

The design studio as liminal space

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Introduction

This presentation outlines a reappraisal of design studio teaching at level 4 using the idea of 'threshold concepts'. The relevance of this idea is demonstrated through the adoption of three new strategies. It is the outcome of research into teaching and learning practices in design studio at University of Westminster.

The current approaches to teaching design studio centre on the tutorial and the crit (or presentation). These have become the orthodox models of teaching and gain credence from both antecedents and more recently the model of architectural teaching that seeks to mirror the practice-based learning. This model has been heavily criticised- as based on superficial parallels and embedding poor practices when qualitatively assessed by teaching and learning benchmarks.

Design studio teaching is a discipline specific approach that has largely avoided academic scrutiny as a form of pedagogy. Examining studio practices from a teaching and learning scholarship perspective can be very revealing however. In particular, we can examine our teaching through our students' eyes: what are they doing, how are they learning, where are they having difficulties and how do they overcome them.

In the context of a 'stuffed to the brim' curriculum can we identify the key nuggets of learning that will unlock new ways of seeing for the student? These are not likely to be knowledge based: Meyer and Land's research calls for an identifying, agreeing and sharing of what they call 'threshold concepts'.

The research engages in this process and examines the implications for design studio teaching and learning practice.

Extensive research on working with threshold concepts in other disciplines demonstrates that a student's grasping of a threshold concept brings a transformation of their understanding of the subject, and furthers their progress towards self-directed learning. We can learn from this research, particularly in allied fields of engineering and design. It has provided the basis for a number of initiatives described here.

The outcome of this research supports a clarifying of the curriculum to identify threshold concepts and troublesome knowledge; a need to focus and innovate teaching and learning to achieve positive outcomes in these areas, and a need for the studio environment to actively hold students in their liminal state- this means an improvement of physical space and its extension in virtual form.

Threshold concepts in design studio

So what's missing from design studio teaching? A good first step would be to focus less on what we *do* as tutors and instead consider the effectiveness of our teaching: We need to understand the challenges of learning from the student's perspective. Shuell explains that "what the student does is actually more important in determining what is learned than what the teacher does" (Shuell 1986) (p429).

The parallel drawn between design studio and the professional office of the architect has been held up as a means of understanding design teaching as a form of reflective practice grounded in professional practice (Schön 1983, Schön 1985). This view located today's architectural education as an heir to articulated pupillage system and so presented it as a natural and 'tested in practice' form of teaching.

A study of existing research into studio tutorial teaching reveals that whilst purporting to be student centred, its effectiveness is limited without prior disciplinary knowledge. For the student, the fickle, elusive tutorial is the single most useful source of knowledge and feedback (Webster 2004). Dependency on the tutor limits the development of a community of learning and militates against the development of metacognitive skills.

How might we better our role as discourse guides? And furthermore, how might we better

identify the key skills and concepts that students struggle to master.

Clearly we face a daunting task given the lengthy nature of our proscribed curriculum: Eleven key criteria at RIBA Part I, helpfully broken down into a further list of thirty-three points: no hierarchy and no recognition of fundamentals. We need a means to identify the transformative elements of this curriculum: concepts which once understood allow arrays of knowledge to fall into a meaningful structure.

It is worth noting that existing studies of our prized disciplinary teaching methods, notably by Gurung, Chick and Haynie (Gurung, Chick et al. 2009) acknowledge the uniqueness **and** completeness of our model of teaching and learning. Their study gives good reason for others to explore our signature pedagogy, but little by way of scrutiny from a teaching and learning scholarship perspective.

This research questions the entrenched signature pedagogies of architectural teaching by accepting that the conveying of disciplinary knowledge is not only means of achieving successful learning outcomes.

Meyer and Land state the importance of the identifying, agreeing and sharing what they term 'threshold concepts' within disciplinary knowledge (Meyer and Land 2006). In brief, threshold concepts are those difficult to grasp, yet central ideas that once mastered have a marked effect on how the student sees all subsequent learning. They are transformative at an ontological level, but once grasped the struggle of mastery is quickly forgotten. Moving through such a threshold allows the student to make connections that were previously hidden and to unlock new meanings.

