

DEVELOPING A CONCEPTUAL FRAMEWORK FOR EVALUATING THE EFFECTS OF SELF-REGULATED LEARNING (SRL) STRATEGIES ON STUDENTS' ONLINE LEARNING SATISFACTION

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Abstract

Self-regulated learning (SRL) is one of the most important learning strategies in the context of online learning as it is required even more as compared to a face-to-face setting. Since online courses rely more exclusively upon SRL strategies, the effects of SRL and online learners' satisfactions need to be extensively and quantitatively examined. However, a holistic study assessing the relationship between SRL strategies and students' satisfaction in virtual learning environments is currently largely unavailable. Therefore, this study integrates SRL strategies through the lens of the Cybergogy for Engaged Learning Model to investigate students' online learning satisfaction. Specifically, a conceptual model is developed to establish a synergy between SRL and Cybergogy to represent an appropriate synergistic framework for the implementation of the educational technologies model in the virtual learning environment. The finding is expected to contribute to the development of an evidence-based model for continuous improvement of online courses. It will also yield a more comprehensive picture of SRL in various online learning environments and serve as an guideline for universities in redesigning online courses to reforms in the era of Industrial Revolution 4.0.

Keywords: Self-Regulated Learning (SRL) Strategies, Cybergogy for Engaged Learning Model, Industrial Revolution 4.0, Virtual Learning Environments (VLE), Learning Satisfaction.

1. Introduction and Purpose

Over the last two decades, SRL has become one of the major areas in educational research, and has been addressed in various research areas, including in different modes of online learning environments. It is an integrated learning process guided by a set of motivational beliefs, as well as behavioural, cognitive and metacognitive activities that are planned and adapted to support the pursuit of personal goals (Schunk and Zimmerman, 2012). Zimmerman (1989) referred to SRL as the degree to which students are metacognitively, motivationally, and behaviorally active participants in the process of monitoring their own learning. Pintrich (2000) defines SRL learners as those who actively construct their own learning process and are able to set their learning goals, while also making an effort to observe, adjust, and control their cognition, motivation, and behavior in achieving those goals.

Self-regulated learning (SRL) is one of the most important learning strategies in the context of blended and fully online learning environments. It highlights the dynamic personality of a learner's interactions as well as constructs self-regulated behavior in learning tasks (Martin,

2004). It is crucial to recognize the importance of SRL in online environments since SRL is prerequisite in such environment, even more so than in face-to-face (F2F) learning (Rowe and Rafferty, 2013). Learners with high inclination for self-regulated learning may find more satisfied in blended and online courses (Nicol, 2009; Rowe and Rafferty, 2013). Therefore, it is interesting to investigate the impact of SRL strategies in various online learning environments.

There are several different self-regulated learning (SRL) models, each presents different theoretical perspectives and provide an understanding of variables that influence students' learning. Generally, all the existing SRL models mainly constitute of a cognitive, metacognitive, motivational and behavioural components. SRL's cognitive component refers to the use of basic strategies such as repeating words, paraphrasing, summarizing, outlining, and critical thinking to actively manipulate academic content (Kauffman, 2004; Zimmerman, 1989). SRL's metacognitive component refers to the skills that help students to monitor their own cognitive processes as well as facilitates the learners' ability to organize learning plans or schedules and set goals to assess their learning growth (Kauffman et al., 2008).

A review of theoretical models of SRL conducted by Puustinen and Pulkkinen (2001) suggests that self-regulated learners are not only metacognitively and behaviourally active during the process of learning (performance phase), but also before (preparatory phase) and after the learning task (appraisal phase). The overview of SRL activities could be categorized into three phases as shown below.

