

Spanbroek, Nancy and Ridgewell, Brenda (2007) To take risk in education requires time for exploration, in *Inhabiting Risk : IDEA Conference 2007*, Wellington, New Zealand, 2-6 July, 2007.

## **To Take Risk in Education Requires Time for Exploration**

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## **To Take Risk in Education Requires Time for Exploration**

Without changing our patterns of thought, we will not be able to solve the problems we created with our current pattern of thought." A. Einstein <sup>1</sup>

### **Abstract**

Student/teacher time relationships are minimised in universities due to a range of fiscal directives. However, when analysing the success of design teaching, the time required for critical analysis through making and drawing, which is recognized as a crucial aspect of the development of the design project, is limited to the student. There is insufficient time for students to explore design ideas due to the reduced teaching time, condensed semesters, and high expectation of output. The thinking time – the unmarked component – becomes evident at the final stage of the project. It takes time to analyse, research and question a design approach.

This paper presents a case study of the initiatives of an Experimental Design Studio in the Department of Interior Architecture, /// University of Technology, /// Australia. The studio addresses the perceived problems in our education system through an experimental project to encourage enquiry, inspire originality and set new standards for industry, avoiding the risk of mediocrity, one line statements and eclectic solutions. The risk here is giving the students the time to explore in a supportive learning environment.

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<sup>1</sup> [http://smarteconomy.typepad.com/smart\\_economy/smart\\_thinking/index.html](http://smarteconomy.typepad.com/smart_economy/smart_thinking/index.html)

## **Introduction**

The workers of tomorrow will need to think critically if they are to survive a constantly changing work place. As the world becomes more complex and technology continues to progress with accelerating change, employee performance will be measured more by their thinking competency than skill based abilities. Successful workers of the future must possess intellectual tools which will allow them to be disciplined, flexible and analytical thinkers, able to address and resolve complex problems. Robert Reich, former US Secretary of Labour suggests that in the future we will be faced with unidentified problems and problems with unknown solutions requiring new patterns of learning. Where information is readily available it will be the capacity to think creatively and effectively that will be considered valuable.<sup>2</sup> This situation also applies to Interior Design. Critical thinking in interior design needs to be taught and nurtured from the education stage however, in order to learn to think critically, interior design students need to be in a learning environment that allows them the time to discuss, analyse and challenge new ideas.

## **Current Design Education**

Academic semesters at Curtin University of Technology are twelve weeks long with a two week study break. The course content originally designed for a thirteen week semester is now taught in the twelve week semester. In the Department of Interior Architecture, students enrol in four years, eight semesters, of full time study. Each semester consists of 4 or 5 core units, depending on the year of study. Student contact times range from 18 hours in their first semester to eight hours in their final semester. Teaching Units range from two hours of contact teaching time for the theory units to six and a half hours of weekly contact for the design units which are studio based. All units have a one hour lecture per week followed by tutorial sessions that generally vary from one to three hours. The teaching ratio on average is from 15:1 to 21:1 but is reduced to 12:1 for final year students.

The push by Australian universities to increase student numbers as discussed in Murray and Dollery's working paper series highlights pressures both academic staff and students face. "The quality of teaching may also be determined by factors like

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<sup>2</sup> Reich, Robert B (1991) *The Work of Nations: preparing ourselves for 21<sup>st</sup>-century capitalism*. p182

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student/teacher ratios. An increase in this ratio will result in less available teacher/student contact, increasing class sizes, and less preparation time for academics (Karmel 2001)”<sup>3</sup> This push is budget driven and does not recognize students need for direct interface with their lecturers. There are now greater pressures on academic staff to increase their production of research and to take on more administrative duties, which further restricts student/teacher time. Students become frustrated due to the limited time available to them by academic staff. This coupled with the stress of full time study and part time work may result in student withdrawal from their academic programs, with students choosing to reduce their work loads so they can cope with the pressures of academic life.<sup>4</sup> This observation of staff time allocation is supported by Tsui in her comment “after all, to effectively foster critical thinking instructors need to invest extra work in experimenting with innovative teaching methods and assessment procedures. Many institutions prefer that this additional time be spent on research.”<sup>5</sup>

### **The Design Studio**

In 2006, an Experimental Design Studio was initiated in the Department of Interior Architecture. The studio was established as a reaction to the growing expectation that students’ works should reflect the professional standards of practice, generally resulting in slick computer drawings but failing to address the critical aspects of the occupation of space. It was felt that the detailed critical examination of design through questioning and experimentation was being over looked as students hurried to achieve the time consuming presentation level for their projects.