Listening out for threshold concepts

How can we identify threshold concepts in design studio? To the learner they are likely to be the awkward, contrary or counter-intuitive moves that are cause anxiety and uncertainty. They may challenge common sense views or involve challenges to personal values. The struggle to overcome the barrier may lie not so much with the complexity of the concept as with the change in outlook required by the student in order to progress.

For most tutors it will have been many years since their own rite of passage through design studio. Furthermore, the difficulty of a threshold concept will be quickly put behind a student as they forge ahead. So we cannot rely on our own memory of difficulties and triumphs of these thresholds.

This leads me to discuss the first strategy we adopted: identifying threshold concepts by listening out for trouble. We may feel that our teaching invites regular feedback- module feedback, NSS and so on. These all give us a general sense of, 'are we doing okay?' But we are looking to ask 'did you get that', 'are you still confused?' or even more generally 'what's troubling?' We can be assured that there will always be students who can stride across thresholds but however large a proportion these students represent, we cannot overlook those that struggle, not least because they represent the distressingly large number of students on courses of architecture who fail at first attempt.

I will now summarise the first and simplest listening out strategy that we trialled. The end of a workshop session provided a useful moment to poll students. Each student was given a post-it note and was asked to write on it two responses: 'From the session today, what did you grasp and, what's still a bit confusing?' No long winded form or set of boxes to tick- a simple, quick, rough and ready snapshot in a form (the post-it note) reminiscent of a reminder, memo or shopping list. The student's even self gathered them together at the end- stacking them up in a neat satisfying pile. The session in question involved a collage workshop, with a tutor demonstration followed by student practice and concluded with a twenty-minute exhibition of the works achieved. Students then peer assessed it by posting a note with their name against the work they felt had worked most successfully. Some works attracted many notes- others few. The studio filled with the loud buzz of students' conferring- justifying their choices, arguing their case. This final step sought to remind students that whilst their drawings grow from personal values and engagement, they are ultimately read cold by others. The students could quickly draw on what was working and reflect on where they had struggled.

The post-it notes provided a valuable insight into the day- giving a picture of what they saw their successes to be, and what they struggled to

achieve. Specific difficulties included problems understanding how to integrate two images using perspective and problems of sourcing images. I had intended to make a summary of the session for online reference, so the feedback helped shape this, focusing on what I had thought be a fairly straightforward aspect of the technique. It involved identifying the horizon line in an existing photograph or painting and matching it in with the horizon line and vanishing point of the emerging collaged image. Areas where I had imagined trouble – creative endeavor, getting started, spatial depth and so on – were not worries for these students.

Here we have identified a threshold concept through listening to students- focus can now be given on providing multifarious and accessible guidance to them.

I have often listened to tutors complain during marking moderation that students up to final year undergraduate level make simple but fundamental errors: *surely they say, such basic principles have been taught over and over?*

These students may have been taught but have not learned. And the reason for this, I would argue, is that these key elements of learning have been buried in amongst a whole welter of other seemingly vital pieces of knowledge. The follow up online summary from the session described above was specifically focused: structured as a one-to-one tutorial with an imaginary student- eager and questioning yet struggling to grasp something. Such a student is of course rare: More often than not students who struggle are the ones who keep their heads down and adopt survival strategies allowing them to keep up with coursework. They use what Biggs and others have described as 'surface' approaches to learning (Biggs 1999). The eager and questioning student by contrast uses a 'deep' approach, driven by curiosity or determination. Such a student is always looking out for conceptual structures and guiding principles.

Helena Webster, has called for the tutor to take on the role of a 'liminal servant' rather than sage. Perhaps this involves both listening out *and* looking out (Webster 2004, Quinlan, Corkery et al. 2007).

Looking out for threshold concepts

So how and indeed can students of architecture really adopt 'surface approaches'? Only by looking out for clues might we identify them.

