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DEVELOPING STUDENT TRANSFERABLE SKILLS THROUGH REFLECTIVE PORTFOLIOS

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Abstract

The development of transferable skills in students, ie those relevant to any future employment, is a common goal of degree programmes. Reflection is a mechanism frequently used in the training of medical and teaching professionals to develop self-awareness of personal skills levels that enable participants to become self-reflective practitioners. The intention in this research was to trial reflection for construction management and architecture students through a series of interventions to engage students in the explicit development of transferable skills and self-awareness. Students were required to keep a ‘diary’ or journal under specific skills headings: communication (involving active listening, conflict resolution, negotiation), team building, problem solving, report writing and presentation skills based on their experiences at university, work and in social situations. A range of learning resources were made available to assist students. The journals were analysed according to a recognised coding for the depth of their reflection1. At the end of the semester, students were required to “apply” for a job description that required explication of the knowledge and skills that were intended to be further developed during the unit. In practice, few students appreciated the journaling and some were even hostile to the process, but all students demonstrated good appreciation of their abilities and skills in the job application – essentially a mechanism that required reflection. In conclusion, explicit reflection through journaling is not a universally popular practice, but tasks that appear to have some foundation in practicality that require reflection are more likely to be appreciated. Students depth of reflection was found to improve through practice.

Keywords
Skills development, reflection, journaling

INTRODUCTION

Reflection: what is it and why use it?

Reflection: the practice of looking back on performance; learning from experience; a complex and deliberate process, thinking about and reviewing performance in order to learn from it.

Dewey (1933) was perhaps one of the earliest Western writers to suggest reflection as a means of challenging personal beliefs and to promote deep thinking. Schön’s more recent work (Schön 1983) has been particularly significant in promoting a recent resurgence in pedagogical application and research into educating the professional practitioner through reflection. It’s application to learning situations is now developing a depth of use and recognition of it’s value. Indeed, reflective practices are now being used as an expected part of the training of students undertaking professional education and medical/social work courses (see reviews by Moon, 1999 and Atkins and Murphy, 1993).

Reflection is seen as a means of promoting understanding and learning about not only particular subjects and problems but also as an aid to assist understanding of individual approaches to those subjects and problems. The intention is to stimulate students’ independent learning and increase self-awareness. Little work, however, appears to have been done to apply reflection to the development of students taking professional degree programmes other than teaching and medicine (Langer 2002).

From reviewing the range of written work, one of the definitions seen as most helpful to this study is that by Boud et al (1985):

“Reflection in the context of learning is a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations.”


This last definition is of particular relevance to professional practice – the process involves review of thoughts and feelings from actual situations and problems faced, and the outcome is some changed conceptual viewpoint. Whilst experienced
practitioners are able to use “reflection-in-action” (Schon 1983), a complex process of being able to articulate thoughts and feelings whilst undertaking a task and musing on how to create a change in the outcome, students, with limited experience, are only likely to be able to “reflect-on-action” – ie look back on a problem and review why something happened and what could have been done differently to achieve a different outcome.

Various methods have been trialled to develop students’ ability to reflect – learning journals, learning partners (a “buddy” with whom to share and discuss ideas), learning contracts and self assessment schedules (typically containing objectives and criteria for achievement), (Boud and Knights 1996). A decision was made to use journals, based on a recognition of the value that they bring to the student learning process – they can be used by instructors to facilitate student cognitive development (Langer 2002), they assist the transition from theory to practice (Boud et al 1985), and journaling has been found to improve the communication skills of science students (Harmelink 1998).

This research sought to trial reflection (through weekly journaling and a final “job application” that required review and reflection about skills and technical knowledge) with construction management and architecture students undertaking a construction technology subject. The focus was on the development of so-called “employability skills”. These were taken to include communication skills (listening, negotiation, conflict resolution, oral and written communication), team working, and problem solving. Communication skills are frequently cited by employers as the most important ability that they look for in potential employees (Davies et al 1999), closely followed by team working. Students were asked to journal about each skill using examples from university, work or social situations as a trigger for reflection. The intention was to make students more aware of the range of skills they were employing at both university and outside of university, and appreciate (and transfer) the value of their learning experiences across their life.

