

# RE-EXAMINING THE CASE FOR MODULAR EDUCATION

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## ABSTRACT

Breaking degree courses up into smaller, modularised units of study has offered students flexibility and cross-disciplinarity in their learning paths and has been widely taken up within the UK university system since first appearing in the 1960s. Deconstructing subjects into constituent components can however be problematic for holistic subjects where students need to reconstruct these individual modules back into successful whole bodies of understanding. Product Design courses is an example of this type of holistic subject, and typically uses project modules as the vehicles for students to re-unite, synthesise and integrate individual subject knowledge back into a common whole. It can however still be problematic, for example; to synchronise subject delivery with project requirements, to avoid overburdening staff and students with modular and project assessment, to balance the requirements of both theory and practice, and to provide the scheduling framework that makes organisational sense to students.

In 2013/14 course staff at the University of Brighton introduced a quasi-non-modular course format, which replaced the repetitive weekly format symptomatic of modular delivery. The aims of this change were to overcome some of the problems perceived to be related to modular delivery. The new format stripped apart traditional subject groupings and delivered subject knowledge in a block module format with a sequence mirroring the design process. Whilst educational efficacy is difficult to verify, the findings suggest that this change has been highly effective. It also revealed more explicitly some of the deeper learning structures that can get overlooked within the modular system, through which further enhancement of this non-modular system and the course have been developed in 2015/16. This paper outlines the changes and lessons learnt by the course team over this 2 year period. It is felt that these findings offer lessons not just for Product Design tutors but for practitioners and administrators across the education sector.

*Keywords: Modular education, Product Design, Higher Education pedagogy.*

## 1 INTRODUCTION

Prior to the 1960's most UK Universities followed a yearly approach to subject tuition, typically through a programme of study split into 3 terms with end of year exams. European and U.S. approaches were by contrast based on the accumulation of credits through the breakdown of a subject into discrete and distinct sub-units taught in regular weekly patterns over semesters. This modular approach offered students flexibility in their learning programmes and offered universities the chance to generate efficiencies in delivery [1]. It was first adopted in the UK by Stirling University, then largely by the Polytechnics, and from the 1960s onwards by more and more mainstream universities until becoming ubiquitous by the 1980s and 90's.

Reviews of modularity have been supportive over this period and the modular system in Higher Education is today seen to work well with contemporary issues such as supporting student enterprise and online learning. Modularity has generally therefore been accepted as the de facto educational framework, and since 2000 has also been introduced into A-levels and since 2009 into GCSE's. It is also now being asked whether universities should integrate modules with other training frameworks and credit transfer arrangements to enable national and international institutional flexibility [2]. This paper outlines the findings of the Product Design course team at the University of Brighton who for the past two years have bucked this trend, and replaced a course operated in a traditional modular format since 1997 with one operating in non-standard modular format.

## 2 RATIONALE FOR CHANGE

Like most academics, the Product Design course team have routinely explored course content and delivery through reviews of project module sizes and timings, assessment formats and pedagogic processes. These reviews have led to a continuously evolving and improving course as evidenced through rising course entry requirements, increasing levels of positive student feedback, and commendable comments via internal review and external accreditation panels. Despite this evolution and improvement however, some issues have seemed intrinsically difficult to resolve including for example; some poor student engagement at both high and low ends of the ability spectrum, difficulties in incorporating increasing knowledge requirements around the expanding scope of the subject, increasing staff workloads including the requirements to integrate research and industrial activities into teaching practice. The task of knitting modules together to form a cohesive whole also has been a recurring challenge.

By 2013 the course team felt that the process of continuous improvement had reached its zenith and that felt that further course development could only be achieved through re-engineering the course rather than through further iteration. It was hypothesised that many of the recurring course issues could be eased if subject delivery could be re-organised into contextual rather than more academically intuitive subject groupings, and delivered at times required by students rather than by timetabling constraints. This would amplify the relevance of material and increase student engagement. As a consequence the course team re-organised teaching material into subject groupings which were more relevant to the design process. These more contextual grouping were organised into a sequential, block format which replicated the design process facilitating real world significance. This model of delivery was repeated at each level. The expectation was that this structure would reduce the organisation and assessment loads for both students and staff, increase the levels of achievement and engagement, and allow staff to blend more successfully traditional materials with more cutting edge research advances.

