DISCUSSION PAPER: ISSUES RELATED TO CONDUCTING A GLOBAL STUDIO

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ABSTRACT
The purpose of this paper is to initiate discussion and guide a proposed workshop on issues in cross-institutional and cross-disciplinary design studios, with a focus on assessment. This paper overviews issues associated with the implementation and coordination of the Global Studio, a recent cross-disciplinary and cross-institutional teaching and learning collaboration conducted across three HE institutions. First, we outline the aims of the Global Studio. Then, we describe the initial planning and implementation of the Global Studio. Finally, we discuss some of the challenges faced by academics teaching on the course. We suggest that many of these challenges were associated with assessment.

Keywords: Discussion Paper, Assessment, cross-institutional teaching

1 INTRODUCTION

As cross-disciplinary and cross-institutional courses are increasingly introduced in academic programmes [e.g. 1, 2-4], it is important to acknowledge and discuss emerging issues associated with teaching, learning and assessing in these contexts. The Global Studio, a course conducted across three European universities: Northumbria (Newcastle, UK), Delft (Netherlands) and Napier Edinburgh (UK) [5], will be used as a case study to illustrate challenges academics have experienced in a cross-institutional and cross-disciplinary learning and teaching context and to initiate discussion on this topic.

2 AIMS OF THE GLOBAL STUDIO

The Global Studio was developed as a response to the increasing globalisation of the manufacture of products and services [e.g. 6]. The aim of the Global Studio is to provide future design graduates with skills that would enable them to work successfully in geographically distributed work groups [7]. More specifically, the following learning objectives were identified:

- Develop a broader understanding of the impact of culture and context on design processes and outcomes
- Use research on local culture to generate a design brief
- Use distance communication technologies to effectively communicate design briefs, concepts and solutions
- Provide timely and effective feedback to workgroup members

These learning objectives were in addition to skills that students would need to demonstrate in a more traditional Design Studio, such as:

- Use a design process methodology to develop design solutions
- Communicate design concepts through drawings and models
- Use technical drawings to communicate design intent

Thus, while the Global Studio retains important features of the design studio [8], it also incorporates new elements. The essential idea was to link student teams in different locations in 'designer' and 'client' roles to undertake a product development project [5].

3   PLANNING THE GLOBAL STUDIO

Like colleagues involved in similar projects, we also found that the implementation of a design projects across institutions and countries was not without complication [7]. Some of the specific challenges that arose and how these were dealt with in obtaining approval, ensuring coherency of the programme and negotiating continued institutional support, are discussed below.

- **Timing:** despite attempts to standardise credit systems and to make timetables more compatible across Europe as part of the Bologna agreement, the start of the academic year and length of term still vary from country to country. Therefore a teaching period with the best overlap including any breaks and holidays was identified. Then a master schedule was developed with weekly tasks and expected learning outcomes as well as lecture topics and supporting exercises for the three participating universities.

- **Prerequisite student skills:** There was considerable discussion around the pre-requisite skills required by students. It was agreed that students should already have basic design skills so that they would be able to communicate design intentions as drawings. It was also seen as crucial that students should prototype the proposed design. This meant that students needed to have well-developed CAD skills in order to model their designs and a good basic understanding of mechanics. It also meant that the design task was altered from a toy for children with learning disabilities to a mechanical (spring powered) kitchen timer in order to incorporate mechanical engineering factors.

- **Assessment:** The assessment needed to 'fit' with the different requirements at each of the participating institutions. While there were shared project milestones and associated outputs such as the design brief, the design evaluation report, a virtual client presentation and prototypes, each institution had separate learning objectives and assessment criteria.

- **Resources:** As one of the aims of the course was to make the delivery of distributed design studios scalable to larger numbers of students, we aimed to use existing infrastructure and technical resources where possible. The main investment was in terms of academic staff time.

