Chapter 13
Online Learning and Self-Regulation: Balancing Between Personal and Social Dimensions

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Introduction

As online delivery courses and distance education (DE) continue to expand, students' learning experiences and course outcomes become critical issues that need to be addressed. Consistent with this growth is the plethora of studies around the affordances and challenges of distance education and/or online learning. The expansion of constructivism, sociocultural theories and other reforming paradigms has made an impressive entrance in education and has been the principal frameworks in research around online learning as well. According to these theories, learners are able to construct their own understandings with the assistance of 'experts' such as 'teachers' or 'colleagues'. There is a shift from the traditional 'active', 'individualistic' participation to a more 'collective', collaborative and holistic approach to learning. Learners are able to learn but they will do even better if they cooperate with others. Team work is expected and encouraged. This collaborative nature of education has attracted a lot of attention and terms such as social learning (Bandura 1994); learning communities; peer learning; and 'scaffolding' are eminent in this area.

The growing presence of DE makes the constant need for research in this area imperative. In this chapter, we will present research around an area that is particularly important for DE students but can also have implications for all higher

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education students. We will concentrate on research around self-regulation, a major field of educational research for more than two decades that has recaptured researchers' interest as a necessary prerequisite for successful online engagement and learning. A study conducted in a university will inform our discussion and will shed more light on existing educational research in the field of online learning and self-regulating skills.

Literature Review

Definition of Self-Regulation (SR)

According to one of the most eminent researchers in the field of self-regulation, Zimmerman, self-regulated learning (SRL), refers to the self-directive processes and self-beliefs that enable learners to transform their mental abilities, such as verbal aptitude, into an academic performance skill, such as 'writing' (Zimmerman 2008, p. 166). According to the same researcher, self-regulating students are 'metacognitively, motivationally and behaviourally active participants in their own learning' (Zimmerman 1990, p. 4) and SR is different to other self-constructs because it involves 'agency, purpose and instrumentality perceptions by learners' (p. 5). In line with this conceptualisation of SR, Pintrich (1999, p. 453) defined SRL as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environments'.

Studies Around Self-Regulation and Online Learning

There are three types of self-regulation interactions that have captured researchers' interest. The first type is the 'effort regulation' (Cho and Shen 2013) or 'student-content' (Bol and Garner 2011) regulation where students try to manage the quantity and quality of the content they have to engage with and the effort they have to make in order to reach their goal; the second type is the 'social or interactive regulation' or 'student–student, student–instructor' regulation, where students interact with other students in team work or collaborative tasks and interact also with their instructors to complete their courses. Finally, the third type is the 'metacognitive regulation', where students with good regulating skills reflect back on their efforts, the strategies that they used to reach their goal and they self-evaluate in order to become more efficient learners in the future.

Cho and Shen (2013) underlined the importance of 'interactive regulation' since online learners are required to complete a number of activities as part of a group. In

this study, they investigated the role of SR in students' academic achievement in an online course by using several constructs to measure SR: goal orientation; academic self-efficacy; effort regulation; metacognitive regulation and interactive regulation. Their findings suggested that all three types of SR had a positive association with intrinsic goal orientation and academic self-efficacy (p. 296) and were positively correlated with academic achievement. Consistent with these findings, Bernard et al. (2009) in their meta-analysis of distance and online learning quantitatively verified the importance of these three interactions (p. 82) and Bol and Garner (2011) recommended that researchers need to take a more holistic approach and investigate all three types of regulation instead of focusing only on one type.

Nevertheless, 'social or interactive regulation' has not been sufficiently explored (Cho and Shen 2013, p. 297). Zimmerman and Tsikalas (2005) have argued that the majority of research in SRL has concentrated on the cognitive aspect of SR and the impact on performance and achievement, over-emphasising the metacognitive element of SR and under-exploring the social aspects of SRL, such as motivation and self-reactions.