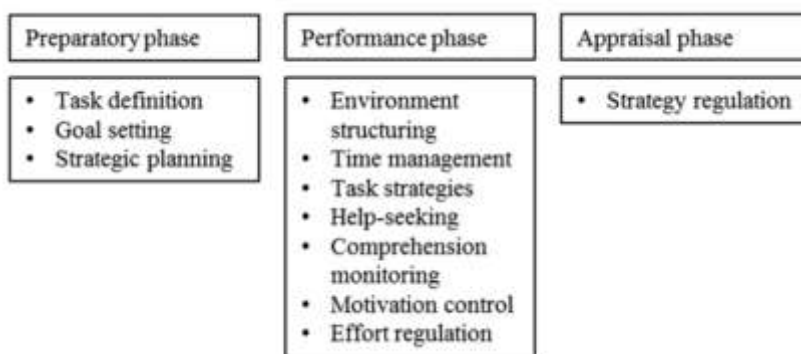


Figure 1. An Overview of Three Phases of SRL Activities

Scholars in educational studies have suggested that the terms self-directed learning (SDL) and self-regulated learning (SRL) have often used interchangeably in the literature as both strategies involve active engagement and goal-directed behaviour (Loyens et al., 2008). This is encored well by Pilling-Cormick and Garrison (2007) who describe SDL and SRL as strategies which carry elements of responsibility and control in learning. However, SDL can encompass SRL, but not vice versa. In other words, SDL requires SRL, one needs self-regulation in order to become a capable self-directed learner. As such, SRL is an essential strategy in promoting SDL, such as discovery learning, self-selected reading, or seeking information from electronic sources, as well as in social forms of learning (Zimmerman, 2008). Self-regulation is a pre-requisite foran individual in their learning process, which include F2F, blended learning and fully online environments. Therefore, sufficient support and an effective measurement of SRL in the context of online learning are of vital importance (Jansen et al., 2017).

Studies indicate that SRL has been recognized as a vital element for developing students' successful learning experiences in e-Learning environments (Nicol, 2009; Broadbent and Poon, 2015; Cho and Heron, 2015). It substantially impacts their success and satisfaction in online courses (Kuo et al., 2013). In online courses, students assume greater responsibility and autonomy for their learning. Online learning's flexibility, demanding nature, and learner-centeredness require students to employ more self-regulatory skills (Artino, 2007; Bothma and

Monteith, 2004). Hence, when learners acquire the skills to regulate different learning strategies in their learning process, they will have higher chances of being successful in online learning environments (Barnard-Brak et al, 2010; Hodges and Kim, 2010).

Similar studies concerning SRL and its impact as an important variable in terms of success in both fully online and blended learning environments were also conducted by Ally (2004), Fisher and Baird (2005), and Kitsantas and Dabbagh (2010). Moreover, Lynch and Dembo (2004) and Chang (2007) also discovered a positive correlation between SRL and academic accomplishment in online and blended learning environments. Additionally, Howland and Moore (2002) additionally found that students who engaged in more online self-regulatory learning behaviours generally had a more positive perception of online courses. Although existing literature suggests that SRL strategies are relevant to students' performance in blended learning courses, little research focuses on how self-regulation is related to affective outcomes such as learning satisfaction and attitudes (Artino, 2007; Peterson, 2011).

In this study, SRL is operationalized as *independent variable* and SRL theory is used as the underlying theoretical framework in guiding the investigation of students' online learning satisfaction in two different learning environments, i.e. blended learning and fully online credit-bearing courses offered by the University.

2. Problem Statement

Online learners' satisfaction is one of the most important factors in understanding the quality of online learning (Allen and Seaman, 2010; Cleveland-Innes and Garrison, 2005). Indeed, the degree of learner satisfaction is often used to evaluate the effectiveness of online learning. Without investigating what satisfies learners in online courses, it is difficult to improve their learning (Harsasi and Sutawijaya, 2018). While many studies on the effects of self-regulation in online learning often focused on learning outcomes such as academic achievement or performance (Bell, 2006; Yukselturk and Bulut, 2005), little research focuses on how self-regulation is related to affective outcomes such as student satisfaction (Artino, 2007; Peterson, 2011; Puziferro, 2008).

Furthermore, the existing literature shows that the ability for learners to self-regulate in the learning process contributes to their educational attainment, but the literature does not indicate which strategies of SRL is directly related to learning satisfaction, and therefore should be developed in both blended and fully online learning environments (Wolters, 2010). With the lack of definitive insights into these issues, it is difficult to know which learning strategies students should deploy by students when they study online.

