REFLECTIVE LEARNING JOURNALS FOR CONSTRUCTION EDUCATION – A CASE STUDY

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ABSTRACT

In recent years, journal writing has become an effective and widely used teaching and learning strategy which is popular with both students and lecturers in higher education. This paper provides a review of the literature of reflective learning journals, in particular: learning processes, types, uses, purposes, benefits and issues of implementation within an educational program. Using action research, the author describes the results of using learning journals within an undergraduate construction degree program. The key conclusions of the research were: students support the use of reflective journals for learning; reflective journals should be introduced early into the curriculum and developed gradually throughout the learning program; learners should to be given instructions to facilitate the reflective learning process; and, journal structure and assessment support the reflective learning process.

Key words: construction management, learning journals, reflective writing

INTRODUCTION

In recent years, journal writing has become an effective and widely used teaching and learning strategy which is popular with both students and lecturers in higher education (Ballantyne & Packer, 1995) In particular educational institutions have been implementing reflective journals for more than a decade (Woodward, 1998). Research supports the value and potential of reflective journals (Woodward, 1998). The use of journals for learning is wide-ranging, for example Moon (1999) discusses their use in over 30 disciplines in formal education. A range of applications are available for learning journals such as for field placements, in-service professional experience, professional projects, course content and interactive learning experiences (Ballantyne & Packer, 1995).

RESEARCH APPROACH

Action Research

This research is primarily based on the application of action research using a case study. Action research involves the identification of planned action, which is implemented and then

systematically submitted to observation and reflection (Burns 2000). Action research is a means of injecting innovatory approaches to teaching and learning (Burns 2000). The problem to be researched was the lack of reflective learning within an undergraduate construction degree program. The research sought, through action research, to investigate the application of reflective learning.

Burns (2000) sets out the stages of action research. Key activities include:

- Identification of a general idea i.e. how to apply reflective writing as a teaching and learning strategy.

- A literature review on the area of research i.e. reflective learning journals

- Implementation of the action plan and interpretation and evaluation of the outcomes. This paper will use a case study to observe and reflect on the implementation of reflective learning journal as a teaching and learning approach. A range of valuation techniques were used for this research:

  o Action research necessarily involves self-reflection (Burns 2000). The author maintained a reflective journal to facilitate understanding of the application of reflective journals as an effective teaching and learning strategy.

  o A focus group was conducted with students who undertook the learning journals

  o Interpretation and evaluation of the outcomes by means of writing a case study reported in this paper

Case Study

The Department of Construction Management at Curtin University of Technology in Perth, Western Australia runs a four-year Bachelor of Applied Science (Construction Management & Economics) degree program. The reflective journal was within Building Industry Application 441 is run in the fourth year of the degree program. The action research was conducted within the normal program of instruction in 2003.

In the case study, students had to complete a reflective journal throughout the semester as an ongoing activity. The students were informed, as follows::

1. Describe a specific event or issue that occurred whilst undertaking your group assignment. (eg group meeting; personal interactions; problem-solving)

2. Critically analyse the event (e.g., what processes worked well? What problems occurred and how they were handled? What did you learn about the experience and yourself (e.g., I must have a proper agenda and a specific block of time to ensure that the group meetings are focused and productive)

3. Learning - How do I need to change my attitudes, expectations, values to improve myself in the future?

REFLECTION

Reflection Process

A learning journal is "essentially a vehicle for reflection" (Moon, 1999:4). Definitions on reflective learning include:

- Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective (Boyd & Fales, 1983).

- 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 (Boud et al, 1985).
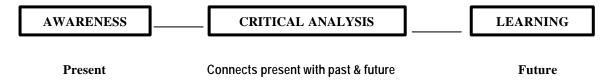
From these definitions and others (eg Atkins & Murphy, 1993), it can be discerned that reflection learning is an internally-focused cognitive process that explores thoughts and experiences that lead to learning outcomes and change. Reflection is a form of response of the learner to experience (Boud et al, 1985).