- **Distribution of student numbers across institutions:** The course formed part of compulsory undergraduate teaching in Northumbria with a class of 35 students but was offered as an elective in the Master's programme at Delft. A lower than expected student uptake at this institution meant that another partner institution was needed in order to match the class size in Northumbria. Fortunately, Napier University were keen to participate and joined as partners shortly before the course commenced. Student teams were then paired up across institutions.

- **Course evaluation:** It was intended to capture learning experiences throughout the course in a systematic manner. Only part of this could be accomplished as those who were to conduct the research ended up coordinating and teaching the course with no time left for conducting systematic studies. However, two surveys on

practicing designer/client roles, virtual collaboration and use of communication technology, and cultural awareness were conducted mid-term, at the end of the project and a year later [9].

4   IMPLEMENTING THE GLOBAL STUDIO

The following section describes how the Global Studio was implemented. Student teams were formed across institutions by partnering the Master students in Delft with two teams at Northumbria University in order to compensate for the difference class sizes. (see table 1). Each team was to fulfil a client as well as designer role. The intention was to link teams was subdivision of the same 'company' yet students at Delft opted to rename themselves into a Dutch and Italian brand.

Table 1 Pairing of student client/designer groups across the three universities

Napier	Northumbria	Delft
LG, Scotland ⬌	LG, England	
Britannia, Scotland ⬌	Britannia, England	
Electrolux, Scotland ⬌	Electrolux, England	
CASIO, Scotland ⬌	CASIO, England	
	Philips, England ⬌	VICEVERSA, the Netherlands
	Breville, England ⬌	
	Bosch, England ⬌	HEMA, the Netherlands
	AEG, England ⬌	

The information exchange and communication between the distributed client and designer teams was primarily undertaken via Wikis, a groupware web-based technology. This was supplemented with other forms of virtual communication, such as teleconferencing, videoconferencing and e-mail.

There were five key stages throughout the course for the client and designer groups. The way each of these stages was actually undertaken by students is described in more detail below.

Stage 1 – Design Brief

Students were asked to undertake research on existing kitchen timer products available locally, as well as research on the preparation of food in their local geographic area. This research was used to generate a design brief for a kitchen timer intended for their local market. Next, each client group forwarded their design brief to the designer group they were working with in their partner institution. Additional information was also forwarded to the designers including: mood boards, product scenario, photographs of existing kitchen timers and information on local culture. The next step involved designer and client groups clarifying the design requirements specified in the design briefs in order for both groups to agree on a design brief document.

Stage 2 – Design Concepts

During this stage students were encouraged to undertake brainstorming and mind mapping exercises. At the end of this stage the designer groups had uploaded their design concepts onto the Wiki pages, along with storyboards and short descriptions. Next, the clients evaluated and selected design concepts based on how well they addressed the specifications outlined in the design briefs.

Stage 3 – Detailed Design
Based on the feedback provided by the clients, the designer groups developed further detailed design proposals. This included construction of 3D sketch models to test various design features such as ergonomics, size and overall product shape, and its fit within a kitchen environment. At the end of this stage the designer groups forwarded their CAD files to their clients

Stage 4 – Prototyping and Testing
The clients were meant to check the CAD files for accuracy prior to being sent for rapid prototyping. However, in many instances, they were unable to assemble a functioning prototype when they received the prototyped parts from the rapid prototyping supplier. There were parts missing, walls of parts were too thin, and incorrect tolerances were used, and this often resulted in non-functioning models. The models were then tested and evaluated against the design specifications initially outlined in the design briefs.

Stage 5 – Client Presentations
Following the evaluation of the prototypes, a presentation session was organised where the clients provided feedback to the designer groups on how their design proposal had addressed their expectations. Each group prepared two posters to summarise their feedback and these were posted onto the Wiki website prior to the presentations. This enabled this information to be shared between groups during the videoconference presentations.

