The Use of Self-Regulated Learning in Authentic Assessments

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Introduction

The advent of globalization at the turn of the century has necessitated a rethinking of policy and emphasis in educational systems in many countries. Governments around the world have come to realize that in an intensely competitive and globalised world, they need to reform their schools for economic survival, if not success. School-leavers must anticipate ever changing technologies and an ambiguous job scope. To be prepared to enter such a workplace characterized by "an infinite, dynamic and changing mass of information" and "a rapidly changing labour market" (Dochy, Segers, Gijbels & Struyven, 2007, p. 87), our students must learn how to "navigate change and diversity, learn-as-they-go, solve problems, collaborate, and be flexible and creative" (Kalantzis & Cope, 2001, pp. 2-3). They cannot be mere passive recipients of information, learning by rote and following prescribed answers and set formulae. Instead, they must be actively engaged to be curious, to be able to form their own opinions and direct their own learning. In short, students must become active, self-regulated learners.

An overview of Self-Regulated Learning (SRL)

There are various definitions of self-regulated learning (SRL) but Pintrich (2004) points out that there are four general assumptions that most models share. Firstly, as the term *self-regulated* suggests, learners, rather than passive recipients of information, are viewed as active participants in the process. Secondly, SRL assumes that all learners can

potentially monitor, control and regulate some aspects of their learning. The implicit assumption is that SRL is possible regardless of student's characteristics such as age, gender, ability level or motivation. Thirdly, SRL assumes there is a goal, criterion or standard which learners strive for in their learning. Lastly, there are no direct linkages between achievement and personal (e.g., cultural, demographic, or personality characteristics) or contextual characteristics (e.g., classroom); achievement effects are mediated by the individual's self-regulation of cognition, motivation, and behaviour to reach learning and performance goals.

Schunk and Zimmerman (1994) have one more assumption in addition to the previous four; that there is a self-oriented feedback loop in which students monitor the effectiveness of their learning methods or strategies and respond to feedback in a variety of ways. Zimmerman subsequently suggested a cyclical model (Zimmerman & Martinez-Pons, 2004) comprising 3 phases: the Forethought phase which includes the key processes of goal setting and social modelling to set the stage for action, the Performance control phase which involves processes that occur during learning, and the Self-reflection phase which occurs after performance (Figure 1).

An attempt was made at a symposium at American Educational Research Association annual meeting in 1986 to arrive at an inclusive definition of self-regulation of learning (SRL) as the degree to which students are metacognitively, motivationally, and behaviorally active participants in their own learning process (Zimmerman, 2008). Metacognitively, self-regulated learners are persons who plan, organize, self-instruct, self-monitor, and self-evaluate at various stages during the learning process. Motivationally, self-regulated learners perceive themselves as competent, self-efficacious, and autonomous.

Behaviourally, self-regulated learners select, structure, and create environments that optimize learning. Zimmerman's definition has been adopted for this present study.

