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## Reflective connections for student success in an undergraduate architecture program

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This paper examines the role of critical reflection in building student success in two units of the undergraduate Architecture course at Curtin University: a first-year communications unit and a third-year architectural science unit. The study reported here was prompted by a 2010 review of the Architecture course, which introduced changes in the curriculum and patterns of teaching. The first-year 2011 unit discussed in this paper is part of the revised course, while the third-year unit in the same year followed the old pattern, except for the introduction of a reflective segment to the Science of Architecture Unit. Critical reflection, challenging commonly held assumptions, has been shown to be a valuable tool for enhancing learning. Our research – a collaboration between staff from architecture and academic communications backgrounds – found that the first-year students demonstrated greater reflectivity, albeit at a basic level, than their third-year counterparts. This surprising finding supports the premise that reflection, an order of thinking that is generally fully achieved only in adulthood, needs to be developed gradually over an extended period. In this paper we explain the context for the reflective writing exercises in each unit, present examples of student writing, and explore reasons for the variations between years.

**Keywords:** critical reflection, architectural education, first-year experience

### Critical reflection

Central to the objective of enhancing student learning in the undergraduate Architecture course at Curtin University is the concept of critical reflection, which we take to mean the challenging of assumptions that helps make us more thoughtful practitioners (Brookfield, 1987, 1995; Mezirow, 1998). This enhancement works on two levels: first, being critically reflective teachers helps us to create programs, approaches to learning and learning spaces that support and improve student success; second, promoting critical reflection among our students can help them to engage more thoughtfully with the concepts and processes they encounter in their studies.

We conducted this study in the context of a major curriculum review in the Department of Architecture and Interior Architecture at Curtin University, coordinated by Lara, which led to a new undergraduate course in 2011. The first-year program now includes the existing Communication for Built Environment unit, coordinated by Jane for several years, which incorporates a major strand of critical reflection. This provided an opportunity to consider the value of specific teaching of reflective thinking for student success, since the third years Lara was teaching in 2011 had not received any teaching on reflective thinking in previous years. This paper argues that if this pedagogic approach is adopted at the beginning of students' studies

and sustained throughout the course, their critical reflection skills are developed effectively, ensuring greater success in academic and professional development.

As this paper investigates critical reflection, and the two of us approach the topic from different disciplines, we have chosen to include our separate voices throughout, weaving in the voices of the students.

### **Jane:**

I coordinate the Communication for Built Environment unit, which Architecture students take as a compulsory, credit-bearing unit in their first semester of studies, representing 25% of a full-time load. This unit is in the tradition of academic literacy units or courses in Australia and overseas. Current research in language development argues that such units work best when embedded within the students' disciplines (e.g. Chanock, 1994; Clerehan, 2003). As a language specialist, I focus on building connections with members of the School of Built Environment, so that the unit complements and is compatible with the units they are teaching. I also work in a team of up to ten tutors each semester to teach the unit. As in most Australian universities, these tutors are sessional, and the tutoring team changes frequently (Kift, 2003). Nevertheless, the conversations I share with members of this team are essential to the success of the unit.

The focus on teaching of reflective thinking is the most challenging aspect of the unit. While a growing number of tertiary teachers have students write reflective journals, few of them teach students reflective thinking processes. The majority also focus the students' reflection on unit content alone, or – in the case of health sciences and education – on their clinical or professional practice experience. In fact, Pavlovich (2007) argues that tertiary students are not often encouraged to reflect critically on themselves and their own assumptions. In this unit, the tutors and I have worked over several years to develop the reflective writing component, so that first-year students learn to challenge their assumptions about themselves as learners and about the built environment. While most students find this difficult initially, almost all are able to identify and challenge their own assumptions to some extent by the end of their first semester. I will be working with Lara in this research project over the next few years, which will be an opportunity to see how this learning transfers to the rest of the students' course, and to continue to reshape our teaching to prepare them for reflective thinking in the context of their architecture studies.