The resulting program was structured to encourage students to focus on the design process and not to be concerned with the final presentations. The emphasis was to think critically through the making of a series of models, reflecting at each stage on the issues of occupation, cross-cultural issues in design, physical, mental and spiritual issues of place, symbolism, metaphor and meaning, tectonics and their integration through design.

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<sup>3</sup> Murray, D. et al (2004) Institutional Breakdown? An Exploratory Taxonomy of Australian University Failure, pp19 & 26

<sup>4</sup> McInnis, C et al (2000) Non completion in Vocational Education and Training and Higher Education. p19

<sup>5</sup> Tsui, L., (2000) Effects of Campus Culture on Students’ Critical Thinking, p.436

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## Design Project

The project to design a Cultural Centre on the campus in the existing Architecture building was developed through a series of lectures, readings, research and photographic studies. The project aims were to encourage students: To think critically at all stages of the design process, to develop the ability to question and challenge accepted norms, to master the integration of theory, materiality and design issues in interior environments and to develop an understanding of cultural and social issues within the interior environment.

Students' creative and critical thinking abilities were stimulated through model making and drawings exploring the themes of 'eating architecture' as a design metaphor. Students explored the alchemic process of cooking and food preparation, initially capturing these processes in a series of quick sketch models. These forms explored the captured themes of cutting, stretching, folding, wrapping etc. This process involved a series of quick drawing and modelling exercises that encouraged students to create on impulse using key words as descriptors. The images of Michelle Salomone, a third year students' work illustrated below explore the sequence of forms that the key descriptor of chopping and peeling reveals. Images 1 and 2 describe the elevation and section of forms that occur through the chopping or slicing of an object and through modelling illustrates the rhythm that occurs. Images 3 and 4 illustrate the remnants of peelings within a container and how these influence a given form. Image three illustrates a reflective interior view of a metal grater whereas image 4 illustrates a plastic triangulated grater, which due to the translucency of the plastic grater allows light to penetrate introducing softness to the space that the reflective interior of the metal grater does not allow. These quick models provide the students' with the tools to examine the qualities their models create and gives them a starting point to discuss and explore possible design directions for occupation.



Figure 1,2,3 & 4. Salomone, M. (2006) IA 321 Student Work 2006

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The following images are of the second stage of the project where students were encouraged to continue to explore their design direction focusing on one particular theme. Salomone explored the notion of kneading dough which was further tested through slicing and rolling. This exploration is evident in both images 5 and 6 below where the combination of stretching and moulding results in the appearance of an aesthetic growth increasing in size and depth.

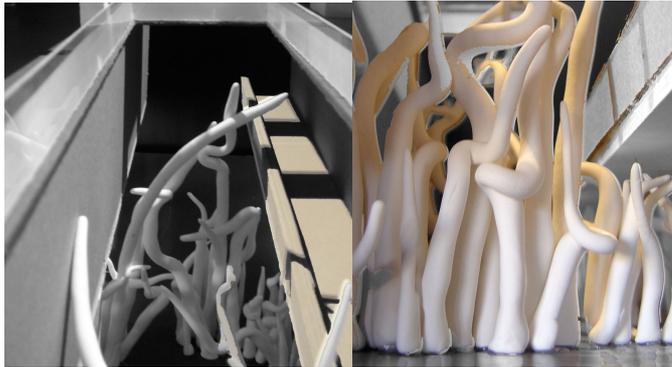


Figure 5 & 6. Salomone, M. (2006) IA 321 Student Work 2006

## Teaching and Learning Methods

The project was primarily studio-based, conducted in two sessions of 3.5 and 3 hours per week, the studio structure varied from session to session and frequently demanded more time. The studio was deliberately scheduled at the end of the day which allowed both staff and students to continue their discussions well beyond the timetable hours of the studio.

Methods of study including lectures, student readings and presentations, individual tutorials, workshops, tutor and peer reviews occurred throughout the semester. Lectures occurred in the first three weeks of the semester, these were informal discussions intended to supplement the research undertaken by students in order to provide a forum for discussion and critique.

