

## Looking into a "Paper Mirror": The use of Reflection Journals for Improving Student Learning

Duan Ning Magdeleine Lew<sup>1</sup>, Henk Schmidt<sup>2</sup>

<sup>1</sup>Republic Polytechnic, Singapore, Singapore, <sup>2</sup>Erasmus University, Rotterdam, Netherlands

### Background

The incorporation of reflection journals as learning and assessment tools into programmes of study within higher education arises from the recognition of the possible positive roles that reflection may play in fostering students' self-reflection, critical thinking, creative writing abilities, and in the demonstrable development of professional values or skills (Hubbs & Brand, 2005; Morrison, 1996). It is believed to enable students to critically review processes of their own learning and behaviours, and to understand their ability to transform their own learning strategies (Gleaves, Walker, & Grey, 2008). Although they are used in a variety of courses, reflection journals are essentially written records that students create as they think about various concepts learnt, about critical incidents involving their learning, or about interactions between students and teachers, over a period of time for the purpose of gaining insights into their own learning (Thorpe, 2004).

Why is reflection deemed as important? Increasingly, many institutions of higher education have introduced reflective practices into their courses as the ability to reflect on one's knowledge and experience is valued by many as a means of dealing with the complexities, challenges, and uncertainties inherent in professional life (Langer, 2002; Moon, 1999a). The use of reflection journals as a learning tool therefore highlights the role of self-reflection in learning. It is hoped that that through reflecting and writing about new information or ideas, learners can better understand and remember them, and that the articulation of connections between new information, ideas, prior or existing knowledge also deepens learning (O'Rourke, 1998).

In his work, Zimmerman (2000) argues that self-reflection plays a critical role in achieving self-regulation in learning. Reflection journal keeping has been positively associated with enhancing student metacognition. Nonetheless, literature findings suggest that the influence of journal keeping on student academic performance was subtle and did not seem to assist students with achieving better achievement test grades. Instead, journal keeping seems to facilitate student learning in a number of ways, among them synthesizing new knowledge about a domain subject with their prior knowledge and learning, and recording of useful strategies in solving problems.

### Research Questions

The purpose of the present study was to evaluate whether there is evidence of reflection in student-written journals, and to investigate whether students show improvements in their reflective skills through journal keeping. Furthermore, the study also attempts to code students' journal responses in an objective manner by subjecting their reflection journals to text analysis using an automated coded procedure.

### Methods

Participants were 3460 students in their first year of studies at the polytechnic. Here, students work collaboratively in teams of four or five. They work on one problem each day, initially discussed in the morning, followed by ample self-study. At the end of the day, the information gathered is shared and elaborated upon. One facilitator supervises teams of students in a larger classroom, where his or her main role is to facilitate student learning (Alwis, 2007).

The reflection journal is a short essay created by the student that is "personal" and records his or her daily reflections of daily learning in response to a reflection journal question provided by the tutor. Each student is required to respond to one journal question per day. The student then submits his or

her reflection journal electronically by means of an online platform by the end of the day. Tutor-asked journal questions mainly required students to be reflective about their learning and development. Some examples of reflection journal questions include "What are some of the strengths that I demonstrated today?", "What insights did I gain today?", "What strategies have I used to help me in my learning", "What prior knowledge did I apply to help me understand the problem better?" and so on. Students respond to a different reflection journal question each day during a five-day workweek. The didactic purpose of writing the reflection journal is in line with the literature reviewed above, to encourage and record self-reflection about the process of learning.

Data used in the analyses were student reflection journals for the entire week, collected once at the beginning of (i.e. Week 3 of the first semester), and again, at the end (i.e. Week 14 of the second semester) of the academic year 2007-2008. In seeking evidence of reflective activities through reflection journal writing, student journals were analyzed using the SPSS Text Analysis for Survey™ software (SPSS, 2006). Identical categories were generated for both sets of data. The number of instances which each category appeared in each journal response was recorded and used for subsequent statistical analyses.

### **Frame**

Descriptive statistics (means and standard deviations) of the frequency counts for the categories were computed. Paired-samples t tests were also performed to examine if the differences in the mean frequency count of the categories generated based on student reflection journals written at the beginning and the end of the academic year were statistically significant.

### **Research findings**

The outcomes of the text analyses suggest that there is evidence of reflection in students' reflection journals; they appeared to reflect on three general categories related to their learning: critical review, learning strategies, and summaries of what was learnt. Descriptive statistics of the mean categorical counts suggest that students focused most on reflecting on their learning behaviours and performance. Furthermore, students seemed to focus least on reflecting on what they have learnt at particular points in time. In addition the number of reflective activities increased while the year progressed as indicated by the significant differences between the mean frequency counts for the three general learning categories found in student journal responses. This suggests that some learning took place during the course of the academic year, such as in the area of enabling students to become better aware of their learning.

Students appeared to show more engagement in critical reviews about the processes of their own learning and behaviours, and demonstrated a better understanding of their ability to transform their own learning strategies. By contrast, students showed fewer tendencies to summarize the content of what they had learnt, as indicated by the significant decrease in the mean frequency count for the category on "Summaries of what was learnt" as the academic year progressed.

### **Contributions to Knowledge**

Most of the reflection journal studies reported in the literature involved only a limited number of participants who engaged in journal writing only on a few occasions throughout a course. In order to ensure that coding of student reflection journals is done in a standardized manner, a detailed set of coding instructions must first be created to guide the work. This makes the task time-consuming and expensive. Even then, there may be disagreements among coders on how to categorize specific responses, reducing the reliability of the resulting data. Another shortcoming of the existing studies is therefore that of inter-coder reliability, since coding is performed manually and thus dependent on a high degree of interpretation. Furthermore, the coding procedures described in many studies lacked details on how they were carried out, or were too complicated for use in analyzing large number of journal entries. The present study seeks to overcome these limitations by including a large sample size (more than 3000 students), and attempting to code students' reflection journals in a objective fashion by means of an automated coding procedure, using software.