### **Lara:**

Traditionally, reflective thinking processes, whilst seen as essential by both staff and students, are often implicit within a curriculum and difficult to recognise. A study of all Architecture programs in Australasia noted that students are expressing concern over the perceived lack of critical thinking and problem solving within their academic programs (Ostwald & Williams, 2008). My observations that follow in this paper refer to the experience of introducing critical reflection in 2011 to third-year architectural science students, who had not previously been taught critical reflection in their studies. These students are in their final semester of the Bachelors Program, and while there are two more years of study in the Master of Architecture program, for many, completion of the Bachelors program is a point at which they commence part-time work within the profession. The critical reflection segment of the unit is an opportunity for students in a science unit to reflect upon the skills and knowledge developed through the program, to

consider the responsibility of the designer, and to review units from all areas of the course. Thus students are prepared for the transition into professional life, where projects require the integration of many aspects of design, such as science, technology and cultural theory. The Masters program focuses on self-directed research and requires students to develop their own position on architecture. Sound critical reflection skills enable the students to do so successfully and meaningfully.

## Reflective practice

Many scholars in the last thirty years have contributed to the analysis and definition of reflection. The term is used in a variety of ways, but John Dewey's (1910) educational philosophies are generally cited as the foundation for most later theorising. Dewey saw reflection as involving two sub-processes:

(a) a state of perplexity, hesitation, doubt; and (b) an act of search or investigation directed toward bringing to light further facts which serve to corroborate or to nullify the suggested belief. (Dewey, 1910, p. 9)

This state of "perplexity, hesitation, doubt" is commonly seen as the vital yeast needed to start the reflective process. Boyd and Fales (1999) go beyond Dewey's two-step process to list six steps of reflection, of which the last three describe reflection as culminating in a focus on one's worldview and sense of self, which may result in specific actions:

- (4) Resolution, expressed as "integration," "coming together," "acceptance of self-reality," and "creative synthesis."
- (5) Establishing continuity of self with past, present, and future.
- (6) Deciding whether to act on the outcome of the reflective process. (Boyd & Fales, 1999, p. 106)

These later steps in the process form the basis of what Mezirow (1998) calls CSRA, critical self-reflection of an assumption, which may lead to particular actions. It is in this tradition that we see ourselves working: Jane in challenging the first-year students to consider themselves as students and future professionals; and Lara in challenging the third years to consider their own engagement in issues of sustainability.

In his conceptual analysis of Mezirow's Theory of Transformative Learning, Mälkki (2010) notes that the relationship between reflection and 'meaning perspective' – the frame within which meaning takes place – is complex, as previous experiences inform our understanding of the world and our beliefs:

Reflection refers to becoming aware of and assessing the taken-for-granted assumptions within one's meaning perspective, in order to construct a more valid belief. (p. 46)

The processes of meaning making, developing understanding and constructing belief through experience, are particularly relevant in this context. Tertiary students typically find themselves in a period of change, and for many their world is shifting and full of new experiences. Critical self-reflection is essential to establishing their own relational positions within this world. Mälkki states that assessing assumptions refers to metacognitive application of critical thinking to one's own thinking, feelings and actions, and that this can create tension, as reflection challenges the very mechanism by which meaning is made. Reflection is not a purely rational process, but can be threatening and emotionally charged (Mälkki, 2010).

Reflective thinking, particularly critical reflection, is high-order thinking (King & Kitchener, 1994; Mezirow, 1998). King and Kitchener (1994), in their analysis of studies of the reflective capacities of more than 1700 people in the United States over 10 years, found that only senior and graduate students achieved levels of thinking that could be labelled as true reflection, and concluded that learning to think reflectively is a step-by-step process that needs to be developed throughout one's education.

### **Jane:**

Our work with first-year students supports the contention that critical reflection is a highly complex process. Most of them find critical reflection more difficult than any of the other processes we introduce in the unit. Because we are working in a communications unit, we engage in teaching reflection, rather than just setting a reflective writing task, as might be appropriate in other units. It is more challenging to teach, however, than essay or report writing, because it is not possible to provide students with genre "recipes" to start their process – all students must find their own voices, which will vary from piece to piece.