Research has also underlined the need for social presence of students who are doing online courses being larger than for students who are attending face-to-face classes. Tsai et al. (2013) explored (path analysis) how students' social experience of online learning is influenced by their motivation and SR. They advocated for the social nature of SRL and not just the cognitive and they also underscored the constructive and active dimension of SRL (p. 90). Similarly, Zhan and Mei (2013) measured the effect of both academic self-concept and social presence on students' learning and concluded that the effect of social presence was greater for students who are completing an online course.

Self-Regulation and Reading

There are numerous studies on self-regulation and related constructs and their association with online learning and although the majority of online learning courses require their students to complete a number of readings, limited research has explored students' self-regulatory practices when engaging with online readings.

The characteristics of a self-regulated reader are established from a young age and include: setting realistic goals; selecting effective reading strategies; monitoring understanding of the text; and evaluating progress towards reaching the set goals (Horner and Shwery 2002; Martinez-Pons 1996; Zimmerman and Pons 1986). This cycle is consistent with the self-regulation model as outlined by Zimmerman and Pons (1986) based on the social cognitive theory. According to Zimmerman, there are different phases in the self-regulation cycle starting from the 'preparatory phase', going to 'action or completion' and then to 'appraisal' of strategies and new 'adaptation' phase. This cycle emphasises the 'social foundations of thinking and

behaviour' and the 'constructive, self-generated nature' of SRL (Puustinen and Pulkkinen 2001, p. 280).

This study explored one key component of online learning which was reading in two different modes (synchronous and asynchronous) and focused on the social aspect of learning. However, it is important to mention that previous studies suggested that there are students whose goal online is to 'master skills' (a process goal) and there are those whose goal is to 'master the subject matter' (content goal). The process goal resonates with the extent to which students trust each other online, while interaction with their tutors is not important. Achieving a content goal requires higher levels of connectedness with their tutors than with their peers (Laffey et al. 2006; Yang et al. 2006). These findings are consistent with previously reported evidence supporting that the connection between self-regulation and goal orientation depends on both the social dimension (individual or collaborative) of the learning experience and the type of goal set (content or process) (i.e. Pintrich and Schrauben 1992). There are no studies to date that have problematised the aforementioned notions of social dimension of learning and goal setting in a fully online environment. It is with such an omission that the present study aimed to engage with.

Method

The study presented here aimed to explore the perceptions of fully online distance learners of four different types of reading activities in relation to some predefined dimensions of self-regulation. In particular, the authors were interested in finding out the extent to which the students self-regulated while participating in collaborative reading activities in different online settings. A mixed methods' approach was employed in this study to allow a better understanding of the problem under scrutiny (Creswell and Garrett 2008). The sample were Master of Education students ($N = 16$) who studied fully online over one academic semester in a New Zealand University.

Measures

Measures combined questionnaires with semi-structured focus group interviews. A seven-item long questionnaire was developed based on the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich and De Groot 1990) and piloted. The adaptation of the questionnaire was necessary since this study involved online students. The questionnaire asked students to state in a five-point Likert scale (1 = least effective, 5 = most effective) how effective or ineffective the four reading activities were in relation to: (1) their individual belief in their capacity to complete

the reading task (self-efficacy); (2) the value of the reading task for their learning (internal task value); (3) the value of their task to complete their assignments (external task value); (4) organise their strategies for learning (set learning-oriented goals); (5) appear to perform well (set performance-oriented goals); (6) develop a sense of belonging with other students (community building); and (7) provide opportunities to receive and give feedback (Feedback). Examples of the questions included: '*the activity helped me focus on the reading task*', '*the activity provided me with the opportunity to learn from other students*' and '*the activity added pressure on me to perform well in the online platform.*'

All students were asked to engage with four compulsory activities as follows:

1. A tutor-led 2-week-long reading group using an online discussion forum in a Learning Management System (asynchronous guided reading activity).
2. A student-led 2-week-long reading group using an online discussion in a Learning Management System (asynchronous discovery reading activity).
3. A tutor-led 2-h-long synchronous reading group using a Web-conferencing tool (synchronous guided reading activity).
4. A student-led 2-h-long synchronous reading group (synchronous discovery reading activity).