**Aims**

The aims of the study were:
1. to assess the extent to which 2nd year undergraduate construction and architecture students could reflect on their skills development in parallel with their taking a practical technology unit
2. to assess their views on what they were learning from the unit
3. to review the benefits and issues of using journaling as a learning tool with construction students

METHODOLOGICAL ISSUES AND CONSIDERATIONS
There are a number of issues that need to be considered when using reflective journals as a learning tool. Firstly, decisions need to be made about what method(s) to employ and secondly, whether to assess the reflective tasks – whether to give only formative feedback or whether to allocate some percentage of marks. If a task is unassessed and voluntary, the lecturer is likely to have only limited student uptake; if the task is mandatory but unassessed, the student may not engage fully with the task of reflection; and if marks are awarded, there may be resentment since the task may be perceived as of little value to a practical course. A third issue is how to actually recognise that reflection has taken place and finally, students will need reflection to be put into context – to be educated about the potential value of journaling, and given guidance on how to approach the selected reflection task – students are unlikely to have undertaken any formal processes of reflection and will therefore be worried about expectations.

Choice of learning journals:
The various types of learning journals that have been used to facilitate critical reflection in student learning include unstructured, structured and dialogue journals (Langer 2002). With unstructured journals, students can adopt their own format and can choose what to include (which could include pictures or photos, as well as writing). However, unstructured journals or diaries make comparison difficult for staff. Structured journals use a template (Johns 1994) that allows the instructor to receive information in a specific format and gives some guidance to the student. Dialogue journals set up a process of writing and response between two people. The most educational benefit is found when this dialogue occurs between the student and an instructor who guides the student’s self-reflective development (Peyton 1993).
**Recognition and analysis of reflection:**

A key issue is recognising reflection in students’ writing and establishing a reliable way to code or assess it (Pee et al 2002). Reflection involves a hierarchy of levels moving from the practical to locating reflection in a broader context involving metacognition (Shiel and Jones 2003). A coding system suggested and used by Hatton and Smith (1995) for analysing writing by trainee teachers appeared to offer the best means of translating student’s thoughts into categories representing varying levels of reflection, combined with templates adapted from John’s work (1994) which use a series of questioning prompts to assist student reflection. This is similar to the approach adopted by Pee et al (2002).

Hatton and Smith’s criteria can be summarised as follows:

1. ‘descriptive’ is not reflective, merely reporting events with no attempt to provide reasons (*I did x; he said y*);
2. ‘descriptive reflection’ provides reasons (often based on personal judgement), although only in a reportive way (*I did x because y*);
3. ‘dialogic reflection’ is a form of discourse with one’s self, mulling over reasons and exploring alternatives (*I wonder…? perhaps ..? maybe…?*); and
4. ‘critical reflection’ takes account of the socio-political context in which events take place and decisions are made (roles, relationships, responsibilities, gender, ethnicity, etc)

**Context – educating the learner:**

Boud and Knights (1996) make the following recommendations about educating the learner and providing a “safe” place for them to undertake the task of reflecting:

- “*articulating an educational rationale for the process.*” So students can gain an understanding of why reflection is useful
- “*introducing a simple exercise to illustrate reflection.*” To provide a concrete model for them to follow.
- “*providing an opportunity for students to clarify their understanding of the idea.*” Through either discussion sessions or tutor feedback.
“introducing a framework or model to aid thinking about elements of reflection.”

“identifying areas of the process that students can make their own. Reflection cannot be determined exclusively by staff and students have to bring an agenda of their own which they pursue in the process.”

“providing time. Reflection takes time and it will normally occupy students in much time outside the class. The importance of it can be emphasized if the staff member commits class time to reflective activities particularly at the early stages.”

“treat[.ing] reflection as a normal activity. While it might be necessary to build particular reflection activities into courses in a way which at first might seem a little self-conscious, the aim is for them to become commonplace over time and be regarded as part of the norm of teaching and learning.” (partially paraphrased from p31 Boud and Knights 1996)

**METHODOLOGY**

The considerations above influenced the final selection of semi-structured dialogic journaling using templates with prompt questions. Reflections were coded using Hatton and Smith’s (1995) system. The intention was to provide some initial structure but to then leave the students to write about experiences that offered the potential for them to reflect on their skills development.

Time was taken at the beginning of the unit to put reflection into context (see recommendations above). A short handout was prepared as background to describe reflection and it’s potential benefits. The handout included a sample piece of reflection and Gibbs (1998) model of reflection.

