Self-Regulated Learning in Informal Learning Environments: an Exploratory Study

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Abstract

The proliferation of Massive Open Online Courses (MOOCs) and other forms of informal online learning has created many opportunities for learning outside of the formal educational structure and reshaped how people learn and work. Research suggests that the flexibility and lack of learner-support structures that are typically in place in traditional learning environments indicates that learners' motivational beliefs and Self-Regulated Learning (SRL) strategies become critical for learners' success and persistence in these new learning environments. However, according to recent research, not all learners possess the knowledge management and self-regulatory skills to effectively customize and manage the learning experience they want. Although SRL has been extensively examined in the context of formal online learning and has been linked to an increase in learners' achievement and persistence, it has not been investigated thoroughly within the context of informal learning settings such as MOOCs. The current empirical study adds to the literature at the intersection of SRL in informal online learning settings such as MOOCs and participants' achievement of self-set goals. Specifically, this study used the social cognitive framework of SRL [1,2] *to explore the relations between MOOC learners' motivational beliefs (i.e. goal orientation, online learning self-efficacy, and online learning task value), use of SRL strategies (i.e. time management, effort regulation, peer learning, and help seeking), and self-reported persistence to goals while taking into account the unique characteristics that distinguish MOOCs as a learning environment from formal online courses as well as MOOC participants' needs and learning experience compared to that of traditional students.*

Keywords: *MOOCs, Massive Open Online Courses, Self-Regulated Learning, SRL, Informal Learning Environments;*

Introduction

The low completion rates in MOOCs, often falling below 10%, has been a central topic of debate in the MOOC literature and has even lead some to question the learning effectiveness of these new informal learning environments [3]. A number of theories exist to explain the high dropout rate witnessed in MOOCs. Learning in a MOOC requires learners to be able to decide what, why, and when to learn which can lead to confusion and a sense of isolation, especially for learners who are not autonomous and lack the regulatory skills to persist in such learning environments [4]. Consequently, several scholars have suggested that Self-Regulated Learning (SRL) skills, that is learners' ability to take an active role in their learning by employing specific learning strategies to achieve their goals, may be particularly important in online and informal settings where there is less external control and incentive such as MOOCs [5,6], However, not all learners possess the self-regulatory skills to effectively customize and manage the learning experience they want [6]. Although SRL has been extensively examined in the context of formal online learning, it has not been investigated thoroughly within the context of MOOCs and informal learning [7]. One framework that allows us to examine the role that motivational beliefs play in utilizing self-regulatory strategies and help understand factors influencing learners' persistence in MOOCs is the social-cognitive model of SRL [1,2].

1. The Social-Cognitive Model of SRL: A Conceptual Framework

The most recent conceptualization of SRL is from the social-cognitive perspective [2,8] that views SRL as being operated through three areas of psychological functioning: motivational (e.g. self-efficacy and task value), cognitive (e.g. learning strategies), and metacognitive (e.g. reflection). According to this view, self-regulation is not limited to the cognitive processes and behaviors learners perform, but is also influenced by motivational and contextual factors. For instance, learners who are more interested in a task or feel more confident in their ability to learn will be more self-regulated [8]. This perspective acknowledge the cyclical nature of SRL where motivational beliefs influence learners' adoption of SRL processes during different phases of the learning task and across tasks [2,8]. This study adopts this view of SRL to examine the relations among motivation as a dimension of self-regulation of learning

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that encompasses different motivational factors, SRL skills and behaviors, and persistence to self-set goals in a MOOC.

2. Research Questions

- Is there a relationship between MOOC participants' motivational beliefs (i.e. goal orientation, online learning self-efficacy, and online learning task value), use of SRL strategies (i.e. time and study environment, effort regulation, peer learning, and help seeking), and their self-reported persistence to goals in MOOCs?
- After controlling for MOOC experience, do motivational and use of SRL strategies predict self-reported persistence to goals in MOOCs?

3. Method

Using a quantitative survey methodology, this study employs a posttest-only correlational design. Participants were a single population of adults registered for a MOOC entitled Humanizing Online Instruction (HumanMOOC). A number of measures were adapted to measure participants' demographics and MOOC experience, motivational beliefs, use of SRL strategies, and persistence to goals in the Human MOOC. These include a tridimensional dispositional goal orientation measure [9] which measured learning-orientation, performance-orientation approach, and performance-orientation avoidance, the Online Learning Value and Self-Efficacy Scale (OLVSES) [10], and the resource management strategies subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) [11]. The outcome variable was a single item measure of persistence to goals measured as a self-reported percentage of personal goals achieved for participating in the MOOC.