Although existing literature suggests that self-regulated learning (SRL) strategies are relevant to student achievements and satisfaction in blended courses (Nicol, 2009; Hu and Driscoll, 2013; Lynch and Dembo, 2004) and online courses (Kuo et al., 2013; Ally, 2004; Fisher and Baird, 2005; Broadbent and Poon, 2015; Cho and Heron, 2015; Puziferro, 2008; Carson, 2011), limited research has empirically compared the effects of SRL in these two different learning modes (Broadbent, 2017). Comparing students' online learning satisfaction in these two different e-Learning environments is relevant and timely because Taylor's university is embarking on its university-wide "Teach Less, Learn More" initiative as part of the learning innovations under Taylor's Curriculum Framework project (2018-2021). This initiative reduces F2F contact hours by translating F2F lectures into online lectures or online engagement activities through the introduction of blended and fully online courses.

Lastly, education theory has seen a trajectory from teacher-centred (instructivism) to learner-centred approaches (constructivism). However, many learning theories were developed prior to the rise and the ubiquity of Web 2.0/3.0 and social media (Herie, 2013). Similarly, research data suggests that personalized learning strategies and collaborative learning play an importance role

in supporting deeper learning among students (Gijsbers and van Schoonhoven, 2012; Redecker and Punie, 2013). However, many existing curriculum and assessment processes are largely identical and discourages the development of a personalized learning in the delivery process. Thus, it is essential for Taylor's University to understand and develop an integrated conceptual framework to support and cultivate creativity as well as to ensure the learning design is relevant to the present generation of the learners. For these reasons, this study integrates SRL strategies through the lens of Cybergogy for Engaged Learning model to assist the university in producing future-ready talent.

3. Objectives of the Study

In this study, the theoretical perspectives on SRL and the theory of Cybergogy for engaged online learning models are used as the underlying theoretical framework in guiding the investigation of students' online learning satisfaction in two different learning environments, i.e. blended and fully online credit-bearing courses. It attempts to provide a holistic view of SRL strategies as predictors of students' satisfaction in both blended and fully online courses.

Specifically, the aim of the study is to assess the roles of self-regulated learning (SRL) strategies in predicting student's online learning satisfaction in two different learning environments (blended learning vs online learning). To achieve the objectives of this study, the following research question is addressed, i.e. to what extent do SRL strategies predict student's learning satisfaction and which variables are significant predictors? How does the strength of the correlation vary between two different learning environments (blended learning vs online learning)?

4. SRL and Online Learning Satisfaction

In online learning environments, it is more critical to understand the effects of self-regulated learning on the learners' satisfaction. This is because the nature of the online learning which requires learners to be self-motivated and self-disciplined. Previous studies found that learners who portray a high level of SRL contributed positively to online learning satisfaction (Cho and Jonassen, 2009; Paechter, Maier, and Macher, 2010; Rowe and Rafferty, 2013). Similarly, Puzziferro (2008) found high-achieving students are skilful, self-regulated learners and are more satisfied with online learning than low-achieving students. This type of learner is better in regulating and adjusting their learning process and adapting to different learning environments.

Puzziferro (2008) examined course satisfaction in online undergraduate level courses, and self-regulated learning strategies among community college students who enrolled in liberal arts online courses during a single semester. The findings revealed that students who scored higher on five SRL strategies, namely rehearsal, elaboration, metacognitive, and time management and study environment reported significantly higher levels of satisfaction with the online course than students who scored lower. Peterson (2011) investigated high school students taking online courses from various subjects and found that self-regulatory attributes of subject specific self-efficacy course satisfaction. In addition, Howland and Moore (2002) found that students who are more engaged online generally have lower attrition rates, higher satisfaction and better academic achievements.

From the perspective of motivational strategy, which is a sub-component of SRL, Lee and Choi (2007) found that motivation appeared to predict the satisfaction. McFarland and Hamilton (2005) also discovered that both student motivation and attitude strongly influence how well students learn in an online course. Artino (2007) found task value and self-efficacy, which are the sub-components in the motivation construct of SRL, are positively correlated with students' overall satisfaction with an online course. Therefore, a student's ability to motivate and regulate own learning progress is critical. Learners who are less capable in regulating their learning may find less motivation and lower satisfaction in online courses (Sun and Rueda, 2012).