Performance Phase

Self-control

Self-instruction

Imagery

Attention focusing

Task strategies

Self-observation

Metacognitive

monitoring

Forethought Phase

Task Analysis

Goal setting

Strategic planning

Self-motivation Beliefs

Self-efficacy

Outcome expectations

Intrinsic interest / value

Goal orientation

Self-reflection Phase

Self-judgement

Self-evaluation

Causal attribution

Self-reaction

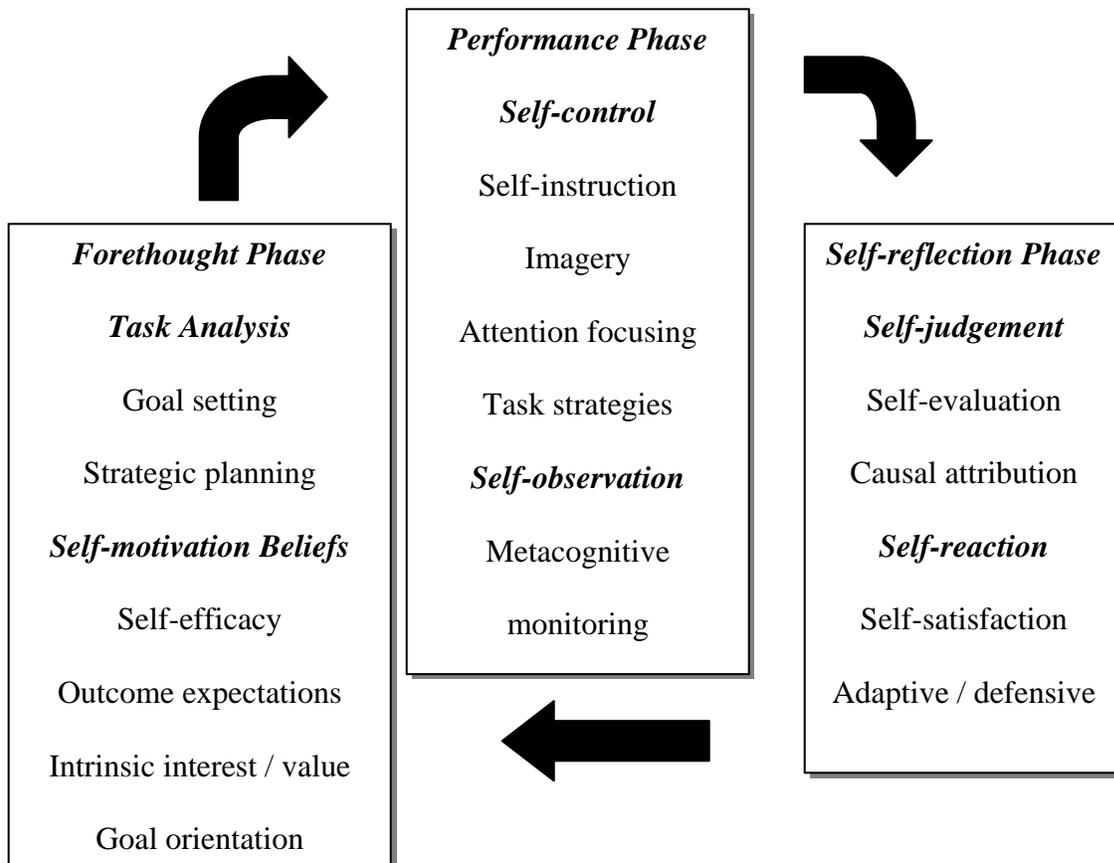Self-satisfaction

Adaptive / defensive

Figure 1. Phases and subprocesses of self-regulation

From Zimmerman, B. J. (2008) Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*(1), p. 178.

Link between SRL and Authentic Assessments

The literature review suggests that opportunities for SRL are best found in performance tasks in open-ended environments as such tasks will develop students' SRL through engaging them in active, self-directed experimentation with alternative possibilities

offered in such environments (Martin, 2004). This implies a fair amount of task complexity

and choice on the students' part.

There must be opportunities for the learners to obtain feedback to guide learners to

attaining their goal or criterion of success (Rhee & Pintrich, 2004). This feature arises not

only from the self-oriented feedback assumption that underpin SRL but also out of concern

that assessments should not just test but also facilitate learning. The real world serves to

provide the situational context for the learner to make sense of the newly acquired

knowledge and skills and the real-time feedback to help him improve. In doing so,

authentic assessments facilitate learning.

In short, as a result of its focus on both SRL and authentic assessment, the present

study limited its focus on authentic assessments which have the following characteristics:

· They involve a performance task.

· Students are required to solve complex problems.

· The problems involve a real world connection.

· The problems offer some level of learner choice.

· The problems involve opportunities for feedback from the real world.

A case study to investigate the link between SRL and Authentic Assessments

Few people would dispute the value of developing SRL in our learners, but how we

can achieve this aim is less obvious. While authentic assessments appear promising in

offering learners opportunities to exercise SRL through solving unstructured problems in

real world settings, this link has yet to be verified empirically.