Students were asked to read the handout and then undertake their first journal entry in class – using the prompt questions:

- What does reflection mean to me?
- What other times in my life have I made use of reflection?
- How do I think I can make use of this journal in this course?
This gave them a concrete model, a rationale, a sample to build from, time to carry out the task and staff on hand to clarify their understanding.

Additional supporting materials for each skill were put onto a teaching website. The students were given a journal with a series of templates and a series of questions to encourage reflection. Each journal entry was given a suggested guide length of 500 words – although this could be exceeded. They were also advised that the journal was about reflecting on their own personal learning experiences in the course and integrating the course material with their learning. It was hoped that as journaling skills developed, they would go beyond the initial questions and explore their own reflective processes.

The journals were collected every fortnight and tutors engaged in a written dialogue with students. The tutor provided feedback and asked questions to encourage deeper reflection and provide feedback (eg ‘What could you have done differently? Can you think of any similar situations and how did you respond?’).

The final summarising journal entry was recast as a “job application” derived from a combination of actual jobs posted that related to the unit practical technical knowledge and transferable “employability” skills objectives.

The reflection activities were given 40% of the unit marks, the remainder being allocated to group tasks associated with construction technology including the Building Code of Australia, model building and construction detailing.

Analysis of questions from an “exit” questionnaire distributed at the end of the unit allowed assessment of the aims as stated in the Introduction.

RESULTS
An anonymous questionnaire asked about students’ perceived learning and the things that helped or hindered their learning. Responses from 82 questionnaires were analysed.
Students were asked what they thought they had learnt or gained from the unit and the tasks set, and their responses coded. Although provided with a complete list of the learning objectives of the unit on the feedback form, overall, students’ ability to articulate what they had learnt/gained from the unit was low. As can be seen from Figure 1, almost fifty percent of students reported ‘Knowledge of the Building Code of Australia’ as the primary learning outcome of the unit. The other major learning outcome recorded was the ability to ‘Work more productively in a group setting’ (23%). The vast majority of students only recorded one or two learning outcomes. Of those students who did report three or more learning outcomes the majority of these students included in their list ‘Employability Skills’ (12%) and ‘Practical/Technological Skills’, (16%).

Figure 1. Responses to: “What would you say you have learnt/gained from studying this unit?”

The failure of students to elaborate further on, and to be able to articulate their learning outcomes as part of the unit, comes as somewhat of a surprise, this is because one of their final class assignments was to complete a resume recording in detail, the skills they had gained as part of doing this course and how they would have been of use to a potential employer. One reason for this may be the students resistance to see some of the more abstract skills such as ‘Reflection’, ‘Study Skills’ and ‘Employability’ as skills obtained as part of this unit, as many students had a negative reaction to the inclusion of these elements in the study unit (see analysis on reflection below). Alternatively, it may that students did not believe that they had, indeed, gained these skills. Although this latter conclusion seems unlikely as
evidence of students increased ability to ‘Reflect’ was present not only in the students reflective journal marks (which increased significantly over the course of the semester) but also in their feedback responses. Even when responding negatively regarding the reflective journals, students were still actively and critically reflecting on why they didn’t think the reflective journals were appropriate. Similarly, evidence of students’ employability skills was evident in the high standard of resumes submitted.

The reason why ‘Building Code’ and ‘Group working’ skills were the highest reported might be for two reasons. Firstly, these two skills were the two most salient aspects of the course. The unit was a course designed specifically to help students learn the Building Code, and the primary mode of implementing this was through group work. Also these were the two aspects of the course that students responded to with the least resistance, compared to ‘Reflection’ and ‘Employability’.

In response to “Were there any things that helped your learning?” students were very supportive of the practical nature of the tasks (48%). Figure 2 illustrates the range of responses. Group working (25%) and reflection (19%) were cited as also helpful. A large number of students responded positively to the study tasks set enjoying both the novel and challenging nature of the tasks and the practical elements incorporated:

“I really enjoyed the practical work”.

“It met and exceeded my expectations, the projects were good and working in groups helped with interaction with other students, like a work environment”.

“Yes, I have a good understanding of BCA, learnt a lot about myself and how to work as a team.”

“The drawing/model making and the BCA assignments helped me develop a good understanding of them”.

“I am more confident in my ability to apply for jobs and have learnt valuable employability skills.”