Although online courses tend to rely more exclusively on SRL, the magnitude and form of the relationships among student satisfaction of online course and self-regulatory learning behaviours have yet to be quantitatively and extensively examined (Barnard et al., 2009). In addition, it is necessary for educators to further investigate how to equip every student to be proficient in the SRL skills necessary to succeed in such an online environment (Driscoll et al., 2012). Thus, more research is needed to identify ways to improve SRL strategies and satisfaction in the context of online learning environments.

5. SRL in Online Learning Environments

Educational researchers recognized SRL not only as one of the most prominent learning styles (Cohen and Baruth, 2017), but also as an influential component of academic achievement in the context of online learning (Barnard et al., 2009; Nicol, 2009). Differences are found between self-regulation of learning in online environments versus F2F learning environments. SRL is more challenging to students in online learning environments as they are required to be more proactive in their learning since interaction and instructors' presence are limited as well as they are socially isolated from peers (Ally, 2004; Cho, Shen, and Laffey, 2010; Sun and Rueda, 2012).

In the blended and fully online learning environments, learners assume more responsibility, flexibility and autonomy, therefore self-regulation becomes a critical success factor in online learning (Barnard et al., 2009; Artino, 2008). The more self-regulatory skills learners possess, the more likely they demonstrate higher performance and course satisfaction, and are subsequently more successful in online learning environments (Artino, 2008; Artino and Stephens, 2009; Barnard et al., 2010; Shea and Bidjerano, 2010; Cho and Shen, 2013). Similarly, researchers have also reported that less self-regulated learners may abuse the flexibility given in the online learning environment, therefore, they were less successful in online learning environment (Lee, Shen, and Tsai, 2008).

The current ubiquity and growing adoption of student-centred learning, as well as self-paced, and non-linear learning environments in online learning, require a more effective application of several self-regulatory processes as compared to F2F learning (Rowe and Rafferty 2013). Zimmerman and Schunk (2001) concluded that self-regulated behaviours are "highly context dependent". To cultivate self-regulated learning behaviours in online environments, educators need to conduct careful investigation as these behaviours differ across different learning contexts. Thus, learners could change their self-regulated learning behaviours rapidly according to the nature of the learning environment (Brak et al., 2010).

There is a growing body of research that recognised the importance of SRL in online learning environments (Chan, 2012). Many studies also have signified that the successful use of self-regulated learning strategies can foster improvements in academic attainment and completion (Beishuizen and Steffens, 2011; Wang, Shannon, and Ross, 2013). For instance, Howland and Moore (2002) indicated that high self-regulation learners are generally more satisfied in online courses, and achieve more positive academic outcomes. Furthermore, Chang (2007) provided evidence supporting the effects of self-regulated strategies in helping learners to be more confident in their online course content and improved their performance.

Although there is a distinct body of literature that examines self-regulation in the online learning environment, the role of self-regulatory skills in the online learning environment has not received the same attention when compared to traditional learning settings (Barnard et al., 2009). In this instance, a quantitative measure of self-regulation learning in the online and blended learning contexts would be particularly useful to examine the relationship between these self-regulatory learning skills and learning satisfaction as contextualized to the online and blended learning environments (Chang, 2007).

6. Conceptual Framework Development

The literature review has suggested that the conceptual framework of the present study is mainly drawn from Winne and Hadwin (2008)'s SRL model and Wang and Kang (2006)'s Cybergogy for Engaged Learning model. Figure 2 shows the conceptual framework of this study. It identifies SRL strategies as an independent variable that would be measured in the virtual learning environment, in relation to online learners' satisfaction.

The context is an important factor in this study as it defines the unique learning environment for the investigation. In the present study, the research compares the differences between the effect of SRL strategies on students' satisfaction in two different e-Learning environments, i.e. blended learning (30 to 79% of the content is delivered online) and fully online courses (more than 90% of the content and learning activities are delivered online).