The purpose of the present study was to examine this link within the bounded system of a high ability, all-girls school, chosen as it presented an unique opportunity to study SRL and how it is affected by authentic assessment.

As such, the research questions were as follows:

1. What differences are there (if any) in students' use of self-regulated learning in conventional paper-and-pen task and an authentic assessment task?

2. Specifically, what differences (if any) are there in Forethought, Performance and Self-reflection phases?

3. How is self-regulated learning helped or hindered by the real life setting, the school setting, student control (with respect to choice of material) and student's ability to self-assess.

Method

The present study employed a two-stage, sequential mixed methods approach to gather data from a variety of sources. In the first phase, data of students' experience of SRL in a conventional paper-and-pen and authentic assessment task was collected through a self-report questionnaire I designed based on Zimmerman's (2002) cyclical Forethought, Performance and Self-reflection model of self-regulation. Quantitative data on SRL was gathered using a self-report questionnaire. Participants, comprising 405 secondary four students (aged 15-16), were assigned two Language Arts tasks that tapped on the same cognitive skills, except that one was a paper-and-pen task while the other was an authentic assessment task which involved them writing a letter to the Forum in the local newspapers. They filled in the SRL questionnaire immediately after they had completed each task.

This was followed with qualitative one-to-one interviews to probe in greater depth the effects of contexts on participants' use of SRL strategies. Six students were interviewed: four selected by their teachers as positive or negative examples of self-regulated learners while two were selected because of the large difference between their two SRL scores. The one-to-one interviews focussed mainly on the two assessment tasks they had completed, but also probed for students' experiences of assessments in general.

Findings

The SRL questionnaire proved to be a reliable instrument with high internal consistency of student responses (Cronbach's alpha = .87). It was also verified by written feedback from teachers who reflected that the scores were generally consistent with their assessment of the students' level of SRL.

The analysis of the quantitative data provides empirical support for the hypothesized link between SRL and authentic assessments. A comparison of the SRL scores between the two tasks, using a paired sample t-test, showed a statistically significant difference in favour of the authentic assessment task in the form of the letter to the Forum ($t = 4.89$, $df = 404$, $p < .01$). However, the corresponding Cohen's $d = 0.08$, indicated a trivial effect. When the SRL scores were compared by phases, it was found that the students' use of self-regulation in the two tasks was not very different in the Forethought phase ($t = 4.83$, $p < .01$, Cohen's $d = 0.21$) and Performance phase ($t = .55$, $p = .58$). However, there was a marked difference in the Self-reflection phase ($t = 10.08$, $p < .01$, Cohen's $d = 0.51$). Further analysis by questions suggests that participants found the authentic assessment task more interesting and facilitated more Self-reflection: they tended to feel greater satisfaction with

their work on the authentic assessment task, having judged that they had made progress and

checked their work.

The one-to-one interviews both corroborated as well as illuminated the quantitative

findings. From the students' comparisons of the two tasks as well as comments on

assessment tasks in general, it appears that the following factors have an effect on their use

of self-regulated learning: the real life setting and choice available in the authentic

assessment task, the larger context of the school, the student's own ability to self-assess and

time available to complete the task. I have summarised these factors and their effects on the

learner with a diagram that is adapted from the social cognitivist model of triadic

reciprocality among the three determinants of SRL: the personal, environmental and

behavioural (Schunk, Pintrich & Meece, 2008).

