Self-Regulation in an Online Learning Environment: A Closer Look at Gender and Motivation Variables

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Abstract

Digital transformation has allowed me to learn how to write online. To learn successfully in the digital age, students are required to be able to self-regulate their online learning. This paper first describes the changing face from offline to online learning. It then sheds light on the theories of self-regulation in learning and, specifically, in the context of writing. It also highlights the application of self-regulation in an online learning environment. Furthermore, it seeks to look at the role of students' individual differences, such as gender and motivation, in using self-regulation. At the end of this paper, I offer implications for future research regarding self-regulation and the role of individual differences among students.

Keywords: gender; motivation; online learning; self-regulation; writing

1. Introduction

Today's rapid growth and enormous use of digital technology have transformed the face of the learning process from offline into the online context. Online learning has become the most popular option since it enables students to gain knowledge without spatial or temporal constraints (Min & Nasir, 2020). However, learning online is not easy since students are required to be more adaptive and autonomous (Broadbent & Fuller-Tyszkiewicz, 2018). At this point, students need to have certain self-regulation in an online learning environment (Barnard et al., 2009; Min & Nasir, 2020; Shea & Bidjerano, 2012). This is because there is a significant distinction in the students' use of self-regulation in the online and offline learning environment in terms of frequency of use, especially related to metacognitive self-regulation and effort regulation

(Quesada-Pallarès et al., 2019). Moreover, online self-regulation is reported to be essential to help students learn online to achieve successful online language learning (Hromalik & Koszalka, 2018; Wong et al., 2019).

Investigation into the students' use of online self-regulation has flourished along with the popularity of online learning. Broadbent and Fuller-Tyszkiewicz (2018) reveal that students' use of self-regulation influences academic success, particularly in an online learning environment in which students are reported to be more adaptive and autonomous. Additionally, self-regulation involving strategies of time management, metacognition, effort regulation, and critical thinking has a positive correlation with academic outcomes (Broadbent & Poon, 2015). A systematic literature review also proves that self-regulation positively influences students' online learning (Lee et al., 2019). Overall, self-regulation can be used to predict students' online learning performance (Lin et al., 2017). In other words, self-regulation is key to successful online learning (Barak et al., 2016).

In an online learning environment, students' characteristics, such as gender and motivation, are reported to influence students' learning performance (Wong et al., 2019). Gender, according to Garland and Martin (2005), is an influential factor in online learning. Female students are reported to be more confident when learning online, which might be why they outperform their male counterparts (Price, 2006). Besides, female students tend to be more motivated in online learning and more active in online communication and time management (McSporran & Young, 2011). It is reported that motivation influences students' academic performance. Students with higher learning motivation generally perform better than those with lower motivation (Pintrich, 2003). In online learning, motivation is related to students' persistence (Hart, 2012; Meneses & Marlon, 2020). Students who have higher levels of motivation in their online courses tend to have increased levels of technology self-efficacy and course satisfaction, in turn, earn better final grades (Wang et al., 2013). Furthermore, Valentín et al. (2013) reveal that motivation might predict the students' productive use of Virtual Learning Environments (VLEs).

Given the fact that students' characteristics influence their online learning, this influence might also appear in their online self-regulation since the way the students self-regulate their learning is different from one another (Hromalik & Koszalka, 2018; Song

& Kim, 2021; Wong et al., 2019). Gender, for example, is one of the essential variables to understand students' self-regulation (Tseng et al., 2017; Wong et al., 2019). However, previous studies provide conflicting results. Some empirical studies provide evidence for highly significant gender differences. It is unveiled that males are better at behavioral and motivational learning strategies (Lee, 2002). Other studies report that female students have a higher score on help-seeking strategies, utility value, and performance anxiety (Virtanen & Nevgi, 2010), and they have better control in self-regulation use in terms of emotion, awareness, and boredom (Tseng et al., 2017). It is noted that even though there is a significant gender difference, it is still inconsistent whether male or female students are more self-regulated.