Many authors identify stages within the reflection process (eg Schon, 1991, Boud et al, 1985, Boyd & Fales, 1983; Moon, 1999). Three key stages of reflection can be discerned:

1. *Trigger* – Reflection is triggered by thoughts and/or feelings about experience, observation, event, issue, etc. Schon (1991) refers to this as a sense of surprise. The trigger can be a recollection of salient events and replaying of features of the experience (Boud et al, 1985).

2. *Analysis* – A constructive, critical analysis of the issue is undertaken. Reflection is a component of the analysis and a perquisite for transformation in terms of taking action and creating change. Reflection can involve re-examining experience in the light of the learner's intent, associating new knowledge with existing knowledge, exploring, linking theory and practice, or reinterpreting from different points of view (Moon, 1999). Reflective writing is effective in promoting this critical thinking (Kennison & Misselwitz, 2002).

3. *Transformation* – Reflection is not an end in itself but leads to learning outcomes such as a new way of doing or perceiving something, clarification of an issue or resolution of a problem (Boud et al, 1985). Reflection leads to a perception for a need for change in the learner's world (Bolton, 1999). A statement of planned actions may be produced.

In the case study, students were given a handout and lecture on the reflective process, thus:

.Part of learning is reflecting upon your learning. Reflective learning can be view as a three-step process:

AWARENESS	_____	CRITICAL ANALYSIS	_____	LEARNING
Present		Connects present with past & future		**Future**

1. *Awareness* – Stimulated by good/bad thoughts/feelings about a situation or event. Without awareness, reflection cannot occur

2. *Critical Analysis* – Critically analyse the situation, using own knowledge and experiences as well as any new knowledge resulting from the analysis process. This

involves critical thinking, evaluation and self-examination with accompanying growing self-awareness.

3. *Learning* – The learner develops a new perspective based on his/her critical analysis.

This process was mirrored in the structure required for the journal entry. Students found this process easy to understand and, combined with a lecture on reflective journals, assisted the students in approaching the completion of the reflective journal. The author feels this was an effective model but perhaps greater elaboration of the reflective writing process was needed due to failings in the students' work as reported later in this paper.

Types of Reflection

Schon (1991) identifies two types of reflection:

a. *Reflection-in-action* – This is reflection at speed while practising and allows for modification of actions and decisions as they occur. The person involved in the action may not be able to articulate the knowledge used.

b. *Reflection-on-action* – This is reflecting backwards or forwards, after the event. Reflection on action tends to be private but can be made explicit by specific process such as reflective journals. By making these thoughts explicit a greater depth of understanding takes place (Sinclair & Woodward, 1998).

Boud & Walker (1990) add a prior reflection stage: reflection during the preparation of a learning activity i.e. reflection-before-action.

In the case study, reflection-on-action was considered more appropriate than reflection-in-action because:

- it requires less student maturity in terms of work and life experience. The ability to reflect whilst acting is challenging and therefore better suited to more mature adults. Students were comfortable to reflect upon an past action so that they could fully focus on reflection only

- it is easier to formulate a learning scenario based on reflection-on-action. The formulation of a learning activity based on reflection-in-action, that requires action and reflection to act in parallel sets a greater test for the lecturer than setting a prior event followed by reflection of that event.

- reflection-on-action creates less pressure and anxiety compared to reflection-in-action

Students agreed reflection-in-action would seem easier to cope with as a learning strategy once they have gained some experience in journal writing through reflection-on-action.

Reflection – Purpose

Reflection has a range of purposes, such as to: consider the process of our own learning i.e. meta-cognition; facilitate learning from experience; critically review something – our own or other's behaviour; build theory from observation; engage in personal development; resolve uncertainty; empower individuals (Moon, 1999). Reflection can be part of a formal course (eg workshop, lecture), or informal from a personal study or totally unplanned occurrence in daily life (Boud et al, 1985). In formal education, learning journals invariably relate to coursework, such as lecture content, tutorials and set readings (Moon, 1999). Students may be asked to critically reflect on the content of course material, making connections between concepts presented and their own experiences or observations (Ballantyne & Packer, 1995). Learners can relate personal thoughts and experiences to literature, as if to validate those experiences that they describe (Slifkin, 2001). The requirement to relate lessons from readings to the learner's own career encourages students to look for similarities, which is much harder than dismissing a reading as irrelevant. Making the reading relevant to the 'real world' is a task for the student, not for the instructor. (Rosier, 2002).