Behaviour

B

Reacts to self-
assessment

Effect from
school setting and
time constraints

Seeks
feedback

Self-assess

P

E

Engagement because of real

Personal

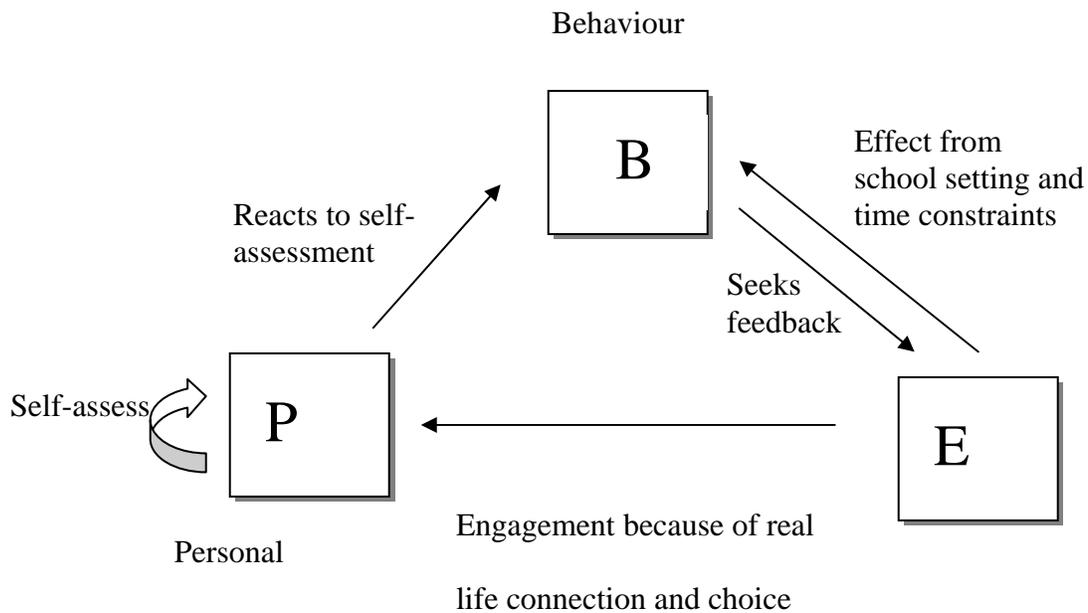life connection and choice

Figure 2. Aspects affecting the interviewees' self-regulated learning and how they are

linked.

Figure 2 illustrates how the interviewees' preference of authentic assessments can

be explained by their engagement because of the real life setting which helped them

connect with the task, both motivationally as well as cognitively as they drew upon their prior knowledge in performing the tasks. This connection was mediated by choice as not all real life tasks were equally motivating. Understandably, students were more engaged in tasks that they chose because of personal interest. Other environmental factors they mentioned which helped their development as self-regulated learners were the school's prevalent use of authentic assessments and emphasis on being a reflective learner. In contrast, the lack of time sometimes hindered effective self-regulation. It was also obvious the learners spontaneously sought feedback and the real life context of authentic assessment tasks was able to provide students with timely feedback on which to base their assessment of their own performance.

Discussion

The present study provides empirical evidence of self-regulation at work in two different assessment contexts. It also sheds light on specific aspects in the authentic assessment context that affect SRL as well as on the link among these aspects. Taken together, the findings present a comprehensive and coherent picture of how we can better develop self-regulated learners through authentic assessments.

From the comparison with the paper-and-pen assessment, there appears to be much value in authentic assessments because they provide a conducive context for the development of self-regulated learning. In contrast to conventional paper-and-pen assessments which frame the learner as passive subject of the assessment process, authentic assessments engage learners to play an active role in planning, directing, evaluating and adjusting their learning. All these skills and their attendant dispositions provide a sound

basis for learning in the long term, beyond the immediate task into the years after graduation. The capacity for students to become lifelong learners is important not only to the individual. In today's complex society, it is also vital for the nation that its school leavers know how to think for themselves and solve problems never encountered before.

Conclusion

The findings in the present study provide valuable information to guide decisions regarding developing self-regulated learners and implementing authentic assessment modes in schools. This study has much significance in Singapore with the increased use of authentic assessment as part of the "Teach Less, Learn More" initiative to bring about self-regulated learning as a desired learning outcome. But the present study has relevance not just for Singapore but for all who believe in developing self-regulated students with the capacities needed for the 21st century.

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