We use several approaches to help them do this. The first is the reflective journal task itself – a collection of six reflective pieces written over a semester, each on an issue that perplexes them about themselves as students, or about architecture or the built environment. We book-end this journal with two pieces of reflective writing in class: in the first week they reflect on their own strengths and weaknesses as communicators, and their expectations and fears for the Architecture course; and in the last week they reflect back over the whole semester and forward into future semesters in the light of what they wrote in the first week. This secondary reflection engages students in an "ongoing developmental dialogue" (Clark, 2009, p. 220) about themselves as learners.

Our second approach is to provide them with a brief discussion of the theories of reflective thinking, and with examples from previous students, and get them to start writing from Week 1, with regular formative feedback. In this feedback we respond to their ideas with our personal reflections, comment on the extent to which the piece demonstrates reflective thinking, and suggest directions they could take in order to think more reflectively.

In the first semester we find many students struggle to "sit with" their discomfort. This may be because they have come directly from a secondary examination system that requires quick, definite answers; or perhaps it is a sign that their thought processes are still maturing. On the other hand, even adults can find this difficult:

Reflective thinking is always more or less troublesome because it involves ... willingness to endure a condition of mental unrest and disturbance. (Dewey, 1910, p. 13)

Some students, however, are willing to maintain their feelings of discomfort even at the end of the semester, and they adopt various approaches to exploring it. This first student draws on the thinking of someone she respects to help her work through her discomfort:

Joining architecture came as such a shock to my system. For the first time I was not told what to do. There was no right or wrong in art, and all I've ever known from science was that there will always be a right and wrong, not a vague in-between.

The vagueness frustrated me at first, and now at the end of a semester, it still does. Sometimes I find myself sitting in front of my sketch book, pencil in hand, with no

inspiration at all, and I just want to scream ... Maybe creativity and science just don't go together, maybe they are two separate worlds that should stay separate. But this cannot be true. When asked if creativity or intelligence is more important, physicist Stephen Hawking replied that both must come together for anyone to be successful.

While this student is not comfortable in her frustration, reflective writing has allowed her to start to ponder on it. Many of our first-year students also use the reflective writing process to ponder on their changing ideas of architecture studies. Almost all of them have their expectations of the course challenged in the first semester, and need to adapt their perspectives and learning processes in response to these challenges:

When we were given our first design assignment on Tuesday, I was a bit confused as to what we were supposed to do. Why are we studying people, culture, movement and the small things that go unnoticed in a city? Does this have anything to do with architecture? According to my simple thoughts on the subject, it's just buildings with personality and this assignment didn't make sense.

Some of them even finish the semester still unsettled and questioning, which we see as a positive stage in the reflective process.

In the light of Lara's later work with the third years on the responsibility of the designer, it is interesting that many of the first years choose to write at least one reflection on the issue of environmentally sustainable design. Their exposure to this issue is just one of the many facets of the course that surprise and discomfort them:

Before starting university, I had an anti-environment mentality. I didn't recycle much, I didn't consider how much non-renewable energy I used and most probably wasted and overall, I didn't care much about the environment. I believed that my life would not be jeopardised as I would most likely be dead before the real issues kicked in. However I've realised that my mentality and my approach to being environmentally friendly has dramatically changed. This is all due to the influences of university. I have realised that studying architecture is not only studying the design of buildings and the structural elements but to also study broader issues like environmental aspects.

My views of an architect have broadened. I grew up idolising my dad who was also an architect, and as a kid I was oblivious to the world of sustainability. I thought he just designed beautiful buildings and nothing else. Now that I'm older and actually studying architecture I understand what my dad was actually doing ... The issue of climate change is dangerously increasing and society is aware of this, yet they still opt to drive instead of walking or catching public transport etc. What disturbs me most is that I was one of those people 8 or so weeks ago. I'm starting to question whether this is a phase that every student experiences or if this apparent 'passion' turns into something greater?