Meanwhile, some other studies report that males and females are not significantly different in adopting self-regulation when learning online (Liou & Kuo, 2014; Ramírez-Correa et al., 2015; Yukselturk & Bulut, 2009). Another student characteristic that might also influence online self-regulation is motivation. Motivation is found to have a close and essential relationship with self-regulation (Ertmer & Newby, 1996). A study by Zheng et al. (2018) confirms that highly motivated students who are more positive in language learning and have an intrinsic interest in English culture tend to be more self-regulated in an online learning environment. Meanwhile, those who learn English only to avoid negative academic achievement tend to be less motivated to apply online self-regulated learning. However, in the context of English writing, there was only one report by Wang and Zhan (2020) revealing that students who have high motivation are likely to be able to self-regulate themselves in online learning better than those with less motivation.

2. The Changing Face of Learning: From Offline to Online Class

Global technological advancement has changed the way the learning process is carried out. As a response, the learning process has transformed from face-to-face classroom to online learning mode. Moreover, the outbreak of COVID-19 has forced schools at all levels of education around the globe to shut down to slow down its spread (Bozkurt & Sharma, 2020). As a result, the learning process must be conducted entirely online to avoid spatial or temporal constraints (H. Min & Nasir, 2020) and to provide safety for the community at the same time (Bao, 2020; Gacs et al., 2020).

This unexpected change from offline to online learning has given pedagogical challenges for teachers since the way they deliver their materials must be dramatically changed (Flores & Gago, 2020). Not only teachers, but this sudden transition also causes students to deal with not only technical obstacles caused by digital inequalities (Beaunoyer et al., 2020) but also problems with their learning attitudes (e.g., self-discipline, inappropriate use of learning materials, and inconvenient learning environments) (Bao, 2020). These challenges appear in all online learning classes, including online writing classes. Previous studies report the challenges in online writing classes are related to problems in understanding *course materials, unstable Internet connection, students' low motivation, teachers' unclear explanations* (Nugraha & Listyani, 2017)*, students' lack of writing autonomy and writing goals (Ramos & Gatcho, 2020), *time management, technology, and course/information delivery* (Savenye et al., 2001). To this end, online self-regulation becomes essential to help students achieve successful online learning (Hromalik & Koszalka, 2018; Wong et al., 2019).

3. Self-Regulation in Language Learning

The term self-regulation in language learning is derived from the notion of self-regulated learning (SRL), and some researchers (e.g., Duterte, 2020; Hromalik & Koszalka, 2018; Schunk & Zimmerman, 2007; Wang & Zhan, 2020) use the terms self-regulation and SRL interchangeably. Self-regulation comes from Bandura's social cognitive theory, which proposes reciprocal interactions between personal influences, environmental features, and behaviors (Schunk & Zimmerman, 2007). According to Zimmerman and Risemberg (1997), self-regulation can be defined as thoughts, feelings, and actions used to achieve different literary goals, including writing skill improvement and enhancement of written text quality.

According to Pintrich and Groot (1990), self-regulation covers three components: metacognitive, management and control, and actual cognitive strategies. Metacognitive strategies refer to how students plan, monitor, and modify their cognition. Management and control strategies are related to the student's effort to persist in complex academic tasks and to deal with distractors so that they can perform better. Actual cognitive strategies are how students use their cognition to learn, remember, and understand the materials.

The categorization of self-regulation widely used in an abundance of research studies is based on the theoretical framework of Zimmerman (1998), consisting of six dimensions: motive, method, time, physical environment, social environment, and performance. The motive dimension refers to the reasons *(why)* for learning involving goal-setting, self-talk, and emotion control. Method dimension deals with the ways *(how)* the learners learn, such as making a summary, taking notes, asking questions, rehearsing, and making a visual representation. Time is related to time management *(when)* during the learning process. The physical environment dimension is the structure of the surrounding environment *(where)* which can support learning. The social environment dimension focuses on how learners ask for assistance (with *whom*) when dealing with learning difficulties. The performance dimension is *(what)* to learn by observing, reflecting, making judgments, comparing current performance, and learning goals.