The objectives use of the reflective journal in the case study were manifold:

o *facilitate learning from experience* –students had to record and reflect their experience from an incident that occurred during the undertaking of a group assignment.

o *critical review* – student had to analyse and reflect on what they learnt from the incident

o *link theory from observation* – whilst not overtly requested, it was intended that students would draw upon any relevant theory learnt previous in the degree program as a means of greater understanding of the reflected incident

Students agreed that the first two objectives were achieved and beneficial for learning However few students made connections between their reflective thoughts and the literature. This implies that lecturers should be careful in clearly stipulating the purposes of reflective writing particularly when first introduced into the curriculum.

LEARNING JOURNALS

Learning Journals – types

Ballantyne & Packer (1995) have identified five types of learning journals:

- *Log books* – These record activities, commonly for field placements, and there is little or no reflection

- *Cognitive journals* – These connect theoretical concepts presented in lectures or readings with the reality of experiences or observations from the learner's personal or professional world. This allows the learner to demonstrate understanding and evaluation of these concepts.

- *Experiential journals* – These are used for learners to describe and critically analyse their own experience. The aim is often to assist learners in their development and learn from experience

- *Self-evaluation journals* – These focus on self-examination for the purpose of personal development

- *Course evaluation journals* – these focus on critical reflection on learning experiences for the purpose of course development

An experiential journal was use in the case study. Students were required to describe a specific event during the undertaking of a group assignment, critically analyse the event, and reflect on any needed change in their attitudes, expectations, values, etc. Students found it difficult to work within the relative freedom offered by experiential journal writing because assignments were typically more prescribed pieces of work. This was particularly a problem because it was the first occasion that students had been required to complete a reflective journal. It might have been more appropriate to require students to complete a cognitive journal, where students link their experiences with concepts learnt in the classroom or from set readings. This would have provided a more structured context, more akin to previous assignments, whilst still requiring students to undertake reflection. Interestingly, as a result of action research and reflection, the author has adopted cognitive journals for a postgraduate degree course in project management, whereby student reflect on set readings.

Learning Journals – Cognitive Benefits

The cognitive benefits of writing learning journals include (Ballantyne & Packer, 1995):

- *Observation and awareness* – Journals encourage students to apply their mind to understanding and learning from their experience and get to know themselves. The writing of reflections forces learners to draw out their experiences, articulate and assess them. This leads to discovering important learnings that are personal and generalisable (Kalliath & Coghlan, 2001). Reflective journals help students connect with themselves by becoming aware of what is going on inside themselves (Kalliath & Coghlan, 2001).

- *Clarification and understanding* – Students are stimulated to articulate their opinions and develop their understanding of concepts and crystallise their beliefs. Writing learning journals helps bring clarity to material that appear ambiguous at first (Kalliath & Coghlan, 2001). They provide a means for students to organise and refine their own thinking (Slifkin, 2001). Writing enables the writer to make contact with thoughts and ideas they did not know they had and to make leaps of understanding (Bolton, 1999).

- *Review and reflection* – Journal writing facilitates reflection, to evaluate experiences, give in-depth consideration to issues and develop an understanding of their experiences. It provides tangible evidence of cognitive processes. Journal writing is a significant mechanism for developing reflective skills by helping the individual to reflect on experience, see how they think about them and help anticipate future experiences before undertaking them. (Kalliath & Coghlan, 2001)

- *Critical thinking* – Journals encourage students to critically evaluate such things as coursework materials or accepted professional practice.

- *Making Connections* - Journal writing allows students to make connections, such as between: theory and practice; concepts and observations; readings and experience; beliefs and behaviours; old knowledge and new knowledge; themselves and other students, themselves and staff; different topics

- *Knowledge retention* - Statistic evidence shows that when students voluntarily write reflective journals on assigned readings, their performance on multiple-choice quizzes on the readings improved compared to students do not complete such journals (Burrows et al, 2001).