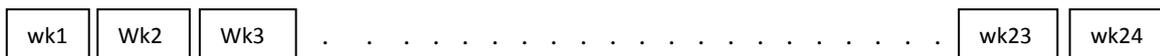


Fig 1. Modular format

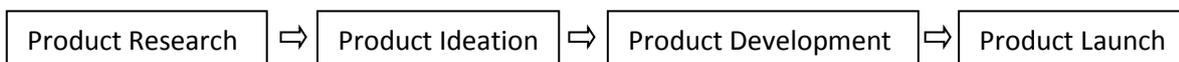


Figure 2. New Block/Process format

## 3 RESEARCH METHOD

Improvements to educational efficacy are notoriously difficult to test and objectify due for example to yearly variations in teaching quality, the ethical difficulties in establishing control groups and issues of repeatability as each year may change in character and make up. The approach has therefore been to implement and compare before and after approaches on a sample of 150 students at each level using evidence based enquiry involving a range of qualitative methods that may lead towards indications of an educational improvement in what is an esoteric and complex multi layered problem.

- i) Questionnaires were released half way through the academic year; not too early to let students see the full roll out but not too late to make them forget their original modular experiences. They were also delivered away from assessment points which may influence mood and responses and were anonymised, voluntary and randomised to avoid response aimed to please course staff. Because it is unknown how students perceive their education, or that students may not understand the pedagogic arguments, questionnaires started with quantitative Likert scale measures from 'strongly disagree' through to 'strongly agree' using closed questions to start with, looking for issues expert tutors think are important; structure, organisation, materials, learning, enjoyment, focus. These focussed questions were followed by open ended questions, uncovering main messages in verbatim to allow for depth in issues to be explored. The intention was to explore attitudes towards; impression, organisation, comparison, on line, learning, enjoyment and time.

- ii) At the end of the year, qualitative and quantitative feedback was sought for each subject area again using feedback forms. These results were supported by quantitative evidence through attendance and results.
- iii) Discussion groups were held with students after the conclusion of the year to probe issues into deeper meaning. These comprised groups of 6 students and a rapporteur discussing the course and reporting back highlights of the discussions. Prompts were used around the subjects of learning effectiveness and emotions. This phenomenological (interpretive) approach used teaching and learning experts as well as course tutors.
- iv) Similar discussion groups were then facilitated for the tutors providing an element of ethnographic action research.
- v) Finally, reliability was appraised by running through the process for a second year and cross checking outcomes across the two different year groups.

#### **4 ANALYSIS**

Mid-term analysis (i) tended to pick up on a variety of 'routine' course issues; assessment clarity and feedback for example. Issues relating to the more structural nature of the courses revolved around the intensity of a single day teaching, the difficulty of getting help when falling behind, a high and intensive workload, positive feelings towards on line material for both previewing and reviewing.

With end of year feedback (ii), first year students were the most positive about the course delivery noting the value of the material, the depth of knowledge felt to have been achieved, and the appropriateness of materials. The high degree of independent working was noted as challenging, and requests for clearer hand over between subjects as they progressed from one module to the next was felt to need improving. Level 5 (second year) students noted the subject relevance and interest but were generally more critical of the delivery noting that their felt to be a constant rush to achieve and pointing out the issues that were felt would have helped them to perform better (support, feedback). Comments from final year students replicated those of earlier years highlighting the time pressures and the need for more assessment clarity and tutor support. The first batch of final year students (2013/14) were critical that changes were made during their final year. First year attendance however remained consistently over the year at 88%, 90% for 2<sup>nd</sup> years and 86% for final years which is felt to be very high.

Student end of year discussions (iii) indicated that 1 subject per week following the design process was universally agreed as preferable to the modular approach, reaping perceived student gains in context and purpose of the material, industrial relevance, clarity of what is required and why. Most comments related to ways to support this process, typically revolving around; clarity in the layout of the year, tutorial support for the subject material, some activities outside of main project to keep up spirits and inspiration (for example mini projects or trips).