In English language learning, self-regulation is necessary for learning vocabulary (Khezrlou & Sadeghi, 2011; Sadeghi & Khezrlou, 2012), listening (Yabukoshi, 2018), and reading (Ayşe & Ali, 2016; Kavani & Amjadiparvar, 2018). In the last few years, self-regulation has been proven to help promote writing skills (Cer, 2019; Forbes, 2019; Geres-Smith et al., 2017; Helsel & Greenberg, 2007; Hu & Gao, 2018; Kartika, 2015; Roderick, 2019; Teng & Zhang, 2018; Teng & Huang, 2019; Zimmerman & Bandura, 1994; Zimmerman & Risemberg, 1997).

4. Online Self-Regulation in Language Learning

The popularity of online learning and the outbreak of COVID-19 have forced students to be able to self-regulate their learning process in an online learning environment. At this point, students must have the ability to be more adaptive and autonomous learners (Broadbent & Fuller-Tyszkiewicz, 2018). Moreover, the effectiveness of online learning relies heavily on the students' high-level active learning (Bao, 2020). Consequently, students need to equip themselves with specific strategies to self-regulate their learning processes in an online learning environment (Barnard et al., 2009; Min & Nasir, 2020; Shea & Bidjerano, 2012) to help them be successful online language learners (Hromalik & Koszalka, 2018; Wong et al., 2019). Since self-regulation

is a fluctuating and changeable process (Barnard et al., 2009), how students self-regulate their learning in offline and online contexts might differ (Quesada-Pallarès et al., 2019).

In the last few years, investigations on the students' use of online self-regulation have widely been conducted. It is reported that high school students use online self-regulation when learning a foreign language at a moderate level (Lin et al., 2017). In conjunction, Russian engineering students' online self-regulation is moderate (Martinez-Lopez et al., 2017). Concerning the subscales of online self-regulation, metacognitive skills such as planning, controlling, and evaluation are essential skills for meaningful online learning for science and engineering students (Barak et al., 2016). Meanwhile, a systematic literature review reports two identified strategies: motivational regulation strategies (e.g., self-efficacy, task value, and goal-setting) and behavioral and contextual regulation strategies (e.g., help-seeking, time management, and effort regulation) used in a massive open online course (MOOC) (Lee et al., 2019). Additionally, strategies of time management, metacognition, effort regulation, and critical thinking have a positive correlation with academic outcomes (Broadbent & Poon, 2015). Self-regulation can predict students' online learning performance (Lin et al., 2017).

5. Self-Regulation and Writing

Graham (2000) points out that one of the causes of difficulties in learning writing skills is that students often fail to deploy effective strategies to self-regulate their writing process. Currently, self-regulation is proposed to help the students cope with those difficulties. In the context of writing skills, the classification of self-regulation is also based on the theoretical framework of Zimmerman (1998), consisting of six dimensions: motive (goal-setting, self-talk, and emotion control), method (making a summary, taking notes, asking questions, rehearsing, and making a visual representation), time (setting learning schedule), physical environment (finding proper places to learn), social environment (asking peers or teachers for assistance), and performance (observation, reflection, judgments, comparison of current performance and the learning goals).

Several research findings have confirmed the essential role of self-regulation in the context of writing skills. Kartika (2015) reports a significant increase in the students'