At the end of each activity, students were asked to complete a seven-item long 'motivation-to-learn' questionnaire as a means of debrief. There were no final exams for this course and participation in the online reading activities were rated as pass or fail. No grades were assigned.

One week after the end of the course, participants were asked to participate in a fully online focus group session using a Web conference tool. The interview took place after all marking of the assignments was complete and marks and feedback were released to the students. Thirteen out of the 16 students participated in the focus group interview and gave their consent for their voices to be captured and analysed for research and publication purposes. The interview included questions related to self-regulation and online participation in the reading activities. All the research was conducted following the Research Ethical Code of Practice of the University.

Analysis

All items of the short questionnaire were inserted in Excel for basic descriptive analysis. Data were represented in the form of graphs to visualise and better understand the responses of the students and help us form the prompt questions for the interviews. Students' interview replies were recorded and transcribed for thematic analysis in NVivo 10. A Kappa reliability check in a quarter of the qualitative data set gave a reliability score of 75 % which was satisfactory.

Results

Quantitative—Questionnaires

The results of the descriptive quantitative analysis of the questionnaire are presented in Table 13.1. The synchronous guided (SG) activity was valued high by the students with regard to the dimension 'community building' ($M = 5$); however, dimensions 'internal task value' and 'setting learning-oriented goals' were low ($M = 2$). When students worked synchronously without the presence of their tutor (Synchronous discovery: SD), the score on the dimension 'feedback' was the highest of all the situations ($M = 5$) and there was a slight increase of one point in the dimension 'self-evaluation'.

There was also a change in how students perceived the value of the task; they felt that the task was more meaningful to their learning and felt less pressured to perform well when the teacher was not present. The asynchronous guided (AG) activity was valued high with regard to students' perception of their ability to complete task (self-efficacy; $M = 4$) as well as several other dimensions related to internal task value, setting learning-oriented goals, self-evaluation and feedback ($M = 4$). Finally, the asynchronous discovery (AD) activity was perceived by the students to be the most effective of all ($M = 5$) for helping them to identify their own learning goals. However, this type of activity scored the lowest combined score in the dimensions 'self-efficacy', 'setting performance-oriented goals', 'community' and 'feedback'.

The patterns of all four activities are also illustrated in Fig. 13.1. The figure presents the mean scores (numbers 1–5) and how the four different activities were scored with regard to SR dimensions (represented in different lines). The figure is divided into two halves. The right half is related to individual dimensions (self-efficacy; task value; set learning-oriented goals) of SR and the left half is related to co-regulation (feedback; community building; set performance-oriented goals). The figure highlights the lower perceived effectiveness of the synchronous activities (both discovery and guided) and the higher perceived effectiveness of the asynchronous activities (discovery and guided).

Table 13.1 Respondents' mean scores of perceptions of usefulness of reading activities in relation to self-regulation dimensions

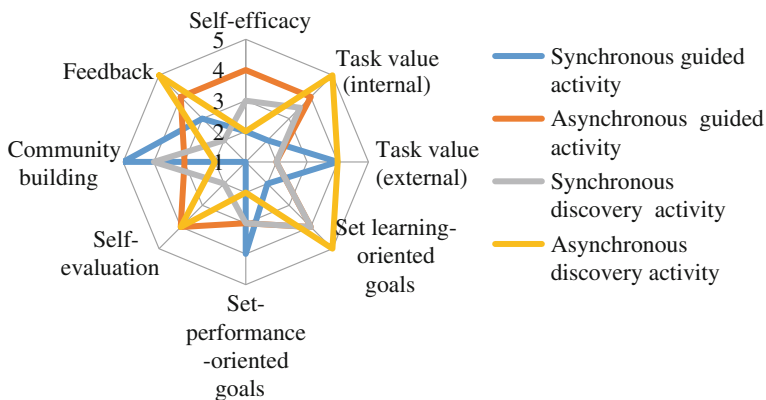| Predefined self-regulation dimensions	SG	AG	SD	AD
Self-efficacy	2	4	3	2
Task value (internal)	2	4	3.5	**5**
Task value (external)	4	2	2	4
Set learning-oriented goals	2	4	4	**5**
Set performance-oriented goals	4	3	3	2
Self-evaluation	1	4	2	4
Community building	**5**	3	4	2
Feedback	3	4	**5**	2

Fig. 13.1 Patterns of perceived effectiveness of four different types of activities in relation to self-regulation dimensions (*1* least effective, *5* most effective)

Qualitative—Interviews

There were four main themes that emerged from the analysis of the focus group semi-structured interviews. These themes were 'Promotion of a 'Sense of Community', 'Performance Goals', 'Personal Development' and 'Feedback'.