5   CHALLENGES AND OPPORTUNITIES OF THE GLOBAL STUDIO

5.1   Different levels of students
The involvement of three institutions resulted in students at different levels of study and from different courses working together. While this formed a challenge in organising the course so that students could be adequately taught and assessed at each institution, it also provided benefits in terms of exposing students to different approaches and techniques.

5.2   Different disciplinary and institutional approaches
The academics participating in the delivery of the Global Studio came from different disciplinary backgrounds including industrial design, design management, engineering, and psychology. This led to different perspectives on what constituted appropriate learning objectives, content, teaching methods and forms of assessment.

For example, at Northumbria, the course was implemented in an existing cross-disciplinary Product Design Technology degree programme, which was jointly administered by the School of Design and the School of Computing, Engineering & Information Sciences. Among the differences that emerged between design and engineering staff was that design staff placed an emphasis on initial research for the design brief and concept development, whereas engineering staff were more interested in the detailed and prototyping stage of the project. As result of the re-negotiation was that the research and writing design brief stages were shortened in order to provide more time for embodiment (detailed design) and prototyping stages. Thus, there was less emphasis on examining cultural and organisational issues than originally planned.

In terms of assessment, it is generally considered good teaching practice and often required by institutional procedure to inform students at the start of the course about what is required to pass it and how assessment will be conducted. However, staff at Northumbria wanted students to 'self-discover' what was required. They were opposed to having explicit assessment criteria and thought that this would lead to a 'check box

mentality'. They wanted assessment to remain 'loose', underpinned by an understanding that this would encourage student creativity and experimentation. This sentiment is shared by other academics within the field of product design [e.g. 10, 11]. On the other hand, students in Delft were asked to reflect on their learning as part of the final report and this constituted part of their mark, which is normal practice in Delft. Neither Napier nor Northumbria included student reflections in their assessment. Another challenge was how to mark an outcome that was partly dependent on performance of another student team in a different university. For Delft this was nothing out of the ordinary as students often have to deal with external influences and varying client support in their project and the mark is seen to reflect their competence in dealing with these situations.

5.3   Continued professional development

The experience of participating in the Global Studio contributed to an enhanced recognition by the lecturers of the importance of preparation and discussion of the learning objectives and assessment prior to the course commencement. There was a lot of confusion among students as well as staff about the management of the dual 'client' and 'designer' roles, which led to the same design brief being introduced in all institutions. While the Wiki was evaluated positively in the survey, it required additional support from teachers who were only minimally more experience in using it that the students themselves.

While any kind of team teaching requires more coordination and planning, teaching a studio across institutions increased complexity in relation to course organisation and administration and reduced flexibility as to the timing of the delivery of specific content. The lecturers were not only responsible for their modules but had to be aware of how these were linked to other programmes at other institutions. This required more complex skills, including skills in collaboration and negotiation. In the initial planning, this aspect was not taken into consideration. It might be useful to provide training, prior to the start of further courses, in order that staff can familiarise themselves with various operational aspects of the Global Studio. Thus, the Global Studio provides a platform for teaching staff to continue professional development in the areas of curriculum development, e-Learning and assessment.

6   POINTS FOR DISCUSSION

During the workshop, the case of the Global Studio will be used to initiate a discussion among design teachers who have taught similar courses or are planning to do so in the near future. Possible points for discussion include:

- Conducting a Global Studio within and outside of the Bologna agreement area (EU member countries): To what extent can and should course schedules be synchronised? What can be done to better align learning goals and forms of assessment?
- Institutional integration and approval of educational bodies: What were the hurdles? How can existing examples be used to convince them?
- Preparation and staff training: What have we learned so far that should be taken into account? What are the options for organising staff training across institutions?
- Student motivation for taking part in these courses: What attracts them? What do they find most useful in terms of their future career?
- Course evaluation: Which forms of course evaluation have been used? Which insight do they provide?

- Combining teaching and research: How can a Global Studio be used to study student learning and/or distributed design processes in a model environment?

These and related question will be used to stimulate exchange between teachers and help to foster

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