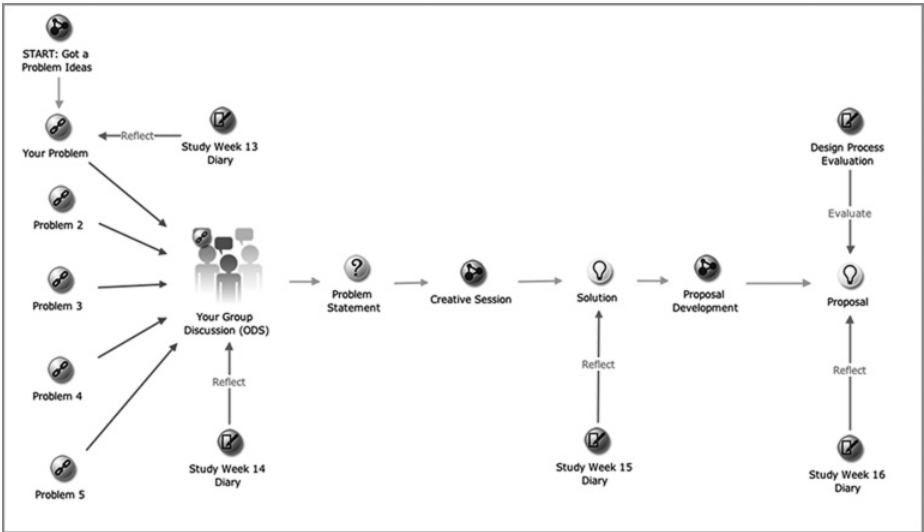


Figure 4.
Design process template for assignment 2.

One of the major learning outcomes for students completing the course – and again introduced at a level that is generic enough to be applied in a wide range of ‘embedded’ contexts – is to understand the components of the design process and how design processes might themselves be ‘designed’. The course gives students a number of design process templates to follow for assignments. For the first assignment (figure 2) this just requires information and images to be added, but progressively, over four assignments, more flex-

between theory, practice, and discussion, with a strong emphasis on using social expertise to generate individual design proposals.

Student Satisfaction

Following the first run of the course 189 students were surveyed about their experience of the course. 64 (33.9%) students responded and the results are shown in table 2.

Statement Responded to	U101	OU (Average)
Overall, I am satisfied with the quality of the course	70.7	(90.0)
Overall, I am satisfied with my study experience	72.4	(89.0)
The course provided good value for money*	63.2	(79.1)
I was satisfied with the support provided by my tutor on this course.	82.1	(85.5)
Overall, I was satisfied with the teaching materials provided on the course	69.0	(89.6)
The workload on this course was higher than I expected	37.9	(34.1)
The course met its stated learning outcomes	80.7	(90.2)
I would recommend this course to other students	69.0	(84.4)
The course met my expectations	65.5	(83.8)
I enjoyed studying this course	79.3	(86.1)

Table 2.

Student satisfaction survey: % of students answering that they definitely or mostly agreed with the relevant statement.

The results of the student survey show satisfaction with the course and this was echoed in the commentary of students describing how they'd used design thinking in the 'embedded context' of their everyday lives. Many described examples of how they'd systematically looked at a problem from a design thinking point of view, and how they'd engaged others around them in doing so. Several reported using the knowledge-mapping environment to complete tasks outside the course as a way of formalising the process they were going through.

Additionally, the regional tutors that taught on the course were surveyed. Of the 16 tutors invited to respond, 11 (69%) did. The results are shown in table 3.

How would you rate the following aspects of U101?	
Overall structure of the course	85.5
Academic content of the course	80.0
Practical content of the course	86.4
Video and multi-media content of the course	84.5
CompendiumDS	67.3
OpenDesignStudio	72.7
Online Self-study Materials	81.8
Course Assignments	79.1

Table 3.

Tutor course-content survey. Responses were on a 100 point scale with 1=poor, 100=outstanding.

