SELF-SELECTING DIGITAL DESIGN STUDENTS.

Michael Mullins, Douw van Zyl

Keywords

Abstract

Recent years have seen the increasing use of digital media in undergraduate architectural education at UND, and which has been fuelled by students themselves taking up the tools available to practising architects. This process of self-selection may hold valuable lessons for the development of architectural curricula.

An experimental design studio offered as an elective to UND undergraduates in 1999 has indicated that the design work produced therein, most often differed remarkably from the previous work of the same students using only traditional media. In so far as digital environments rapidly provide new and strange objects and images for students to encounter, those students are driven to interpret, transform or customise that environment in innovative ways, thereby making it their own. It is clear that the full integration of digital environments into architectural education will profoundly effect the outcomes of student work.

We have observed that some self-selecting students struggle in expressing ideas through representative form in traditional studios. The question arises whether these students are 'onto something' which they intuitively understand as better suited to their abilities, or whether in fact they are see digital tools as a means to avoid those areas in design in which they experience difficulties.

Through observation of a group of "self-selectors" the authors attempt to lead useful generalisations; to develop a theory and method for facilitators to deal with specific students; and to work toward the development of suitable curricula for these cases.

The initial methods of the research include:
- Monitor the self-selection process
- Identify particular individual characteristics and learning
- Monitor the effects of hybrid digital/analogue design studios on the subsequent development of design students.
- Monitor and identify the visual acuity and symbolic language involved in the students' learning situation in terms of digital/analogue interfaces.

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Introduction

Recent years have seen a wider use of digital media in undergraduate architectural education at UND. Students have themselves selected to take up the challenge of the new tools available to architects, purchasing home or mobile computers, and presenting design programmes using digital media. The lack of preparation on the part of faculty to this development is at least partly to do with the speed with which architecture is shifting its means of production and, to a certain degree, its entrenched ways of education and evaluation (Bermudez pp.8-9).

The present shift of the context in which design is produced, and the consequential changes in design processes and outcomes, presents an opportunity to re-examine different methods of learning and teaching in the design studios of architectural schools.

The process of self-selection, where some students elect to take up 3D modelling, animation and advanced graphics of their own volition, may hold valuable lessons for the future development of architectural curricula; particularly with respect to the consequences of integrated digital studios on student design capabilities, process and outcomes.

Background

An experimental design studio offered as an elective to undergraduates in 1999 (Mullins pp.182-183) has included both the introduction of digital 3D modelling tools to students without previous experience of them, and an integration of design tasks exploring those tools. The studio has indicated that the design work produced, most often differed remarkably from the previous work of the same students using only traditional media. As digital environments rapidly provide new and strange objects and images for students to encounter, those students are driven to interpret, transform or customise that environment in innovative ways, thereby making it their own.

In arguing that students adapt their individual learning strategies to the context of their learning, Ramsden has written that: "..if there is a degree of discretion over methods of teaching and learning…students may self-select study environments which suit their preferred habits of learning.." (Ramsden p.169). The research into the cognitive learning styles of students may thus offer some direction in the future structuring of digital design studios at UND. The issues which the enquiry addresses include: are there identifiable characteristics of students who self-select digital studios? If this is indeed the case, then: how do these students benefit from digital studios, and why do students benefit from these digital studios? How may students with certain identifiable characteristics be advised?

On the basis of preliminary observation we have noted that some students self-selecting the studio display strong analytical skills, but have a history of less-developed integrated form-making or expressive skills. Digital design work produced by the self-selecting students most often differed remarkably in these respects from their previous work using only traditional media, and on the basis of faculty assessments, generally displayed higher levels of originality and conceptual thinking. The question is therefore asked: are these students 'onto something', which they intuitively understand as better suited to their abilities? Or do they in fact see digital tools as a means to avoid learning in those areas of design in which they experience difficulties.

Learning styles

Early research by Pask describes "holist" and serialist" styles, both of which he maintains are required for retained understanding of learning tasks (Pask p.93). "Illustrations, analogies, and an-

Figure 1:
LEARNING STYLES :
Comparison of Totals for
Whole-Class (31=100%),
Self-Selectors (15=100%) &
Non-Selectors (16=100%).
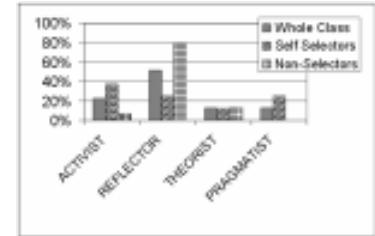
ecdotes seem to be an essential part of holist learning" (Entwistle p.61). A serialist style is described as step-by-step learning: "Facts and information are interpreted cautiously and critically, and little use is made of visual imagery or personal experience. Logic, rather than intuition, is the main intellectual instrument of understanding" (Entwistle p.62). These polarities of style correspond generally to the 'analytical/intellectual' and 'intergrational/intuitional' students alluded to in the preceding paragraph.