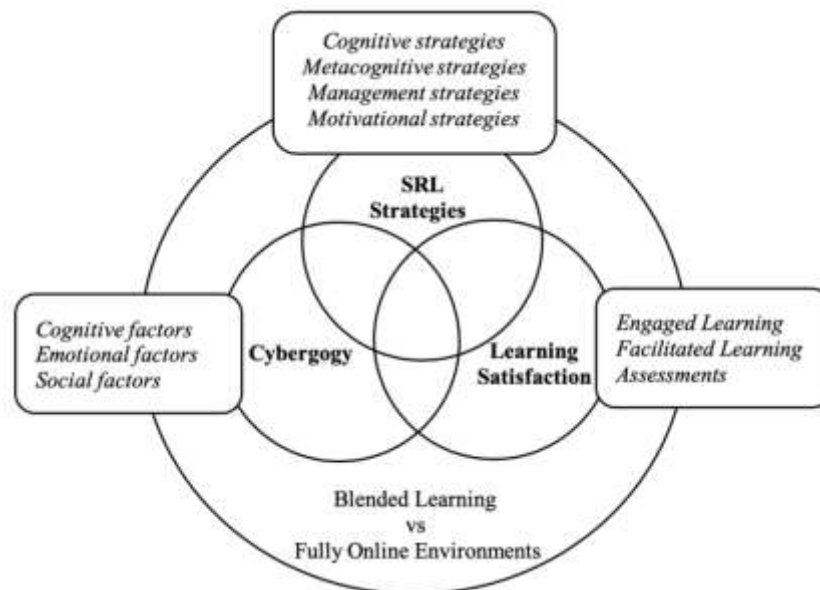


Figure 2. Conceptual Framework Development

7. Cybergogy For Engaged Learning Model

A new teaching and learning concept called Cybergogy has emerged due to the application of educational technology in the virtual learning environment. This concept reminds educators that the learning strategies used for F2F context may not be the same as virtual environment. It highlights the strategies for creating autonomous, collaborative and engaged learning in the online environment and integrates the cognitive, emotional and social processes of engaged online learning (Wang, 2008). In other words, Cybergogy maximizes the unique benefits of technology-enabled learning for better learning results. It also focuses on guiding e-content developers in designing an efficient learning module in a virtual environment (Wang, 2008).

Interestingly, the Cybergogy for engaged learning model and the strategies of the SRL are strongly correlated. Figure 3 shows a synergy between SRL and Cybergogy and it represents an appropriate synergy framework for the implementation of the educational technologies model in a virtual learning environment.