The studio sessions provided an opportunity for students to; discuss their work with their colleagues and tutors, gain valuable analytical review on their design work and were challenged in a supportive and critical environment. Students worked on their models/drawings in the studios. It was clear that students enjoyed the materials based approach to design exploration, and frequently would return to the studio at

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the end of their classes to continue with their work. Where possible, staff made themselves available for design debate, assisting with the process of making and critical examination.

Potential outcome scenarios were discussed at the commencement of the semester for each stage of the design process, and students were advised that assessment on each submission would receive a pass/fail grade only as illustrated in the chart below.

### Assignments and Weighting

Weeks	Submission	Mark
2	Exercise 1 - Student Readings and Presentations	P/F
3	Exercise 2 - Ingredients (Initial Building Photographic Studies)	P/F
5	Exercise 3 - Entrée (Explorative Working models discussing selected design themes)	P/F
8	Exercise 4a - Main (Sectional models exploring development of design themes)	P/F
10	Exercise 4b - Main (Exploration of interior through 2 dimensional drawings)	P/F
12	Exercise - Dessert (Model of selected area at 1:50 scale)	P/F
14	FINAL SUBMISSION OF ALL WORK	P/F
15	Folio – Includes Journal/Writings + Project Work	100%

Students generally are numerically graded for each submission of design work, however in this instance, students accepted that they would only receive a pass or fail grade, and that the final grade would not be submitted until all the process work was assembled. The emphasis was on the process work, not the final submission or presentation of the work. Students were clear of their progress at all stages of the semester program, this clarity was gained due to the ongoing student development of their model work which better allowed for studio discussions, critique and reviews of their process. There were no surprises or misconceptions, students accepted the grading system and stressed their enjoyment and learning achievements from the project at the conclusion of the semester. The following images are examples of student Jenna Hogan's (2006) process work through modelling and drawing exploring the cooking themes of dipping, stretching, and ladling. The final drawing

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illustrated in Figure 11 shows a section through the building and reflects the various stages Hogan explored in this project.



[INSERT IMAGES 7 - 11]

Figures 7 – 11 Hogan, J. (2006) IA 321 student work

### Unit Outcomes

At the end of the semester students achieved the following outcomes; the ability to develop a design project beyond the pragmatic, an ability to communicate a design intent reflecting an understanding of the magic and poetry of the environment and its impact on the occupant, and an ability to express the materiality and tectonics of an interior environment through drawing and models. Students were able to resolve design problems at an informed and creative level and were able to think critically and translate findings into project work.

Tsui in her paper 'Effect of Campus Culture on Students' Critical Thinking' supports our findings as she reflects upon the time demands of institutions placing greater emphasis on critical thinking needing to devote extra time to teaching related activities and students needing extra time to learn in a critical manner than those being taught in a passive learning situation<sup>6</sup>.

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<sup>6</sup> Tsui, L., (2000) Effects of Campus Culture on Students' Critical Thinking. P436

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Academic staff who teach in creative design programs are expected to teach within a traditional education framework which generally has prescribed outcomes. However for creative design to be taught successfully, timeframes and structures must alter in order to allow staff and students to develop creative and innovative design solutions. The time required to critically explore design problems is measurable but may extend well beyond the standard academic teaching framework. This in itself can be problematic with the teaching day structured into teaching streams that require constant changes of venue and breaks in concentration. Thought processes are therefore interrupted and time constraints act as constant pressures.

Prescribed outcomes for student work contradict empirical learning, where students learn through question, exploration and discovery. The danger with prescribed outcomes within a project brief is the amount of evidential output in relation to the learning achieved. Critical thinking processes involving not only the building of competency in cognitive reasoning, but also the ability to translate competency into effective action is important to the students learning, but often in total contrast to the processes of a student submitting a minimal finished project. Minimal finished projects can be assessed to meet all the predetermined outcomes desirable within the university system. While the critical thinking process will have gained an enormous amount of learning within the processes undertaken, and is the valued component in developing thinkers skilful at analysing and evaluating information, reflecting on meaning, examining evidence and reasoning, and forming grounded assessments about facts collected from observation, experience, cognitive reasoning, and/or communication, all absolutely important in the process of learning and building good design, but not assessable unless reflected in the outcome of the work<sup>7</sup>.

The thinking time – the unmarked component – becomes obvious at the final stage of the project. The disappointment is evident in the lack of time allocated in a semester to explore, revisit, analyse and discuss a project. It takes time to analyse the form, experiment with materials, research construction techniques, and develop appropriate design aesthetics, without sufficient dedicated time these critical aspects of design become incidental.