Most students agreed that reflective writing is a worthwhile learning experience. They appreciated the need and benefits of drawing on their experiences, exploring and articulating their experiences in order to lead to new understandings. It assisted in enhancing their understanding of the event upon which they reflected. Many students stated that they had moments of reflection during their personal lives and found the discipline of applying reflection as part of a learning process within the degree course particularly beneficial and enlightening. All students strongly agreed that reflective journals were worthwhile for learning and should have greater prevalence within the degree program.

IMPLEMENTATION ISSUES

Preparing students

Teachers can incorrectly believe that reflection is an automatic part of completing a journal (Woodward, 1998). Without guidance on reflective writing, students often simply write diary entries describing an event or activity. Therefore learners need to be given instructions to facilitate the reflective learning process. In particular student should be aware that a reflective approach is required rather than a descriptive summary. Students could be provided with examples and early feedback on whether they have met requirements (Ballantyne & Packer, 1995).

Students should be explained the purpose of the journal writing (Moon, 1999). e.g. why they are required to write, what they might expect to be the benefits. For mature students it might be useful to provide some theory about how journal writing might enhance their learning (Moon, 1999). Student may be provided guidance on such matter as (Moon, 1999; Ballantyne & Packer 1995): purpose of the journal and its values for learning; content and format; writing style i.e. personalised, informal; depth of analysis and length of entry; emphasis that quality rather than quantity is sought; advice eg be honest, let words flow and use you own simple words; assessment criteria; examples of appropriate journal entries;

In the case study, students were prepared by provision of a handout that stated:

o A reflective learning journal is not simply a diary but a thoughtful description that follows from the reflective thinking

o Pick a quiet place and reflective time to do your journal entries.

o Entries should be done twice weekly or daily when there is significant project activity e.g. project meetings, completing project activities.

o Be honest and open - All journals will be assured confidentiality.

Despite the guidance provided, all students expressed difficulties in writing a reflective journal. Many produced a diary of events rather than a critical reflection on their learning experiences. Students noted that they had never been required to provide a reflective journal previously in the course whereas they had completed diaries in previous units so there was a natural tendency to again produce a diary. This suggests that it is more efficacious for learning to introduce reflective journals gradually throughout the degree program. Furthermore, it would have been useful to provide more preparatory information, such as length of entries, and advice eg quality was more important that quantity. Students suggested that it would have been helpful to undertake a classroom activity to rehearse reflective writing and provide examples of reflective writing.

The journal required students to recount their experiences, attending to positive and negative feelings about the experience. So students were encouraged to engage in affective processes through informality and honesty in their journal entries. In most cases this proved to be beneficial as students displayed a depth of reflective thinking that was facilitated by this openness. However, a few students wrote entries that contained unethical statements about their fellow students. This probably indicates students' lack of experience and understanding of the process of completing reflective journals and suggests greater guidance is required in terms of the affective components of reflective writing.

Structure

There are contrasting views regarding whether journals should have a predetermined format:

- *Structure – benefits:* A predetermined structure for journal entries helps students understand what is required. It assists learners to commence writing and ensure their reflection moves on (Moon, 1999). Journals that are unstructured and open-ended may leave student feeling anxious and uncertain about the task (Ballantyne & Packer, 1995; Sommer, 1989).

- *No Structure – benefits:* A lack of preset structure allows students freedom to express themselves and they are not predisposed in any direction. This freedom encourages creativity and reinforces the self-directed nature of journal writing (Ballantyne & Packer, 1995)

Ballantyne & Packer (1995) consider structure is more appropriate in cognitive journals and more necessary for first-year students than for postgraduates. The balance between structure and freedom must be appropriate for objective of the task (Ballantyne & Packer, 1995).

A range of structured formats are available, such as

- *Double entry journals* - One approach for structuring a reflective journal, based on Bertoff (1978), is the double-entry journal (Woodward, 1998). The description of an issue is entered on the left-hand side of the journal and reflections on these are entered on the right-hand side.

- *Exercises* – Journals can be structured around set activities or exercises (Moon, 1999)

- *Questions* – A sequence of questions act as prompts to guide the learner's thinking in covering particular material (Moon, 1999). For example, describe a significant event and answer three questions: What have I learned from this experience? How would I behave in a similar situation? In what ways do practice and theories explain the situation? (Burrows, 1995). Similarly, "What did I do right here? What could I have done better? (Bolton, 1999).

