‘A-Z of Sustainable Materials’: using a hands-on workshop to engage students

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Abstract

This case study focuses on the design and delivery of a hands-on workshop involving second year Interior Design students in the Sir John Cass department of Art, Media and Design (JCAMD) at London Metropolitan University. The workshop was delivered in December 2009 to 40 students studying a module entitled ‘Responsible Design’. This 13 week module is predominantly lecture/seminar based, with student participation in small-group presentations. The workshop gave students the opportunity to activate their learning, combining theory and practice to engender a deeper understanding of the complexity of sustainability issues in relation to design practice.

Context and Rationale

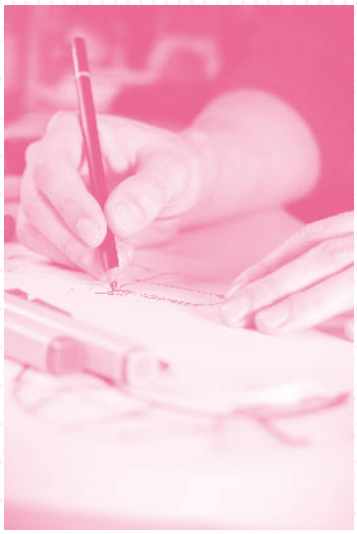
The Design subject area in JCAMD includes BAs and FDAs in Textiles, Furniture and Product Design, Graphics, Jewellery and Interior Design. ‘Responsible Design’ is currently the only module within the subject area portfolio that directly and explicitly (in title, and written aims) addresses sustainability. The module is core to BA Interior Design, and is available as an elective to students from other courses within the department.

Of 54 students registered for the module in 2009/10, 49 were studying BA Interior Design, three were taking joint degrees in Interior Design and CAD, one student was from an overseas exchange programme and one was from BA Textiles. Although the module aims and learning outcomes are adaptable and interdisciplinary, the dominance of Interior Design students results in a subject specific focus.

The delivery mode of the module is lecture/seminar based and as such relates more to contextual studies/theory teaching rather than studio-based ‘practical’ curriculum elements. However the module culminates in an individual project in which students select an element of their practical (studio-based) work, and evaluate it in relation to the sustainability agenda. This (assessed) project seeks to enable a transfer of knowledge between contextual study and practice.

In the 2008/9 delivery of the module, issues emerged in relation to the module delivery mode. Students successfully engaged with lecture content, and produced small group presentations demonstrating developing understanding of sustainability issues, however when tasked with the final project – applying this learning to their design practice – they struggled. There was a tendency for students either to make poor design decisions in order to forefront sustainability, or to make superficial reference to sustainability as an ‘add-on’ to their design idea.

The module structure in 2008/09 began with ‘the big picture’ giving background and overview to the current environmental agenda,



gradually focussing in, week-by-week, onto the role of design and the designer. This was followed by sessions covering 'greenwash', specification and materials. Students were briefed on the final project in week eight, and support from that point onwards was in the form of small group tutorials. In week 13 students submitted their final project for assessment along with a research file.

With the student project work in hand, I was immediately able to identify that students needed more active support in producing their final project – and that building skills towards this end needed to be embedded within the module structure from an earlier point in the semester.

Description of Initiative

The aims of the initiative were to address areas of weakness through the development of more active forms of delivery that bore specific relationship to the final project – enabling students to transfer knowledge between theory and practice.

In commencing this process I began by looking at the learning outcomes of the module. These were written as:

On successful completion of this module students will be able to:

1. Select materials and products on the basis of their appearance, performance and their relative environmental cost.
2. Consider inclusivity issues within a design project and prepare concepts that acknowledge the needs of the whole community.
3. Consider the energy use consequences of relevant design proposals.
4. Prepare a specification document.

Although these were considered technically accurate and relevant, and were not possible to change within the timescale, it was helpful to write some additional broader statements that were felt to embody the ethos of the module. These were:

- Establishing the responsibility of the designer – mapping impact.
- Recognising the complexity of environmental issues in relation to design.
- Establishing a personal ethic.
- Developing critical thinking and evaluation skills.

The third of these statements 'establishing a personal ethic' is of particular significance as it is an affective, rather than a cognitive, domain outcome. Explicit affective outcomes, although well explored in relation to health, medicine and educational pedagogy, are only recently – and cautiously - emerging in relationship to sustainability and sustainable design agendas in higher education.

Teaching and learning activities that have been identified as successful in supporting affective outcomes, such as problem-based learning, discussion and debate, and expert engagement are, however, often used within studio based design education (Anjou, 2007). Active reflection on the relation of studio work to sustainability, stimulated by tutors, has also been linked to a deeper routing of personal ethic towards sustainability within the student self (Morris, 2008).

Exploration of the affective domain in relationship to learning and teaching helped inform my response and initial ideas for change. I was then able to form new proposals for the module which utilised the teaching and learning methods identified.