The results in table 3 indicate that, in general, the tutors supporting the students were very positive about the various features of the course. Of note particularly are high responses for the course structure, academic content and practical content, indicating that the course is both coherent and balanced.

Of the sixteen regional tutors employed to tutor the course ten (63%) were entirely new to the Open University and to distance learning. What is remarkable is that eight of the top ten tutors, measured in terms of student retention, were all 'new' tutors. Table 4 shows the average retention rate achieved by 'new' tutors and 'old' tutors.

Tutor Experience	Retention Rate (%)
'New' Tutor	70.5%
'Old' Tutor	55.5%

Table 4.

Average student retention rate by tutor experience

Table 4 raises a question related to design expertise. Seven of the ten new tutors were practising designers, from a range of disciplines, and this seems to have played a role in keeping students interested in the course. It turns out that the experience of the studio tutor, so valued in face-to-face design education, is also vital for design education by distance.

Discussion

In the introduction we discussed the main approach to making the subject area of design more widely applicable to areas outside the creative industries. This was to adopt more of a business focus to the design curriculum, emphasising, for example, how design can be used to solve management problems as well as improving product and service delivery. The paper also outlined a second approach, which was to give a more diverse group of people the tools to think creatively, developing their confidence and helping them to engage with the world around them in a productive way. Crudely put, the first approach emphasises design as a way of increasing profit for business, while the latter emphasises design as a way of empowering people more generally.

The new Open University course in Design Thinking described in this paper has broadly followed the second approach, drawing out the natural creativity of a diverse range of individuals and helping them to shape and sharpen their ideas in the world around them. This approach exploits the unique diversity of the part-time Open University student population. With many students already employed in the workplace, the design thinking skills that they have learned in doing the course can be directly applied to a business context, lessening both the need to become qualified to design before practicing as designers, and the need to consume some product or service to fix a solvable problem.

This model of design education is perhaps not suitable for many academic schools of design, with more homogenous cohorts of students, but it could point the way for possible change.

Accepting students from a wider range of backgrounds and, importantly, drawing on those backgrounds directly in teaching, could lead to designers having a more fundamental impact on society outside the creative industries. Design education is a curious mix though. On the one hand it is a

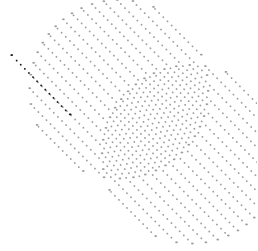
subject that fosters and demands creativity and innovation from students, while on the other it is resistant to the very creativity and innovation espoused. Traditional design courses still hold at their heart a discipline-based, master-apprentice approach to learning with any radical deviation from this viewed as a debasement of design values. Design education is largely still the final stage in a development process whereby creativity is en-

couraged in young children, repressed in teenage years, and then professionalised in higher education, a process made explicit by Ken Robinson⁹.

Does this type of design education produce designers? This was a question asked by the course's external examiner who, although impressed by the quality of the student work produced, was keen to emphasise that the students passing the course shouldn't think of themselves as designers. The external examiner was right, although their claim as to what exactly constitutes a fully educated 'designer' remained unarticulated at the time. Design Thinking is a first level course and no programme in design education would claim to have produced a 'designer', whatever we mean by that term, after only one year of part-time study. However, it does raise an interesting issue about courses teaching design subjects in what we might term 'non-traditional' ways: outside of studios, with little face-to-face contact between students, and with a tutor distanced from the work of the student. Could students graduating after a design education on this basis be termed 'designers'?

The question, of course, depends on what we mean by the term 'designer'. Do we mean someone who is steeped in a traditional design discipline or do we mean someone who is able to solve problems in particular way? Traditional design education, I suspect, produces more of the latter than might be admitted. Adding more business-based elements to traditional design courses, or conversely adding more design-based elements to business courses, is a way of making the skills of designing more generally applicable, but the Design Thinking course has sought to go much wider in teaching and applying the skills of designing in embedded contexts.

⁹ Robinson, K. (2001) *Out of Our Minds: Learning to be Creative*, Capstone.



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