- *Accompanying other learning* – For example, a research project is undertaken and a journal is written to reflect on events during the project

- *Structure with Journal* - Some authors propose structures for journals, such as: Progoff's (1975) intensive journal which contains 19 sections; Kolb's (1984) experimental learning cycle – experience, reflection, conceptualisation and experimentation; or, Schein's (1999) model of observation, reaction, judgement and intervention

In the case study, the journal was structured into three parts: event description, analysis, and learning. Furthermore, prompt questions were provided for guidance (e.g., what processes worked well?; what problems occurred and how they were handled? What did you learn about the experience and yourself?

All students appreciated the structured provided by requiring the journal to be completed in sections with accompanying prompt questions. This was considered beneficial because it was the first time they had completed a reflective journal and students were accustomed to assignment work that was more clearly prescribed. This suggest that the initial introduction of reflection writing should have some structure, but as students become more mature in complete reflective journals there seems a logical argument for providing less structure. Furthermore, the author found it useful to provide structure as it helped to clarify the desired learning objectives.

Assessment

Assess or not?

The evaluation of reflective writing is difficult (Kennison & Misselwitz, 2002). There are contrasting views regarding whether student learning journal should be an assessable piece of work:

- *Assessable*: Students are assessed on their learning throughout a program of learning so there is nothing wrong in setting journal writing as a method of assessment (Moon, 1999). Journals allow for assessment of higher-order cognitive skills, exposure of misunderstandings and differences between students (Ballantyne & Packer, 1995). If journals are not assessed, students tend not to give it priority (Ballantyne & Packer, 1995). Students are inclined to devalue assignments for which a grade is not attached and put little effort into them (Kennison & Misselwitz, 2002; Moon, 1999)

- *Not-Assessable*: When students are expected to elicit personal feelings, then assessment may inhibit freedom for expression, thereby constraining learning (Ballantyne & Packer, 1995). Grading can impose constraints on the free expression of ideas and feelings that are

requisite to reflection and it could change the content and the purpose of reflective journals (Woodward, 1998). So assessment may result in the student writing according to what they think the assessor wants (Moon, 1999). It can be difficult to find a suitable set of criteria by which to code the 'reflectiveness of students' work such that reflection appears unsuited to quantitative assessment (Sumsion & Fleet, 1996).

Ballantyne & Packer (1995) consider log books and cognitive journals as acceptable for assessment, which are less affective and more open to objective assessment (Hettich, 1990); self-evaluative and course evaluation journals as generally not acceptable for assessment; and experiential journals and possibly assessable based on a trade-off between optimising learning, maintaining motivation and assessing performance.

When journals are assessed, what percentage of the total module mark should be given? Often a low percentage is given when initially introduced e.g. 10%-20%) (Moon, 1999; Kennison & Misselwitz, 2002). But this seems to be significantly increased as assessors become more confident of the benefits of journal writing to learning e.g. 40%-75% (Moon, 1999). Hettich's (1990) student were asked what weighting should be given to journal writing and the median response was 25%, which suggest it was seen as a supplement to other measures of learning.

In the case study, an experiential journal was used and the author decided that it would be assessed, based on past experiences which strongly indicated that students are strongly motivated to complete work that will be assessed. Interestingly, all students admitted that if the work was not assessable, they would be disinclined to complete it. The reflective journal had a value of 15% of totally assessable work for the unit. All students agreed that this relatively low value was appropriate because it would be unfair to attach a high value for a method of assessment for which they had no previous experience. Interestingly, most students considered that even with greater experience in completing reflective journals, they were not supportive of a much higher value because they were use to assessment work based upon a understandable technical problem and linked to course material and literature.

Assessment Criteria

Assessment requires detailed criteria for evaluation (Hahnemann, 1986). Assessment of learning journals is based on often 'gut feelings '(Moon, 1999). Assessment criteria are useful in crystallising the teacher's understanding of the desirable qualities that constitute good performance (Moon, 1999). The purpose of the journal writing should be reflected in the assessment criteria and indicated to the students before the journal is started. In many situations, teaching staff may not be clear of the purpose for which they set journal writing, and sometimes it just seems like "a good idea" (Moon, 1999).