3.1 Participants

The sample (N = 111) included 67.6% females and 32.4% males. The majority were White/Caucasian, 30 and older, and have a master's or doctoral degree. Participants were also asked about whether they have enrolled in and completed some or all of a different MOOC in the past, with 62.2% indicating previous experiences with MOOCs.

4. Statistical Analysis and Results

The analysis began by screening the data for assumptions and missing values followed by exploratory factor analysis using Principle Component Analysis to examine the factor structure and internal reliability of each scale. As a result, one item was removed from the performance-orientation approach, effort regulation, and help seeking subscales. As for the time and study environment subscale of the MSLQ, initial PCA resulted in the emergence of three factors. Ultimately, only three items representing time management were retained in the final subscale and the variable was renamed time management as it is more representative of the items and the factor it measures.

4.1 Research question 1: Correlational analysis

Pearson product-moment *r* correlation was conducted to assess the first research question. Of the motivational beliefs variables, only online learning task value was statistically significantly related to persistence ($r = .35$, $p < .001$). However, all SRL strategies of time management ($r = .47$, $p < .001$), effort regulation ($r = .30$, $p < .01$), peer learning ($r = .24$, $p < .05$), and help seeking ($r = .21$, $p < .05$) were significantly and positively related to persistence. Further, Online learning task value was significantly related to all SRL strategies examined in this study. However, online learning self-efficacy was only statistically significantly related to effort regulation ($r = .37$, $p < .001$).

4.2 Research question 2: Hierarchical regression analysis

A three-step hierarchical regression was conducted to explore further the relationships between learners' motivational beliefs, use of SRL strategies, and persistence to goals in MOOCs as shown in Table 1.

Table 1. Model Summaries for the Hierarchical Regression Analysis of Persistence

Variable	R^2	ΔR^2	F	ΔF	Standardized Beta	t
Model 1: MOOC Experience	.003	.003	.30	.30	.05	.55
Model 2: Motivational Beliefs	.22	.22	5.84***	7.20***		
MOOC Experience					.16	1.75
Performance-Orientation Approach					-.09	-.96
Learning Orientation					-.35	-3.28*
Online Learning Task Value					.46	4.54***
Online Learning Self-Efficacy					.25	2.42*
Model 3: SRL Strategies	.32	.10	5.27***	3.80**		
MOOC Experience					.15	1.66
Performance-Orientation Approach					-.15	-1.55
Learning Orientation					-.29	-2.84**
Online Learning Task Value					.20	1.66
Online Learning Self-Efficacy					.21	2.04*
Time Management					.33	2.94**
Effort Regulation					.12	1.05
Peer Learning					.10	.91
Help Seeking					-.03	-.22

Note. MOOC Experience was dummy coded (yes = 1; no = 0).
*p < .05. **p < .01. ***p < .001.

The final model was statistically significant, F (9,101) = 5.27, p < .001, explaining 32% of the variance in persistence with time management emerging as the strongest positive predictor of persistence (ß = .33, t[101] = 2.94, p < .01). The effect size for the final model was large.

5. Discussion

Findings from this study confirm the ongoing relationship between motivational beliefs and SRL strategies as predicted by the social-cognitive models of SRL. Correlational analysis indicated that positive motivational beliefs were found to be significantly related to each other as well as to the use of SRL strategies in MOOCs, and those SRL strategies in turn were significantly related to learners' persistence to self-set goals in MOOCs. The results of the hierarchical regression analysis indicated that the proposed regression model provided a statistically adequate fit for the data obtained, with time management emerging as the strongest positive predictor (ß = .33). This finding should come as no surprise. SRL studies in formal learning settings as well as in MOOCs have consistently found time management to be one of the most important self-regulatory behaviors and related to a number of positive outcomes such as satisfaction, motivation, achievement, and persistence [12,13, 14].

Prior research has indicated that the role of motivational beliefs and SRL strategies in informal online learning environments such as MOOCs might be different than those established in formal learning settings [7]. Consequently, this study utilized a correlational design to explore the nature of these relationships in MOOCs. While the findings suggest robust relationship between the measured variables, these relations are not as clear in terms of the nature and direction of influence between the studied variables. Thus, a natural next step is to study the significant variables that emerged in this study in more well-designed and controlled studies that examine their causal role and their influence on learners' success and persistence in MOOCs.

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