A recent example illustrates this point. Students in the first semester at University of Westminster undertake a short project to select, measure and make scaled drawings of an object using 'orthographic projection'. This may sound familiar to tutors in similar contexts across the world. We see this as a simple first step in the acquisition of architectural skills, and one that therefore requires minimal explanation. Orthographic drawing does however embody a very fundamental principle- that three or four 'two dimensional' representations can work together as a suite of information to build a three dimensional picture of the object or building in the mind of the viewer. Linking the individual drawings together are the 'projection lines'. These allow each drawing to line up together, with dimensions carried from one to the next. They assist in making the drawings and in the reading of them afterwards: Those of us educated before the universal application of CAD talk about the elevation being 'projected up' from the plan. During our formative review of student work, we noted that for a small number of students, there were small errors in their work. The elevations and plans etc looked complete- but they did not quite align. Projection lines had been drawn in but more as a 'style' than to serve any concrete purpose. These students had not really understood the principles underlying orthographic projection and saw each drawing as a discrete picture. Closer inspection also revealed that drawings in the set didn't quite match each up either.

I would argue that these students, under pressure to achieve a complete submission had adopted a surface approach to learning. They had worked hard to make the work appear correct, masking what Biggs has described as a "genuine inability to understand particular content at a deep level" (Biggs 1999). Of course not all students had made the work *look right* in lieu of being right. A significant number had carefully edited out the errors of their colleagues; using projection to assist the correct alignment of forms, generate curves and so on.

It would be easy to blame these errors on the students' lack of care, or to overlook them as simple, unfortunate errors. Examining the teaching approach reveals a much clearer

picture. The design of the task actively denied students' deep understanding of the principles of orthographic projection and failed to emphasise the importance of understanding the principles involved.

The students, working in groups, had assigned roles to each other (you do the plan, I'll do the elevation) in the true spirit of collaboration. This immediately gave the message that, for example, the *plan* was a 'picture' quite separate from say the *elevation*. Although students were asked to collaborate on the task, the principles were not demonstrated or built into the methodology.

The learning activities did not focus on the key skills through instruction, demonstration and practice. Resources were not made available to students for revision or reference purposes. We might understand this episode as an example of a threshold concept: grasping the fundamentals of orthographic projection may seem simple to us 'experts' but the evidence (see above) suggests that students who adopt a surface approach to learning it, remain hampered at later stages of their learning.

In parallel with the hand-drawn exercise, students were introduced to computer aided drafting. The same drawings were prepared and rather surprisingly, the same mistakes appeared. Not only were students missing the practical advantages of linking say plan and elevation; they were also skating over the embodied conceptual framework.

These observations were made at formative feedback stage, so there was scope to *feedback into* our teaching. A basic instructional video on YouTube provided the background for further guidance on our Virtual Learning Environment.

In summary, where do threshold concepts take design studio teaching? A survey we carried out in January 2013 (Scott and Williams 2013) allowed us to reflect on the increasingly diverse range of teaching approaches: more blended learning and a definite focus on the 'troublesome' knowledge that might constitute our threshold concepts. In the survey, 18 separate activities were listed: Of these only 5 would have been offered in previous years. The new elements include 4 delivered wholly on-line, and 4 with on-line support.

Blended learning 'spaces' provide the means for students to help themselves: they offer what Cousin refers to as 'recursiveness', 'holding the messy journey back forth and across conceptual terrain' (Cousin 2006). Through our VLE we have monitored students accessing basic podcasts and slideshows repeatedly- through the night even!

Activities to date have included live and online studio demonstrations. The live demonstration provided feedback from students as above; 'what's clear', 'what's still a muddle'. This feedback was then used to plan an online demonstration.

These activities started an interesting trend: with other demonstrations, students planned the recording and editing themselves for, as they put it 'absent friends'; recognising with some relief that others too can be confused.

A further demonstration session has been made solely for online use by filming drawing board activity. I see this as crucial difference with past attempts to explain our threshold concepts: students, who struggle to understand through 'definitions', may more readily grasp them through observing practice.