Moon (1999) suggests that journals will need to demonstrate quality in at least some of the following: Length; presentation; clarity and good observation of events/issue; evidence of speculation; evidence of willingness to revise ideas; honesty; thoroughness of reflection and

self-awareness; depth and details of reflective accounts; evidence of creative and critical thinking; use of different cognitive skills e.g. synthesis, analysis, evaluation; relation of entries to relevant coursework, theories, etc

In the case study, no detailed assessment criteria were given to the students, except that "*evaluation of your journal submission is based upon the apparent thoughtfulness (i.e., critical reflective thinking) that went into the journal*". In hindsight, a more detailed set of assessment criteria would have been appropriate for both students and the author in terms of achieving more effective learning outcomes. Students stated that without more specific assessment criteria it was difficult to focus their efforts and appreciate what the lecturer required. Also, the lack of clear criteria perhaps reflected the author's relative inexperience in implementing reflective journals as a method of learning.

Trust & Confidentiality

Reflective writing can elicit intense affective responses; therefore unconditional support from the teacher is needed (Kennison & Misselwitz, 2002). Journal writing works best in an atmosphere of trust (Mayher et al, 1983; Kalliath & Coghlan, 2001). Students may feel uncomfortable in describing personal information with academic staff and may be guarded in their writing. They may compromise honesty and write what they believe is acceptable to the lecturer rather than what they really think. Students must be assured that their work will be treated with respect and confidentiality. The need to consider confidentiality will depend on the purpose of the journal and the type of material the learner is likely to write (Moon, 1999). Conversely, students need to be respectful of third parties referred to in their journals.

The students were given a handout that stated that they should be honest and open and that "*all journals will be assured confidentiality*". This proved effective in terms of journal entries that displayed a good depth of cognitive and affective processes. However, in one or two instances it resulted in unethical comments from students regarding other students in their team and that all journals would be assured confidentiality. Upon reflection, students needs guidance of ethical considerations when undertaking reflective writing.

Feedback

Student learning from journal writing can be improved by providing feedback, such as by written or verbal comments or questions. Students' motivation can be stimulated by informing them of the benefits of journal writing and providing regular feedback eg weekly or fortnightly (Ballantyne & Packer, 1995). Early feedback (eg after the first or second entry) determines the quality of future submissions and regular feedback is an effective approach to improving journal writing skills (Ballantyne & Packer, 1995).

In the case study the assessed journals were returned to students with extensive written feedback and a classroom presentation by the author, outlining some key good and poor examples of reflective journal entries. The students considered this a very useful process and greatly enhance their understanding and future approach to reflective writing. In hindsight, it

would have been more efficacious to require student to submit their first journal entry for feedback and assessment to assist in their future journal entries.

SUMMARY

Action research using a case study was used to plan, implement and evaluate reflective journals as an approach for teaching and learning. The key reflections are:

- The publications by Ballantyne & Packer (1995) and Moon (1999) provide an excellent theoretical and practical foundation for implementing reflective journals as part of a teaching and learning strategy.

- Reflective journals should be introduced early into the curriculum and developed gradually throughout the learning program, starting with simple and short applications and culminating in complex and comprehensive treatments during the later years. Reflection-on-action provides a natural commencement for undergraduate students, perhaps leading onto the more challenging reflection-in-action.

- Experiential journals were used in the reported case study an the initial introduction for reflective writing within an undergraduate degree program. However, upon reflection cognitive journals perhaps offer a more effective approach as they have more similarities to typical situations whereby students used lectures or readings as a basis for assessment work.

- Learners should to be given clear and comprehensive instructions to facilitate the reflective learning process. Students should be explained the purpose of the journal writing and provided relevant guidance on such matter as content and format, writing style and assessment criteria.

- There is a need to provide some structure for reflective writing, particularly when first introduced into a learning program.

- Reflective journals should be an assessable piece of work in order to to motivate students and formally assess students' higher-order cognitive abilities.

Finally, the outcomes of the action research strongly indicate that students support the use of reflective journals for learning. They appreciate the need and benefits of drawing on their experiences in order to lead to new understandings.

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