writing scores after a self-regulated writing strategy intervention. Investigating graduate students' self-regulation and rhetorical problem-solving, Roderick (2019) found that the more proficient students make a narrative of progress and use writing problems to find possible solutions and set goals. Conducting experimental research, Teng and Zhang (2019) uncovered that students in the self-regulated strategy intervention group perform better and apply the strategies more actively than those who do not get involved in the intervention. Abadikhah et al. (2018) find that the frequency of use of self-regulation in writing is moderate to a slightly high level. Strategies in the method dimension are reported to be the most frequently used by EFL university students. Besides, fourth-year students use self-regulation in writing more intensively than third-year students do. It implies that the proficiency level might affect the adoption of self-regulation. Umamah and Cahyono (2020) find that EFL students use all of the six dimensions of self-regulation in writing (e.g., motive, method, time, performance, physical environment, and social environment). Among the six, the students use the social environment the most. Further, Abdulhay et al. (2020) examine the relationship between goal orientations and self-regulation in writing. They reveal that personal performance-approach and performance avoidance goals have the strongest correlation. In addition, personal mastery and performance goals and mastery goal structure are closely and positively associated with self-regulation in writing. Meanwhile, efficacy has a significant correlation with goal orientation measures, and in turn goal orientations are predictors of self-regulation in writing.

6. Self-Regulation in Online Writing Classes

Learning writing skills in an online context confronts students with potential issues. According to Nugraha and Listyani (2017), difficulty in understanding *course materials, bad internet connection, students' low motivation due to boredom and lack of focus,* and *teachers' unclear explanations are the most frequent problems that Indonesian students face during online writing classes. Meanwhile,* Ramos and Gatcho (2020) report that students' lack of writing autonomy, motivation, and goals are concerns in online writing classes. *Also, critical concerns about online writing classes are related to time management, technological familiarity, and course/information delivery issues* (Savenye et al., 2001). To deal with the abovementioned challenges in online writing

classes, students need to have self-regulation (Hromalik & Koszalka, 2018; Wong et al., 2019).

Unfortunately, few studies have been published investigating the students' use of online self-regulation in online writing classes. Among the limited studies is one conducted by Wang and Zhan (2020). They examine the role of belief, anxiety, and motivation in online self-regulation. They reveal that belief in online learning positively affects the students' online self-regulated English learning, anxiety in online learning influences self-regulation negatively, and their correlation is mediated by online learning motivation. In other words, more positive students who have lower anxiety levels and high motivation are likely to be able to self-regulate themselves in online learning. However, this study involved non-English students, computer techniques, and software engineering students learning online academic English writing. It is suggested that further studies explore the effects of age and gender on motivation and their role in the correlation between motivation and self-regulation. However, this current study did not involve the role of age since the participants are at the same level of education, junior students of the university. It is supposed that their age range is not far different.

7. Gender and Self-Regulation

Gender significantly influences how students learn online (Lim & Kim, 2003). It is reported that male students are more active in online learning using the learning management system (LMS) (Lim et al., 2020). On the contrary, female students outperform their male counterparts in learning multidisciplinary courses online (Price, 2006). Also, they are more motivated to learn online and are more active in online communication and time management (McSporran & Young, 2011). These findings align with reports that female students perceive online learning better than male students (Ashong, 2012; Ramírez-Correa et al., 2015).

Concerning the influence of gender on learning, gender becomes an essential variable in understanding students' self-regulation (Tseng et al., 2017; Wong et al., 2019). Gender is one of the students' individual differences, which might influence the use of self-regulation. Some empirical studies give evidence for highly significant gender differences. A study reports that female students show better control in self-regulation than male students in language learning in terms of emotion, awareness, and boredom

control (Tseng et al., 2017). Also, female students have a higher score on help-seeking strategies, utility value, and performance anxiety (Virtanen & Nevgi, 2010). Other studies report an insignificant difference between males and females in the adoption of self-regulation when learning online (Kara et al., 2020; Liou & Kuo, 2014; Ramírez-Correa et al., 2015; Yukselturk & Bulut, 2009); thus, Basol and Balgalmis (2016) conclude that self-regulation is not dependent of gender. Further studies are then demanded to confirm the results of those previous studies. These inconsistent findings imply the need to conduct further studies.