Leading from the work of Piaget, Kolb defined 4 cognitive styles of learning: 'concrete experience' (CE), 'reflective observation' (RO), 'abstract conceptualisation' (AC) and 'active experimentation' (AE) (Kolb, p.68). These styles are patterns in the way individuals transform "prehended" experience into knowledge. To form a clearer picture of the patterns in self-selecting students, we have chosen, on the advice of the Education Development Programme at UND, to use the Honey/ Mumford Questionnaire. This attempts to identify the learning style categories of "Activist" (A), "Reflector" (R), "Theorist" (T), and "Pragmatist" (P) (Honey p.7), corresponding closely to Kolb's definitions of the CE, RO, AC and AE learning styles respectively.

Method
The initial methods of the research include:
- Monitor the self-selection process.
  In the first semester (2000) at UND, 41 students in their 3rd year of study were given the choice of participating in one of four design studios. Only one of these studios specifically concentrated on digital design. 20 students selected to participate in the digital design studio. The two groups are referred to as 'self-selectors' (who chose the studio), and the 'non-selectors'.
- Identify particular individual characteristics and learning styles, which would signify potential affinity for design-thinking in digital environments.

Honey/Mumford Questionnaires were distributed to the class. 31 responses were received. 15 of the responses were from the self-selectors, and 16 from the non-selectors.
- On analysis of the responses, a distribution of styles across the whole class was compiled:
  Activist/CE=23%;
  Reflector/RO=52%;
  Theorist/AC=13%;
  Pragmatist/AE=13%.
  It is apparent that Reflector/RO styles predominate among the class sample, those who "enjoy intuiting the meaning of situations" (Kolb, p.68); the assimilators who rely on a "conceptual interpretation and symbolic representation" of experience (Kolb, p.40).
- The percentage distribution of learning styles among self-selectors and non-selectors was then compared to the whole class, and the following preliminary observations have been made (see Figure 1):
  Considerably more Activists self-selected
  Considerably more Reflectors non-selected
  Equal numbers of Theorists self- and non-selected
  All Pragmatists self-selected.

Preliminary conclusions
In terms of the initial enquiry, it has been interesting to note the relatively low number of 'serialist' learning-styles in the class (ie. Pragmatist/AE and Theorist/AC). However, of the total number of 8

students in these latter categories, 6 self-selected. This indicates a preliminary confirmation of the initial observation that these students will tend towards digital studios. The effect of the digital studio on their learning style remains as yet unclear.

A further observation is of the predominance of 'holist' Reflector/RO learning styles that generally non-selected. This is in keeping with their tendency to "patience….and considered thoughtful judgement" (Kolb, p.68), leading their tendency to wait-and-see. It may also be that their need for assisted visualisation is less.

The most marked differences between self- and non-selectors belong to those students for whom concrete and immediate experience (contra abstract conceptualisation) is the preferred process of knowledge creation. Self-selectors were clearly predominant in these areas.

Implications

The limitations to the research include the relatively small sample, and the fact that many students indicate a combination of more than one of the four elementary styles. The latter is considered a central aim of experiential education, in that the "combination…of all four…produces the highest level of learning" (Kolb p.66). However, the tests do allow comparisons between individuals in their relative emphasis of learning-style. The digital studios at UND stress conceptual abstraction and the figurative representation of those abstractions, but must take into account that serialist learners may be motivated to self-select these exercises to acquire other skills. A broadening of their learning styles will have beneficial outcomes in their further design work.

The research into learning styles of self-selecting students will be continued. Areas requiring further attention are:
- Monitor and identify the visual acuity and symbolic language involved in the students' learning situation in terms of digital/analogue interfaces.
- Monitor the effects of hybrid digital/analogue design studios on students' subsequent development, with particular attention to the possible strengthening of visual symbolic capacities in serialist learners.

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Michael Mullins
Senior Lecturer in Architecture
School of Architecture, Planning and Housing,
University of Natal, South Africa
mullins@gwise.mc.und.ac.za
Douw van Zyl
Senior Lecturer in Architecture
School of Architecture, Planning and Housing,
University of Natal, South Africa
vanzyl@gwise.mc.und.ac.za