In this study, students reported that the promotion of a strong community feeling was achieved mostly during the synchronous activities and especially when they were participating in the synchronous student-facilitated discussions (Synchronous Discovery). One student reported that '*working with other students during the web conference activity was fun! It was nice to put some faces on the names, listen to their voices …it made me feel that there is a real class.*' Another student emphasised, however, that the presence of the tutor in the synchronous activity worked well but that she '*was not feeling that comfortable to express my opinions … I definitely enjoyed more the student-facilitated web conference session.*' The reasons that other students offered about the perceived usefulness of the synchronous activities towards completing the reading tasks included '*it gave me some clear deadlines to complete my readings before we met to discuss them*' and '*.. not worrying about having to write lengthy replies to the online discussions forum, I just turned up and spoke.*' An important point was raised by half of the students in relation to the value of the task in achieving their performance goals in synchronous sessions. The following extract is indicative of this theme: '*the synchronous nature of the discussion with the presence of the tutor made me feel pressurized to perform well…I was stressed about what I would say to contribute to the discussion as opposed to listen to what others have to say.*'

In relation to personal development and feedback, students agreed that it was the asynchronous activities that helped them the most with both reflecting on their

learning and offering and providing feedback. The reasons offered were in accordance with many of the declared benefits of asynchronous learning. For example, one student reported that '*having my contributions in writing, I could always go back, read them again, read other contributions by other students and think deeper about the key points*'. Another added that '*the time delay in the online discussion forum helped me formulate my thoughts first in my mind before sharing them with my group… I went many times and read other comments before I posted mine. Yes, it helped reflect on my views*'. In particular, the student appreciated the efforts by the tutor in the asynchronous guided activity to ask questions as a critical friend and prompt them to reflect and evaluate their contributions. A student emphasised that '*having the tutor asking us questions about why we wrote something, or how well one idea connects with another or with my own views, helped me look at the discussion forum from a more critical perceptive*'.

Overall, as can be seen by the analysis of the interviews, students clearly identified the synchronous discovery activity as the one supporting their sense of belonging and community enhancing at the same time their co-regulation. A final point is that the replies from both the quantitative and the qualitative data agreed that the asynchronous activities were most effective as far as the personal dimensions of SR are concerned and the synchronous were effective for co-regulation.

Findings and Discussion

In online learning environments, self-regulation has been shown to be strongly associated with the social ability of students (ability to work together in groups) as well as with students' self-efficacy and ability to set their own goals (Laffey et al. 2006; Yang et al. 2006). In this study, we tried to shed some light into how different types of online activities can motivate distance learners to engage with readings by setting realistic process and content goals and achieve them. We tried four different types of activities that provided students a variety of online learning rhythms (asynchronous and synchronous) and degree of student-centeredness (tutor-led and student-led discussions). We report from our findings that the four different types of activities with regard to the self-regulation dimensions were effective but for achieving different goals. None of the four activities was perceived individually to be the most effective in promoting SR. It was the combination of the four activities that created the best condition for SR.

The rhythm of the activity (synchronous or asynchronous) appeared to have an influence on students' perceived self-regulation. In particular, the asynchronous nature of the activity was perceived as more effective for self-efficacy and motivation, whereas the synchronous nature of activity impacted more on community engagement and co-regulation. This finding resonates with well-referenced studies on the importance of asynchronous online discussions in supporting individual

learners to reflect and set their own learning goals (Garrison 2003; Salmon 2002). Moreover, previous studies related to synchronous interactions also suggest DE students' preference for not being required to participate in synchronous activities (Murray et al. 2008; Webster and Hackley 1997).