The key addition was the introduction of a hands-on materials workshop in week nine of the module, following directly on from the final project briefing. The workshop was conceived of and delivered in collaboration with two external consultants: Rosie Hornbuckle, a doctoral candidate at Kingston University; and Tracy Sutton, a sustainability expert working in industry.

In devising the workshop we considered how best we could (in one three hour session) enable students to link their new contextual/theoretical understandings to design scenarios and their practical work. We defined the following learning outcomes for the session:

1. Students will have an understanding of the complexity of issues surrounding the evaluation of materials in relationship to sustainability.
2. Students will be able to perform a simple evaluation of a group of materials based on given application scenarios.
3. Students will be able to define key areas of impact in relation to a given material, and formulate questions to stimulate focussed materials research and enable further evaluation. »



We decided that it was important to move the workshop session away from the lecture theatre and seminar rooms and into a studio space, feeling that the associations of active involvement (moving around and doing things) were preferable to passive involvement (sitting and listening) for meeting our aims.

The session began with a review of the principles of life cycle thinking, with students contributing to a life-cycle map on the wall of the studio space. This was referred to, and added to by students and facilitators, throughout the session.

Our key activities were two group tasks based around a selection of 15 materials samples.

The 40 student participants were divided into 4 groups, each based in a different area of the studio with their own set of materials placed on a table (with chairs set aside).

Task 1

To begin with each group was asked to arrange the samples in order from the 'most sustainable' to the 'least sustainable' and to record their chosen order on an A3 worksheet which we provided. By asking the students to make a record they were forced to conclude the task with a final decision; it prevented them from changing their minds after they had heard other groups' decisions and also allowed comparison of the two tasks later in the workshop.

Each group then presented the materials samples order they had chosen to the whole class. Discussion about different choices and decisions within the ordering was facilitated by staff, with points added to the central life-cycle diagram as necessary.

Although some of the debate and discussion after the first task was repetitious the iterative process of questioning and defending decisions worked well to include quieter students, and to reinforce key issues and principles.

We had decided from the outset that if a student asked about the context (application/scenario) for considering the sustainability of the materials, we would provide one. To build this flexibility into the session we had planned two different options for Task 2:

- The students would reorder the materials in response to class presentations and further discussion of the lifecycle which followed Task 1, or;
- Having realised the importance of the application for a material's sustainability 'rating' during Task 1 discussions, the students would reorder the materials in reference to a 'design scenario' provided by us.

During the discussion of the first task, as the 4th and final group presented the order of their materials samples, one student realised "it depends what it's for". This triggered the use of the second option for Task 2 described above.

Before commencing with Task 2 the class returned to the life cycle mapping diagram and were again asked to add to it, with the new focus of how the type of material application might implicate differences in lifecycle phases.

Task 2

Each group was given a design scenario to consider, tailored around the majority subject specialism of interior design. These were:

1. Designing an exhibition stand for Earl's Court in London. It will be used for a one-off 2 week exhibition.
2. Designing a point of sale presentation device for a chain of national supermarkets to be used during a Christmas promotion for 6 weeks.
3. Designing a residential interior in the Midlands that is intended to last for 15 years.
4. Designing a display system for an exhibition that will travel globally over the next 2 years.

This task proved much more challenging than the first, with considerable debate and discussion within groups. The key 'problem' was resolving their design ideas, in terms of appropriate and aesthetic judgements, with their search for the 'greenest' material for the given application.

Students were given 30 minutes to complete the materials order and record their decisions on a second A3 worksheet.

The presentation of this task to the class again raised interesting points, including the lack of access to external information sources and



expertise needed to verify details or find out more about the given materials. We had intentionally not provided internet access within the studio as we felt that this would be a distraction from the central aim of nurturing the students' approaches and attitudes to materials evaluation rather than finding specific information about materials.

A third task had been planned that would ask students to compile a list of questions that they needed answers to in order to make a more accurate evaluation (and decision) over the materials before them. However in the event this was abandoned in favour of a facilitated discussion, and listing, of what each student had learned during the session which they might use during their final project.

Without formal assessment to demonstrate the achievement of our learning outcomes for the workshop, this final session worked very effectively in confirming the short-term success in relation to our aims.

Student comments at the close of the workshop included:

- Different forms of materials (that seem similar) have different environmental impacts.
- The context (application) of materials is key to evaluating impact.
- Don't rely on preconceptions – find out more and evaluate information – remember that you might have your own preconceptions.
- Other people's perceptions have an impact too – e.g. consumers/clients.
- Sharing knowledge is key.
- I realise that you have to research and question the material.
- This helped me to understand that you need a good range of knowledge about materials in order to make good decisions.
- Possibilities for reuse need to be considered realistically.
- Infrastructure is key to any plans for recycling/reuse.
- Durability is an important consideration.
- Materials have an eco 'back-pack' – you have to look for all of the impacts.
- Design requirements can conflict with sustainability requirements – it's complicated to try and imagine all of the possibilities for the life and end of life of your design.
- The group task really highlighted that each design scenario has to be evaluated specifically – there's no such thing as a sustainable material.
- Combinations of materials (as required for use) might mean they can't be recycled or reused.