8. Motivation and Self-Regulation

The theoretical framework of motivation in this study follows the theory of the L2 Motivational Self System (Dörnyei, 2005) since this study is conducted in an EFL context, similar to the context of a second language (L2). The L2 Motivational Self System is classified into three: the Ideal L2 Self, the Ought-to L2 Self, and the L2 Learning Experience (You & Dörnyei, 2014). The Ideal L2 Self is related to L2 students' expectations of how they would like to be. If the students could find discrepancies between what they envision and the existing situation, they would be encouraged to learn the target language. The Ought-to L2 Self refers to L2 students' belief of what they ought to have to fulfil others' expectations (e.g. teachers and parents) and to steer clear of any negative results in L2 learning. The L2 Learning Experience concerns L2 students' current learning situation and experience that become situated and executive motives of L2 learning.

Motivation is closely related to self-regulation (Ertmer & Newby, 1996). Zimmerman (2000) even states that self-regulatory skills mean nothing without the motivation to use them. A study by Zheng et al. (2018) proves that highly motivated students who are more positive in language learning and have an intrinsic interest in English culture are likely to be more self-regulated in an online learning context. On the contrary, those who learn English only to avoid negative academic achievement tend to be less motivated to apply online self-regulated learning. Besides, Wang and Zhan (2020) reveal that students who have high motivation tend to be able to self-regulate themselves in online learning better than those with less motivation.

However, in the context of an online learning environment, the role of motivation is still debatable. Some studies report that motivation significantly influences students' online learning (Hartnett, 2016; Lim & Kim, 2003). Other studies report contrastive findings. For example, Hartnett et al. (2011) reveal that students are not primarily intrinsically motivated by online learning. Motivation is seen to be complex, multifaceted, and sensitive to situational conditions. Thus, other studies highlight that motivation is not a predictor of online learning outcomes (Chen & Jang, 2010; Lin et al., 2017). Concerning the previous inconsistent findings, further research to see whether motivation affects students' self-regulation in an online learning environment is worth carrying out, as suggested by Song and Kim (2021).

9. Implications for Future Research

Based on the abovementioned review, little is known about online self-regulation in English language learning since most studies involved non-EFL/ESL students. Also, an absence of research concerns online self-regulation used in online writing classes. In contrast, information and communication technology (ICT) is widely used to practice writing skills (Çelik et al., 2012). More significantly, the massive use of the Internet and mobile technology supports students' online self-regulation in language learning (Lai et al., 2014), including in learning writing skills. It is supposed that students today have shifted from offline to online self-regulation.

Besides, issues regarding the role of students' different characteristics (e.g., gender and motivation) in an online learning environment and their relation to online self-regulation still need further exploration (Basol & Balgalmis, 2016; Song & Kim, 2021; Valentín et al., 2013; Wang & Zhan, 2020; Wong et al., 2019), especially in online writing classes. Motivation and self-regulation are deemed crucial factors that determine students' academic success in any educational stage and process (Alkış & Temizel, 2018; Wang et al., 2013). Meanwhile, knowing the role of gender in self-regulation is essential to develop online courses and programs (Garland & Martin, 2005). The significance of gender and motivation in self-regulation in an online learning environment leads to critical questions on whether the two variables affect the students' use of online self-regulation in online writing classes and whether they correlate

significantly with online self-regulation. More importantly, the vast majority of previous studies provide statistical evidence (Urbina et al., 2021). Thus, a descriptive qualitative report is recommended (Yot-Domínguez & Marcelo, 2017; Zheng et al., 2018) to give a better interpretation of the statistical analysis (Wang & Zhan, 2020). At this point, combining both statistical and qualitative data is supposed to provide more fruitful insight into the students' use of online self-regulation in online writing classes.

Anchored by the literature mentioned above review above, future studies should be carried out to profile the use of online self-regulation by EFL university students in online writing classes based on gender and motivation. Further, it needs to scrutinize the different uses of online self-regulation in online writing classes based on gender and motivation and to measure the relationship between the two variables and online self-regulation in online writing classes. Finally, it is recommended to explore how EFL university students use online self-regulation in online writing classes based on gender and motivation descriptively. In essence, future studies should present statistical and descriptive analyses to provide more meaningful results.

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