### **Lara:**

In semester 2 2011, in addition to their work in design and culture units, third-year architecture students were asked to consider their position on 'responsibility in design' as part of an architectural science unit. The students were also asked to undertake a number of critical reflection tasks, which related to the topic of responsibility in design, to their current design work, and to their own attitudes and everyday experiences. The aim of the exercise was for

students to consider how they related their learning experiences to everyday experiences, and to determine if this affected their design practice and personal opinion. Previous research I undertook with a colleague indicated that often, particularly when discussing sustainability issues, the learning experience is mostly transmissive, in that information was successfully delivered and the skills developed were applied in subsequent learning experiences, but not transferred beyond the classroom (Karol & Mackintosh, 2010). This limited the practices students developed.

At the end of each Building Science 302 tutorial from weeks 2 to 6, the students were given 15 minutes to complete a reflective exercise. These exercises were structured to encourage students to deepen their reflection upon the role of the designer, and to consider others, those who are potentially affected by their designs, within their thinking. Different prompts were offered each week, and the students were asked to use these as starting points for their reflections.

These exercises were not formally assessed, or part of their required work, but all in the group chose to complete the tasks, and in fact seemed to enjoy them. As the activities outlined by Jane were new to the first-year program in 2011, these third-year students had not received the formal instruction in critical reflection described above. When we reviewed the reflections, it was evident that, despite the descriptive and reflective nature of the responses, critical or self-reflection was not developed to a high level. The following reflection illustrates this:

I just got back from an island in Malaysia called Mabul. It was really beautiful and they had this division of resorts and the local village housing. It was nice for me to see this mixture, especially for tourists from other countries to see the village house above the water. But I noticed the toilets & shower shacks for these local housing, the water from their goes straight into the sea. This island is known for its coral reef and clean waters. But how long would it take for the waste to ruin the reef? I wondered to myself why didn't the designers of the resort do anything to change this. They just left it as it is.....

This affects my life at this moment as I am living in a neighbourhood but it isn't a very tight and close neighbourhood very private but there still is a sense of community. When you go out and use public buildings/facilities like rec centers and parks [being] clean creates the idea of a nice and safe neighbourhood/community. I think this is very important in creating a sense of community – being able to have your own private space and being able to access open areas and interact with people in your community.

Upon reviewing this comment, I noted that the student has recognised an environmental issue, and related this to the responsibility of the designer, but the following statement she has made about a sense of community is not clearly linked to the environmental issue, nor does she consider how her own views on community maybe reflected in the first scenario. I would expect the comment 'this affects my life at this moment' to be the beginning of further development of reflective thinking about the dilemmas that face she may face in her future professional development, and about how the student feels unsettled, perhaps daunted, by this realisation.

### **Jane:**

By the end of their first semester, most of the Architecture students challenged their own and others' assumptions in their writing, as demonstrated in the examples above. They did not limit themselves to architectural theory or personal narrative, as Lara found was characteristic of the third-year students' responses to the exercises set. There are several possible reasons for these differences.

The first is the position of Communications educators ‘in the gap’ at Curtin: the gap between the School of Built Environment and our own home school, the School of Media, Culture and Creative Arts, in which we do no teaching; the gap between the academic researchers and the learning support staff of the university; and, for most of the team, the gap between permanent lecturers and sessional tutors, who are postgraduate students. This marginal position has been examined by many academic literacy researchers (e.g. Chanock, 2007). While it creates difficulties for us, it also provides us with interesting opportunities. Students quickly become aware that we are not members of their department, and have no power over their marks in Architecture units. They may therefore feel freer to take risks in exploring their perplexities with us than they do with the lecturers in their department. In addition, as Portelli (1997, p. 63) argues, our position on the margins of the university power structures may lead students to be more trusting and open with us. Chanock (2007, p. 273) suggests that universities, by focusing on research and theory at the expense of practice and skill, engage in “othering” those involved in supporting student learning, and it may be that first-year students, in their initial transition period, recognise and relate to us as “others” more than they do to those in positions of power. The communication unit itself foregrounds interpersonal, learning and communication issues, and it focuses on supporting student learning, so some students may feel encouraged to reflect on their problems and concerns as students.