“In contrast to the universities push to reduce student/staff contact time it is revealed that “most medical schools are moving from a traditional, lecture-based curriculum to

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<sup>7</sup> Tapper, J., (2004), Student Perceptions of How Critical Thinking is Embedded in a Degree Program. P23.

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a new “problem based learning” (PBL) curriculum that uses small group, case based, learner-centred approaches designed to stimulate lifelong learning. The issue for educators, is that this approach is more effective in many respects with improved performance of students on high stakes exams in the United States, but also more costly for educators since it requires a higher staff to learner ratio of 1:8, rather than lecture-based courses in which lecturers deliver their wares to hundreds of students at a time, albeit with a knowledge retention rate of 10 – 30%.”<sup>8</sup>

This observation is further supported by the statement made by Tsui, “Undergraduate education can become more effective by not only limiting the number of large lecture courses but also by offering more seminar courses to freshmen and sophomore students<sup>9</sup>”

### **Impact of Condensed Time Frames**

Due to time constraints and predetermined outcomes students within these university systems compartmentalise the units they study, losing the overall knowledge approach needed to develop ideas creatively. They isolate bodies of knowledge and rarely acknowledge the interaction of specific subject knowledge as they have so little time to think and assimilate the knowledge base across the breadth of their education. The inspired input of the university academic has been lost in the process of assimilation of knowledge due to lack of contact time. Every one is so involved in their own small fraction of academia that time for communication and reconciliation of knowledge has gone, academic staff have little time for collegial debate, course reviews or to explore new and better ways of teaching.

### **Surviving Student Life**

Student time for academic output is further compromised as they have to live whilst at university. Most students now work up to twenty hours a week and still expect to complete a fulltime course and lead a ‘normal’ social life. As a consequence students become experts in compromise of minimal input for maximum output.

There's nothing new about university students going to work to make ends meet. According to the most recent studies, “about three-quarters of the estimated half-million full-time domestic uni students in this country hold down a job. But these days

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<sup>8</sup> Dewitt T E, et al (2004) The Impact of the Information Explosion on Medical Education. p.8

<sup>9</sup> Tsui, L., (2000) Effects of Campus Culture on Students' Critical Thinking. P436

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it seems that students are working longer hours than ever before with some juggling two or even three part-time jobs for up to 30 hours a week. The irony is the more they work to study, the less time they have to actually hit the books. According to Rose Jackson, National Student Union Representative, 80 per cent of students are in paid employment and the average number of hours that they are working per week is 14.5. That is a threefold increase from 1984.”<sup>10</sup>

Government support for students within the economic situation of today does not provide enough monetary support for them to live adequately in any manner let alone provide the necessities of university life such as books, telephone connection, internet connection and a computer. Students are the poor cousins of the workforce of the same age, and will remain disadvantaged if we don't find a solution to provide these students with more time to think and develop ideas rather than just repeating the expected.

### **Student Learning**

‘Success in developing critical thinking requires institutions to recognise that enhancing students’ abilities to think critically is truly within their own interests because graduates who can think critically become more productive and successful alumni and citizens<sup>11</sup>’

Assigned projects are now frequently designed to give the students research and developmental time outside the bounds of the University. These resolutions are often followed with minimal input from the lecturer as the student with ideas is a lesser problem than the student without any form of resolution. Time restraints demand that the lecturer’s attention is devoted to the struggling student allowing the student with embryonic ideas to follow through the project without outside input other than that of peers, often resulting in predictable outcomes rather than exemplary design. There are always the exceptions, those academics who stay late in the day to explore design notions with enthusiastic students, or to enthuse a student to open their minds and explore the many options available.

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<sup>10</sup> ABC (2006) Students Working longer hours in juggling act, Reporter: Scott Bevan

<sup>11</sup> Tsui, L., (2000) Effects of Campus Culture on Students’ Critical Thinking P23

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### **Possible Solutions**

Creating more time for critical thinking is no longer desirable it is absolutely critical. Tuition free weeks are a time to think for both staff and students. Students using their time efficiently find this time excellent for developing their projects, consulting with lecturers and preparing for various submissions. A fantastic solution for both lecturer and students, sadly the students using the system efficiently are the exceptions. Many students need to work extra time to have enough money to meet the demands of the next weeks of study. The success of this study period is often connected to the student's financial situation.