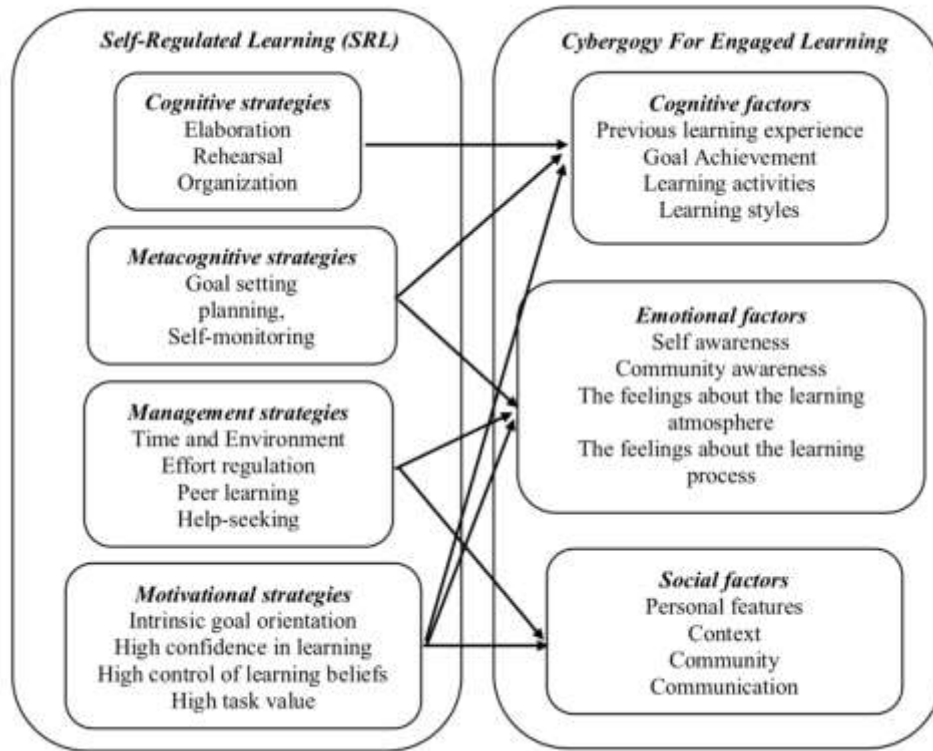


Figure 3. Synergy between SRL and Cybergogy

The Cybergogy model integrates the cognitive factors, emotional factors and social factors in explaining the engagement process in online learning environments (Wang, 2008). Thus, in any successful online learning environment, it is essential to equip students with prior discipline-specific knowledge, to create a motivating environment for them to learn, and to engage them meaningfully in the learning process (Wang and Kang, 2006; Wang, 2008). In addition, Wang and Kang also suggest that in order to foster an engaging online learning environment, educators need to form a strong sense of community and social commitment among the learners to make them feel comfortable to contribute in the online learning community. In this model, the learning engagement is clearly associated with motivation, and therefore, all members in the online learning community need to collaboratively create the motivational conditions. For instance, there is a need to create a bonded and respectful learning atmosphere in order to help learners to develop a positive mindset, while creating deep learning experiences that are aligned with learners' perceptions (Wang, 2008).

8. The Significance of the Study

From the practical perspective, this study provides insights for Taylor's University to identify predictors which have a stronger relationship with e-learning system satisfaction, and subsequently enhances the perceptions of these predictors in order to improve the quality of online learning. It also sheds light on the potential of SRL strategies and its impacts on online learning satisfaction, in both blended and fully online courses. The finding is useful for the university to efficiently plan out the development roadmap for both blended and fully online courses as part of the "Teach Less, Learn More" initiative under Taylor's Curriculum Framework project (2017-2021). This finding may also serve as guidelines for other universities to redesign their e-Learning courses in line with learner-centred and 21st century pedagogies.

The research will also complement and situate online learning initiatives, as outlined in the National Higher Education Blueprint, within the context of Malaysian universities. It explores the possibility of transfer of innovation to further propel the e-Learning growth in the country. It also addresses the specific local issues and challenges in the context of university-wide implementation of online learning as well as the need to understand how virtual learning environments (VLE) are used to support an effective pedagogical transition. Thus, it will contribute to the alignment of VLE with the changing educational context through the effective integration of technologies.

Education 4.0 emphasises on supporting and cultivating creativity in a student's learning journey as well as to provide a more personalized learning experience to students. Thus, this research provides a holistic understanding of how self-regulated learning affect online learners in acquiring new competencies and skills to tackle 21st century challenges. These theories will also complement one another and will be further aligned with emerging concepts of learning and teaching in producing future-ready graduates. In short, this study will explore the multiple constructs of SRL as compared to the previous online researchers who focused on a single construct of SRL (mainly metacognitive regulation). Therefore, it will yield a more comprehensive picture of SRL in online learning environments.

Conclusion

The immensely fast growth of blended and fully online courses is challenging higher education institutions to ensure their online programme remain on par with traditional classes, in all areas of satisfaction and quality. This trend is serious enough to warrant an in-depth investigation and to compare the differences between students' satisfaction in blended learning and fully online environments. Drawing from empirical studies and wider literature, it is evident that online learning satisfaction is an important factor to consider in designing any online courses as it directly relates to quality of online courses, as well as student's retention, engagement, motivation and achievement. However, a holistic study assessing the relationship between SRL strategies on students' satisfaction in two different online learning environments is currently unavailable.

In the course of this literature search, it was also found that the development of SRL, in both asynchronous and synchronous modes, differs across all learning domains and environments. Learners change their learning strategies quickly to adopt to different contexts of learning. Since online courses rely more exclusively upon SRL strategies, the effects of SRL behaviours need to be extensively and quantitatively examined. This study which highlights SRL strategies will potentially develop a unique learning model to predict and subsequently improve student's online experience and satisfaction. Similarly, the role of self-regulatory skills in the online learning environment is expected to be further explored in order to develop an evidence-based model for continuous improvement of online courses. The findings from this research will serve as a guideline for Malaysian universities in redesigning online courses and will bring this mode of learning to greater heights. It will also assist universities worldwide to reform in the era of Industrial Revolution 4.0.

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