The staff end of year review (iv) noted no variations in assessment profiles to suggest that the students performed better or worse in the revised system. The difficulty in the block system of improving skills that needed longer development time, such as sketching, maths, CAD, digital media or modelling was however observed. It was also noted that with just 1 subject per week, students could no longer 'hide' from areas of weakness resulting in a number of behaviours at improving or avoiding their situation. There was also a perceived increase in pressure on staff attributed to the fact that students can more clearly 'see' the purpose of their material and its application requiring staff to get every single detail right for students to allow them to perform.

Results correlated over the 2 years, but the second batch of final years (2014/15) acknowledged the development of the course delivery (awarding 100% overall course satisfaction in the independent National Student Survey).

#### **5 RESULTS**

The consequent evaluations by the course team are summarised as follows:-

- i) Empowerment: Providing one subject per week for students, rather than many through a modular system, has reduced their organisational and assessment load, allowed them to focus more effectively on learning a particular topic, and is widely appreciated by the students leading to higher levels of attendance and engagement.

- ii) Transparency: The system makes it explicitly clear to tutors how much work to set, to see exactly what each student is doing each week and seeing how they are developing. This cohesion is often lost in the modular system where many tutors are setting different agendas at the same time.
- iii) Capabilities: In a modular system, students can pass each module with a good grade which can mean they are effective learners, but they may still not be effective subject practitioners or theorists. This applied, sequential process more closely links subject capability with knowledge and application.
- iv) Attention to detail: The process provides context and clarity to the teaching which consequently amplifies the demands of students with requirements for more support and perfection in delivery. Students are also more critical of subject material that is not directly relevant to their immediate project, but which is important for general learning and future projects
- v) Social context: The modular system allows students to work in areas they are comfortable in, but scrape through weaker areas. The block system that focuses on a single subject makes explicit any weaknesses of students. There are no places to hide and consequently attention to academic support and personal health and wellbeing are necessary. There is also a clearer need to better understand the nature of the student transiting from school into these programmes of study to understand generic weaknesses in subject knowledge.

## 6 CONCLUSION

Our experiences suggest that the educational efficacy of Product Design is best delivered through a non-modular approach. Learning empowerment, subject transparency and context, student organisation and subject expertise all appear to have been heightened. There is however a greater need for exact and precise course administration and greater student support.

There is no appetite from students or staff to return to the modular system and the course team have instead evolved further the non-modular delivery for 2015/16 for example by introducing more tutorial time to provide academic and pastoral support, and providing a split teaching day that reduces students and staff concentration loads. This split also mixes knowledge/theory with practice which provides some facility for the learning of core skills over a long period. The year-long block process has also been staggered at levels 4 and 5 to reduce the workload on tutors having to deliver and assess concentrated material at the same time, and split into smaller projects in first year to provide an easier transition from school:-

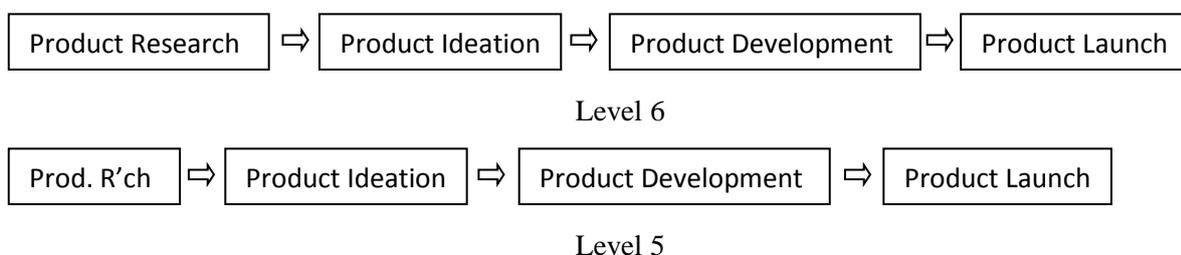


Figure 3. Staggered Block/ process format

The benefits of non-modularity are clearly more transparent in holistic subjects such as design. The bigger question however is whether the flexibility and efficiency of a modular system does actually provide enough benefit to outweigh the educational effectiveness of non-modular approaches in any subject. At the very least, there is case to be made to allow choice in the system for tutors [3]. Given that the UK Higher Education system alone is a £30Bn industry, at least the question demands to be asked more; Why is the clamour for flexibility and choice still heard above all else (including educational effectiveness) and why is modularity itself not under closer scrutiny?

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