Glynis Cousin has emphasised the subjective and shifting nature of threshold concepts: unlike key concepts they do not pertain to the facts of knowledge but to the prior experiences and emotionally engaged frontiers that charge new boundaries in learning (Meyer and Land 2006)

It should be acknowledged that the assigning of labels does not confer a permanent definition. Cultural and educational backgrounds play a key role in determining areas of confidence... and difficulty. Last year's trouble spot might be skated over by next year's cohort.

Liminal spaces for passing thresholds

Up to this point I have described the activities of the design studio, but what of the spaces themselves?

The direct physical consequences of considering the studio as having the appearance of an 'architects office' are multiple and not overt. The studio space offers very little to comfort the

student- bare walls (stripped of last years efforts- perhaps a few lingering models) give the air of an artist's studio.

The impact of Schön's design studio model has been a systematic depletion of its rich potential as a holding space for learners.

Arriving students do not know where they can sit, where and when the teaching will occur, when to attend and leave. The impact of this is not even: less confident students or those with limited family experience of HE, are more deeply impacted (Anthony 2006). The arrangement does not make students feel welcomed or settled in an academic sense.

In schools where there are no space constraints, it is often possible to organize studios such that each student has a permanent workspace. Such arrangements alleviate the problems identified but do not clarify the teaching and learning model, limited perhaps to a peripatetic tutor and a one-to-one tutorial system.

The studio needs to play an active role in supporting students through troublesome knowledge. To accompany Webster's (Webster 2004) liminal servant they deserve liminal spaces: The studio should not reflect the anonymity of the office- like the library, the art room of school, or even the V+A (as this was originally designed as a design studio resource for students!), it should be a visual feast of knowledge, ideas and exemplars.

A study by Cai and Khan's into 'hot-desking' in 1st year design studio supports this position: 'under the transient environment of the hot-desking studio it is important to use artefacts/displays wisely to sustain and distribute knowledge (Cai and Khan 2010).

In our research, how far have we moved towards this? Progress on this front is somewhat slower: however we have started with the easy wins. Students have built rows of coat hooks and a reading area: journals donated by staff (the likes of Building Design) are wired down in to chairs in a reading corner. Staff are interested in displaying examples of work on the walls: part of a recognition that every opportunity needs to be taken to engage students as peripheral participants in the discourse.

Computer stations have been relocated and with the possibility of a data projector facility we will be able to introduce structured whole group teaching (eg. talks, demonstrations, workshops). This reflects the need to consider that students are not recalcitrant employees or arted pupils, but require basic disciplinary knowledge and skills to be taught in a manner informed by current teaching and learning scholarship. The spaces need to both suggest and allow for this and celebrate past success (Duggan 2004). There is a genuine need therefore to review the appropriateness of where we teach and to become more explicit about the teaching and learning activities that come under the vague umbrella of 'design studio'.

Most of this research has focused on design studio at 1st year undergraduate level, however the work of Sibyl Coldham reflects a similar reading. She describes the criticism of the aligning of studio with practice at post-graduate level. In her research, employers and students agreed in their understanding of studio as a form of liminal space for speculation and reflection: a kind of private study for the making of new meaning (Coldham 2009). This reveals an understanding of the need for both professional and academic discourse in design studio.

Conclusion

The process of defining our disciplinary threshold concepts should be an active and collaborative one, because the definitions are relative and shifting. Cousin warns against the permanent labelling of threshold concepts- in order to keep our teaching alive to this we need to listen out, watch closely and build a supportive environment that allow successful mastery via multiple routes. The anxieties faced by students are not inevitable or to be dismissed: they are signposts to a better understanding of how they are learning.

Clarifying our approach to teaching and learning in design studio can benefit students and tutors. This research has demonstrated that greater focus on what the student does, through finding means to identify and 'hold' threshold concepts, enables us to build a revised understanding of what design studio can provide. It allows us to tread with care through our weighty curriculum, ensure deep rather than surface engagement with its key elements and provide unique learning spaces that can be justified as such.

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