Another explanation for the higher degree of reflective thinking in the first year unit is that for many students the first semester of studies in a new environment is like being in a new world with a new language; they experience “cultural disequilibrium” (Taylor, 1994, p.169), and are more likely than the more settled third-year students to question their assumptions about learning and about the built environment. Becker (1991, p. 226) describes the experience of learning a new language as “an erosion of certainty and comfort at another level of one’s being”, and suggests it is particularly difficult to resolve, because new arrivals interpret their environment through their existing language. In the light of this culture and language mismatch, it is easy to appreciate why critically reflective processes can be uncomfortable and need time to develop. In fact, Taylor (1994) argues that not all people respond to a new environment reflectively: while some are provoked into deep critical reflection, others deal with the environment in non-reflective, adaptive ways. Nevertheless, it is possible that many first-year students are predisposed to some level of critical reflection because of their cultural dislocation, and – in the context of a unit that encourages interpersonal communication, teaches reflection, and is taught by a team of mature-aged students who support their learning – they are more likely than their older counterparts to be critically reflective.

None of the above assumes that all first-year students succeed in developing critical reflection, nor that the assessment of their reflective writing is straightforward. It is inevitable that some students will write what they think their tutors want to read in order to succeed in the task. For example, since we emphasise that they need to consider questions rather than give answers, some students may exaggerate their uncertainties and doubts in their writing, without this doubt having a significant impact on their daily thinking.

### **Lara:**

Analysis of the third years’ reflective exercises indicates that the capacity for critical self-reflection is not innate, and that students do not spontaneously engage in such activities without appropriate ongoing guidance. The reflections were influenced by a number of factors that affected their nature and the extent to which the experience was transformative. These factors

included the physical, social and situational contexts (Boud & Walker, 1998), in that the reflections were clearly focused on immediate, personal and often educational experiences. That is, the exercises were directed towards their immediate educational experiences, and without the necessary skills developed in earlier years, the students did not extend beyond these immediate practical boundaries or consider the effect of their actions upon others. The physical environment in which these reflections took place may have had a significant effect on the reflections, for the writing activities took place in a formal teaching space within formal teaching times, and were conducted by the staff member who would assess their academic work.

It is also evident in the reflections that the students relied on the use of discipline- or topic-specific language. As these students were in their final years of a bachelor program, their prior knowledge of architecture, design and sustainability seemed to influence their comments. Their reflections focused on familiar general concepts of social impact, sustainable technology and aesthetic concerns, rather than the more intimate ones of lifestyle, behaviour and everyday experiences in architecture. Moreover, the students were instructed throughout the unit in discipline-specific language. For the [critical reflections] study, which focused on the opportunities for students to make meaning of the everyday through education, this pedagogical style was seen as inhibiting the application of learning to life, as it was relying on a language not often used outside the educational context. Considering the success of the development of self-reflective skills in the new first-year unit, the opportunity to embed the development of these skills into the discipline-specific units of subsequent years is seen as critical to developing the transformative learning experiences.

## Conclusion

In this paper we argue for specific teaching of critical reflective thinking in the first year of an architecture course, followed by systematic consolidation in the following years. The new first-year unit for architecture students at Curtin University has been very successful in promoting students' critical reflection processes, encouraging and guiding them to challenge their own assumptions about themselves as students, and their own and others' assumptions about the built environment. In future semesters, in the context of the recent review of the core competencies and skills of architects mentioned above, which recommends that accrediting and professional educational bodies place more emphasis on helping students to develop their critical reflectivity, we will work in our collegial networks to consolidate approaches to critical reflection throughout the course.

Our future research together will explore the impact of the specific teaching of critical reflection processes on current and future first years as they progress through the course. In addition, we will examine further the surprising findings of this research that first-year students demonstrated critical self-reflection more clearly than their third-year counterparts, exploring the impact of students' contexts, as well as the architecture curriculum and the unit structures, for possible reasons for these differences. Third-year students in 2014 will have learned critical reflection processes in their first year, so it will be valuable to consider their reflective writing in the context of their earlier learning.

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