Evaluation

This initial trial of the 'A-Z of sustainable materials' workshop was very successful. As a fairly large group, these students benefited from having three members of staff to facilitate discussions (lecture/seminar sessions are normally staffed by one or two). The different backgrounds and specialisms/areas of knowledge of the staff made the presentation and discussion elements of the session richer for us as well as for the students. During the group tasks our movement from group to group was key in facilitating the discussion and pointing students in the right direction. Some students had difficulty in relating to specific materials and needed 'feeding' with additional information about what things were and what they are used for.

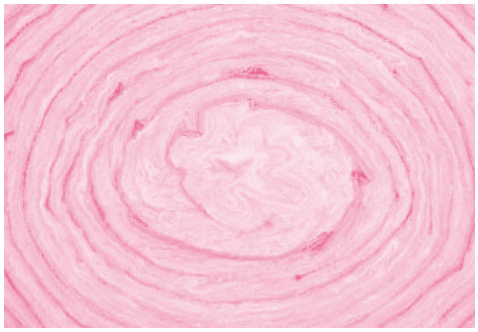
We also found that we needed to differentiate between the students' varying levels of prior knowledge, engagement and ability by adapting the level of information provided and the tasks themselves during the session. Perhaps one of the main successes of this workshop format is that participants were able to achieve the learning outcomes on a broad range of levels, so that everyone was able to get something out of it.

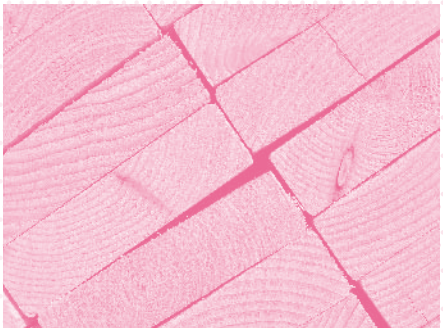
The introduction and activities were specifically designed in relation to the other components of the module – bringing elements of the syllabus out of the lecture theatre and into the studio 'mode' of thinking in order to prepare students for the task set for the assessment.

Conclusions

The evaluation of an initiative such as this reveals a tension between results that are measurable in relationship to the summative assessment of the module, and those which are not – the emergent outcomes and, arguably, the 'bigger picture'.

Without using time consuming comparisons and analysis it is difficult to get an impression of the actual impact of this individual workshop on the student project work submitted for assessment. We decided instead to focus on students' perceptions. »





This decision was led by an awareness that how we, and to a much greater extent, how students value learning is so closely tied in with the grades achieved that to encourage consideration of and focus on wider goals can feel subversive, and is certainly frowned upon by some. As the imperative for action for a sustainable future becomes more urgent we hope we are not alone in wanting to forefront the development of students with a personal ethical stance, even if that carries an associated incompatibility with outcomes based assessment within the 'holy grail' triumvirate of fairness, reliability and feasibility.

In addition to the student comments collected as part of the workshop we circulated an email questionnaire in late January 2010. Through this we hoped to get a sense of the workshop impact after the passage of several weeks – and in relation to their recently submitted coursework. Students were asked:

1. Overall did you enjoy the workshop?
2. Do you think the content and issues discussed will benefit you in your studying/degree? How?
3. Do you think it would be beneficial to include this in the course schedule for the future?
4. Please rate the workshop out of 10, 1 = Poor, 10 = Excellent
5. How well did the workshop fit with the rest of the module?
6. Were you able to use what you learned in the workshop for your final project?
7. Has the workshop (or other elements of the module) changed the way that you think about your other design projects? How?
8. Do you have any other comments, suggestions or feedback?

Although the response rate was poor (10 out of 40 students returned the questionnaire) the feedback they provided was meaningful and considered, and forms a useful basis for possible further investigation:

- Dealing with – touching - the materials made a different and very 'hands on' approach on the subject.
- It has made me think more about how I can incorporate materials that still look nice and do the job they are designed for but without having such a negative impact on the environment.
- Yes it will change the way I think about other design projects as I think it makes you more aware of materials and what happens to them once they have served their purpose.
- The workshop and this module have made me more aware of the choices we have to make as designers and also to consider and respect the environment we will design and build in.
- I think it would be very beneficial to have these types of workshops more often during the course as it makes it a good way to learn.
- I think the content of the workshop will definitely help me on how to be more sustainable with the designs I will use in my next module.
- There should be more workshops as that included in the module teaching. We all prefer visuals and hands on learning, I believe. I do.
- It was fun and informative. Always nice to step out of the lecture theatre!
- It was very insightful. I understand now how tricky it can be to design responsibly and in order to last as required.

Although these again indicate some success we do not conclude that our 'job' is done. We hope now to build on these preliminary findings through further exploration of the processes involved in transferring knowledge around sustainability between lecture theatre and design studio, with a focus on learning and teaching activities that support affective outcomes.

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