### **Recommendations for Change.**

The following suggestions are how to make more time available for students within the current University system:

The time period allocated for project submission could be extended in the following ways; a) present the project brief during Orientation Week. b) Develop design projects over two semesters, semester one for planning and materials investigation; semester two for resolution of ideas and bringing the project to a conclusion with all the outcomes expected in a critical learning situation.

The breadth of the project could be limited so one aspect is developed well, and the student then understands how to develop the process to obtain an exemplary outcome.

The Bauhaus of Pre-War Germany was progressive in the design of machine made goods, furniture and architecture as it was in its educational philosophies. The notion of students working together with their professors on shared design projects allowed them to explore a variety of ways of thinking, allowed them to quickly learn the drawing skills required to communicate their design intent, providing them with mentors that advised them about tectonics, materiality, colour and light, but most importantly, they were able to stay focused on one design project, with a realm of activities that all played together for the one purpose of thinking critically in order to create new solutions.

“Traditional higher education programs produced workers who have specific skills within specific areas enabling a high level of problem solving constrained by their specific area of expertise. Employers now need employees who are capable of

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thinking beyond their specific area of expertise and therefore need more expansive thinkers within the workplace.”<sup>12</sup>

## **Critical and Lateral Thinking**

Effective critical thinking involves not only the building of competency in cognitive reasoning, but also the ability to translate competency into effective action. To think critically, one must have and own a willingness to be accountable for results. Good critical thinkers are skilful at analysing and evaluating information, reflecting on meaning, examining evidence and reasoning, and forming grounded assessments about facts harvested from observation, experience, cognitive reasoning, and/or communication. Those who become skilful at critical thinking are able to reach conclusions and develop solutions that generate new results. Central to the idea of effective critical thinking is the practice of thinking laterally. Good lateral thinkers always see, appreciate and analyse the forest and the trees. The central inquiry in lateral thinking is, if I do this, then what? The best critical thinkers turn their attention to innovation. They are the creative problem solvers who lead the way to the future. These innovators set the standards.

Richard Paul believes that “we can be sure that the persuasiveness of the argument for critical thinking will only grow year by year, day by day -- for the logic of the argument is simply the only prudent response to the accelerating change, to the increasing complexity of our world. No gimmick, no crafty substitute, can be found for the cultivation of quality thinking. The quality of our lives can only become more and more obviously the product of the quality of the thinking we use to create them (p. 16)...Our students deserve at least a fighting chance to compete, to rise to the challenge of the day (p.5).”<sup>13</sup>

## **Conclusion**

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<sup>12</sup> The Sonoma Institute (2006) *The Architecture of Learning Ideas*. P4

<sup>13</sup> Paul, R. (1995) *Critical Thinking: How to Prepare Students for a Rapidly Changing World*.

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Education needs to look to the global future, it has a responsibility to each and every student that passes through its doors to provide the necessary skills to survive within a competitive marketplace, if these skills are critical thinking and in order to achieve this more time is required to develop this skill, then so be it – Educational institutions must make time available for the development of critical thinkers and free up academics from “Housekeeping” to be available for debate of alternative thought and the fostering of critical thinkers for the future.

The case study presented in this paper shows that critical thinking in Interior Architecture students can be nurtured and taught through flexible time scheduling and exploration of design through staged process work. This studio approach has allowed students to step back from their work and truly question the design intention and its occupation. Where the focus was placed on the process rather than the final outcome students were comfortable in questioning each stage of their design work recognizing that this was part of the process and not another interruption preventing them from completing their work. On more than one occasion students found they had to revisit a particular design stage before their work could progress, as this was an accepted part of the studio project, students were willing to revisit their design idea's and consider their approach from different perspectives.

The opportunity to explore and discuss design through modelling, drawing and discussion has proven to be very successful in this studio. Students have responded with positive feedback and staff have commented on the strength and quality of this cohorts design work in ongoing semesters. Although the flexible time scheduling may not work for all units, it is important to note here that it is the focus on the process that benefits the student, and the learning that occurs within each stage and not the final outcome.

There are no right and wrong answers to set problems within design, in fact there may be many answers to one set problem, in this instance it is how the student is encouraged and allowed to explore the problem that may provide them with a successful learning outcome. For creative design to be taught successfully timeframes and structures must be more flexible in order to allow staff and students to develop creative and innovative design solutions.

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