Finally, teacher presence appears to have an influence especially on setting internal or external goals. Their role should be that of 'critical friend' and 'fellow learner' as opposed to the 'instructor' and their online tutoring approach should be carefully planned (Vlachopoulos and Cowan 2010). Other studies have found the role of the tutor to be influential in creating the conditions for SR in online learning environments. Guldberg and Pilkington (2007) found that the ability of students to self-regulate enhanced their learning but they suggested that the tutor also has had a crucial role to play in supporting SR. In line with this finding, Oliver and Shaw (2003) reported from a study of asynchronous discussions that the only contextual element that appeared to influence SR in any important way was the tutor.

Implications for Practice

There are a number of implications that our study has for future research and educational practice. Addressing educational practice first, we recommend considering the following:

- Setting up asynchronous student-led discovery reading activities (where students can search and select academic readings of interest to them) to improve intrinsic motivation and internal task value as well as adding some external task value;
- Setting up synchronous discovery reading and discussion sessions, preferably led by students, to increase community feeling among students;
- Avoiding the temptation to directly intervene in reading discussions, unless you are doing so in a collegial way as a critical friend. Direct interventions, especially in synchronous settings, do not appear to promote a self-regulated attitude on the part of the students;
- Particular design elements (individual accountability, group goals and positive interdependence) are essential for these learner–to–learner benefits to occur; and
- The provision of synchronous experiences in online learning should be considered and designed carefully without the expectation that all DE students are required to participate.

As far as future research is concerned, although the research in this field is abundant, there is still need for more studies with a clear theoretical framework and that will measure SR in all its diversity. SRL is a cyclical, recursive and active process encompassing motivation, behaviour and context and as such, very challenging to capture in its entirety (Winters et al. 2008). Furthermore, Artino and

Stephens (2006, p. 147) argue for the need to study SR from a developmental perspective, explore possible developmental differences in students' SR practices as these practices might evolve and be transformed with experience and new knowledge.

In terms of methodology, concerns for self-report measures and trace data collection methods have been expressed as inadequate to capture motivation and interest (Puustinen and Pulkkinen 2001, p. 283) A need for more think-aloud methodologies/protocols as recommended by Ericsson and Simon (1984) will focus on asking students to verbalise their thinking, not explaining, as verbalising their thoughts does not interfere with cognitive processes.

Finally, as also emerged in this study a field of SRL that also deserves further investigation is the role of self-regulation in the learning design, delivery and evaluation of the effectiveness of instruction in DE environments (Bol and Garner 2011, p. 105).

Conclusions

Online learning is steadily growing and its firm establishment in Higher Education has provided us with opportunities to revisit educational practices, theories and pedagogies. One of the concepts that emerged as' highly relevant and valuable' (Cassidy 2011, p. 990) and a major goal for any modern educational system is the development of SR skills. Investing in the promotion of SR skills is an investment for lifelong learning as envisioned in today's society. The key message from our study is that a social and holistic approach to designing online courses is also effective in building SR skills. A carefully designed online course should include a good balance of both synchronous and asynchronous activities with the tutor taking the role of a 'critical friend' or 'fellow learner' that allows room and scaffold learners to be able to take control of their own learning, which in turn promotes their SR skills.

References

Artino, A. R., & Stephens, J. M. (2006). Learning online: Motivated to self-regulate. *Academic Exchange Quarterly, 10*(4), 176–182.

Bandura, A. (1994). Exercise of personal and collective efficacy in changing societies. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 1–45). New York: Cambridge University Press.

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A meta-analysis of three interaction treatments in distance education. *Review of Educational Research, 79*, 1243–1289. doi:10.3102/0034654309333844v1.

Bol, L., & Garner, J. K. (2011). Challenges in supporting self-regulation in distance education environments. *Journal of Computing in Higher Education, 23*(2–3), 104–123.