“I learnt new skills to be aware of peoples’ working roles within a team environment.”
“Tasks were good, reflection journals seemed strange at first, but were effective in understanding myself and ways I can improve to enhance my career prospects.”

“Overall very relevant and journals and reflecting were a new and positive experience.”

“They were helpful, and it made studying the BCA easier by splitting it into smaller parts.”

“I found the journals brought up good issues but most of the learning came from the BCA assignments, models and reports.”

“They were relevant in buildability issues that will become an issue in the future.”

“I thought all were valuable though I found it rushed due to too much work.”

“They were challenging but interesting at the same time.”

In response to “Were there things that helped your learning”, students rarely left this section blank and took the time to write “no”. Of those students who reported negative responses, these were mainly for group working (24%), perceived excessive student workload (19%), journals (13%), unequal weighting of marks (4%), and students feeling unclear about the course and what was expected (6%). However, as can be seen by looking at a small selection of student quotes drawn from the feedback questionnaires, the most emotionally charged responses were
related to students’ negative feelings towards the reflection tasks. So although students’ negative responses to reflection only accounted for 20% of overall negative responses to the study tasks, the emotional charge of this perception may in fact account for more negativity reflected in the simple percentages.

Figure 3: Responses to: “Were there any things that hindered your learning?”

“The tasks were inconsistent in the percentage they were worth. How can a 50+ hour model be worth 15%?”
“I believe the reflective journals were unnecessary and were not taken seriously by most students.”
“Reflective journals are irrelevant and a waste of time. Too much work. Unorganised. You just can’t change the course because you think of new assignments.”
“Are we studying psychology or building technology?”
“Very time consuming for a single unit!”
“The journals were so far removed from what I believed ‘Tech Projects’ would entail it was ridiculous.”
“Too much work for very little marks. I did not have a clear understanding of what was expected.”
“I think reflections should have been worth a lot less than 40% as it was hard to put a lot of effort in knowing that the tech assignments were only 15%. This really needs to be revised.”
“I think the model should have been worth FAR more than the journals.”
“The journals were irrelevant and just took up TOO much time when we are
meant to be learning tech projects. Not psychology.”

To test whether there was any development of student reflective processes, students’
first and final reflective journal entries were coded and analysed according to Hatton
and Smith’s (1995) Reflective Process Model. There was no correlation between
students’ initial depth of reflection and their overall reflection mark and final grade
for the unit (both p>0.428). Similarly, there was no correlation between students’
final reflective journal entry and their overall mark (Spearman’s rho \( r = 0.025 \) (N
82) p > 0.822), however there was a significant correlation between students depth
of reflection on their final journal entry and their overall reflection mark
(Spearman’s rho \( r = 0.544 \) (N 82) p < 0.001), as might be expected. Finally, results
did indicate that students’ depth of reflection increased from the first reflective
journal entry compared to the last (Wilcoxon \( T = -6.806 \), p<0.001).

CONCLUSIONS

This research set out to assess the extent to which 2nd year undergraduate
construction and architecture students could reflect on their skills development in
parallel with their taking a practical technology unit; to see if students could be
made more aware of what they were learning from the unit and to review the
benefits and issues of using journaling as a learning tool with construction students.
A number of issues from the questionnaire results became evident:

1. Reflection is not usually associated in students’ minds with practice as a
   construction professional;
2. Reflection directly contradicted students’ conceptions of what a construction
   technology unit should comprise;
3. Reflection produced strong positive or negative emotional reactions;
4. The academic culture of assessment may inhibit the self-exploratory style
   necessary for reflection. Students are already acculturated to what
   constitutes acceptable assessable tasks.
5. Students ability to reflect improves with practice (the exit questionnaire and
   the final job application both required reflection) and a statistically
   significant improvement between first and last journal entries was evident;
6. Few students engaged in ‘critical reflection’ – their ability to set their work into a larger framework of socio-political context may be asking too much of second year students who have a practical mindset geared towards construction technology;

Recommendations for using reflection in technical professional subjects include making tasks as relevant to students’ future careers as possible (see also Davies and Reynolds 2006) and, where possible, introducing reflection or other more novel learning situations early into the curriculum – before student expectations have been too firmly fixed.

On a final note of reflection, given some of the feedback from students, the unit was perhaps overly ambitious in it’s demands combining too many elements of assessment. Subsequent delivery of this unit has re-allocated the marks and reduced the number of elements of assessment.

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