Cassidy, S. (2011). Self-regulated learning in higher education: Identifying key component processes. *Studies in Higher Education, 36*, 989–1000.

Cho, M.-H., & Shen, D. (2013). Self-regulation in online learning. *Distance Education, 34*(3), 290–301. doi:10.1080/01587919.2013.835770.

Creswell, J. W., & Garrett, A. L. (2008). The "movement" of mixed methods research and the role of educators. *South African Journal of Education, 28*(3), 321–333.

Ericsson, K. A., & Simon, H. A. (1984). *Protocol analysis: Verbal reports as data*. Cambridge, MA: The MIT Press.

Garrison, D. R. (2003). Cognitive presence for effective asynchronous online learning: The role of reflective inquiry, self-direction and metacognition. In J. B. J. Moore (Ed.), *Elements of quality online education: Practice and direction*. The Sloan Consortium: Needham, MA.

Guldberg, K., & Pilkington, R. (2007). Tutor roles in facilitating reflection on practice through online discussion. *Education Technology & Society, 10*(1), 61–72.

Horner, S. L., & Shwery, C. S. (2002). Becoming an engaged, self-regulated reader. *Theory into Practice, 41*(2), 102–109.

Laffey, J., Lin, G., & Lin, Y. (2006). Assessing social ability in online learning environments. *Journal of Interactive Learning Research, 17*(2), 163–177.

Martinez-Pons, M. (1996). Test of a model of parental inducement of academic self-regulation. *The Journal of Experimental Education, 64*(3), 213–227.

Murray, S., Nuttall, J., & Mitchell, J. (2008). Research into initial teacher education in Australia: A survey of the literature 1995–2004. *Teaching and Teacher Education, 24*(1), 225–239.

Oliver, M., & Shaw, G. P. (2003). Asynchronous discussion in support of medical education. *Journal of Asynchronous Learning Networks, 7*(1), 56–67.

Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research, 31*(6), 459–470.

Pintrich, P. R., & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33–50.

Pintrich, P. R., & Schrauben, B. (1992). Students' motivational beliefs and their cognitive engagement in classroom academic tasks. *Student perceptions in the classroom, 7*, 149–183.

Puustinen, M., & Pulkkinen, L. (2001). Models of self-regulated learning: A review. *Scandinavian Journal of Educational Research, 45*(3), 269–286.

Salmon, G. (2002). *E-tivities—The key to active online learning*. London: Kogan Page.

Tsai, I.-C., Tung, I.-P., & Laffey, J. (2013). Exploring the impact of students' motivation and self-regulation on the social nature of online learning experiences. *International Journal of Learning Technology, 8*(1), 86–108. doi:10.1504/IJLT.2013.052833.

Vlachopoulos, P., & Cowan, J. (2010). Choices of approaches in e-moderation: Conclusions from a grounded theory study. *Active Learning in Higher Education, 11*(3), 1–13. doi:10.1177/1469787410379684.

Webster, J., & Hackley, P. (1997). Teaching effectiveness in technology-mediated distance learning. *Academy of Management Journal, 40*(6), 1282–1309.

Winters, F. I., Greene, J. A., & Costich, C. M. (2008). Self-regulation of learning within computer-based learning environments: A critical analysis. *Educational Psychology Review, 20*(4), 429–444.

Yang, C.-C., Tsai, I.-C., Kim, B., Cho, M.-H., & Laffey, J. M. (2006). Exploring the relationships between students' academic motivation and social ability in online learning environments. *Internet and Higher Education, 9*, 277–286.

Zhan, Z., & Mei, H. (2013). Academic self-concept and social presence in face-to-face and online learning: Perceptions and effects on students' learning achievement and satisfaction across environments. *Computers & Education, 69*, 131–138.

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational psychologist, 25*(1), 3–17.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166–183.

Zimmerman, B. J., & Pons, M. M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal, 23* (4), 614–628.

Zimmerman, B. J., & Tsikalas, K. E. (2005). Can computer-based learning environments (CBLEs) be used as self-regulatory tools to enhance learning? *Educational Psychologist, 40*(4), 267–271.