The roles of learning strategies and motivation in online language learning: A structural equation modeling analysis

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A R T I C L E   I N F O

A B S T R A C T

Students' active regulation of learning, through being motivated and a variety of cognitive and metacognitive strategies, is crucial to their online learning success. Despite the large numbers enrolled in online language courses, very little is known about students' motivation and strategy use in these learning environments, or how they may affect their online learning outcomes. This study helps fill this gap by examining students' motivation and learning-strategy use across a number of online language courses, and investigating the role of motivation and such strategies within the framework of self-regulated learning. Based on data about online language-learning strategies collected from 466 high-school-level online language students in a Midwestern virtual school, our findings indicated that online learning strategies operated at a moderate level in the process of foreign language-learning. Further analysis using structural equation modeling revealed that the use of online learning strategies predicted students' online learning outcomes.

1. Introduction

During the 2009-10 academic year, there were more than 1.8 million enrollments in K-12 distance-education courses in the United States (Queen & Lewis, 2011), more than triple the 506,950 enrollments in 2004–05 (Zandberg & Lewis, 2008). The most recent data from the National Center for Educational Statistics were still unavailable at the time of writing, but based on multiple sources of data, Watson, Pape, Murin, Gemin, and Vashaw (2015) estimated that 2.2 million students were taking online courses in 2014–15, a number equating to about 3.8 million course enrollments.

Among all subjects, foreign languages are especially challenging to learn online. A meta-analysis by Cavanaugh (2001) found that, among all K-12 online subject areas, only online foreign-language courses produced negative learning effects. Given that Cavanaugh's study was conducted more than 15 years ago, and dramatic changes in K-12 online learning have taken place over the past few years, its findings could well be obsolete. A more recent study by Oliver, Kellogg, and Patel (2012), however, prompted further concern: reporting that students enrolled in online foreign-language courses at North Carolina Virtual Public School had significantly less positive perceptions of their courses than students taking other subjects had of theirs. Among intermediate and advanced foreign-language students in the same study, just 19% perceived that they learned as much in online courses as in offline ones. Yet, the extent to which Oliver et al.'s participants learned their target languages in online vs. offline courses remained unclear. Nevertheless, the challenges that students perceive in regard to online language courses seem to be unique to K-12 settings, as researchers on the same topic found that beginning and

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intermediate online language courses in higher education were at least as effective as their offline counterparts (see Lin & Warschauer, 2015 for a review). However, no recent study of K-12 online learning has examined what factors contribute to this challenge.

It is clear from such findings that an examination of the factors affecting student success in online language courses is long overdue. One prominent challenge of K-12 online learning is how to help students learn autonomously, persistently and actively (Lawanto, Santoso, Goodridge, & Lawanto, 2014). This is related to the consensus that successful online learning at any level requires a relatively high degree of autonomy, including self-directed learning practices and the ability to manage one's own time and learning pace. A higher locus of control has been found to result in better online-course performance (Barnard, Lan, To, Paton, & Lai, 2009), and a research synthesis by Barbour and Reeves (2009) indicated that students with high motivation and good self-regulation skills were more likely to succeed in virtual schools.

The cardinal purpose of the present study is to examine this claim by Barbour and Reeves (2009) in the particular context of online language courses offered by a virtual school, and specifically, how motivation and learners' self-directed behaviors affect their learning. Given the special challenges of online language learning (see Cavanaugh, 2001; Oliver et al., 2012), it is critically important to explore how and why motivation and self-regulation may work together in online language courses. Drawing on the self-regulated learning (SRL) framework originated by Zimmerman (2002), we examined the effect on learning outcomes of two main factors: motivation and learning strategies. The following literature review sections review each of them in turn, beginning with the motivational process, and then proceeding to the various specific learning approaches students adopt in order to achieve their learning goals.

2. Self-regulation in language learning

SRL refers to "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and contextual features of the environment" (Pintrich, 2000, p. 435). As such, SRL has been recognized as an essential part of learning (Schunk & Zimmerman, 2012; Zimmerman, 2008). In a meta-analysis by Hattie (2008), motivation had an effect size of 0.48 on student learning outcomes, while cognitive and meta-cognitive strategies had effect sizes of 0.60 and 0.53, respectively.

In addition to the beneficial effects of self-regulatory behaviors on students' learning outcomes in traditional classrooms (Pintrich & De Groot, 1990; Zimmerman, 2008), several recent studies have shown that SRL is a crucial factor in students' success in online courses, both in higher education (Barnard et al., 2009) and K-12 settings (Kim, Park, & Cozart, 2014).

It has been argued that SRL is domain-specific, i.e., that a person able to self-regulate in one subject may not be capable of doing so in another (Boekaerts, 1997). The review below therefore identifies two major strands of language-learning-specific SRL research. The first aims to understand the motivational process, and the second, the various learning approaches students adopt in pursuit of their learning goals.

2.1. Language-learning motivation

Language-learning motivation, according to Dörnyei (1996), poses a unique challenge to general theories of motivation. More so than other subjects, languages involve both personal and social aspects. Learning a language is both a personal matter that reflects one's identity and ethnolinguistic attitudes (e.g., attitudes towards the target language and its community), and a means of accessing social and cultural resources in target-language communities. Social factors such as perceptions of the status or power of a particular language can affect individuals' willingness to learn it.

This complex combination of cognitive and social aspects has given rise to several competing theories of language-learning motivation. Gardner's (2006) widely popular social-educational model defines language-learning motivation as comprising learners' attitudes towards the languages being studied as well as their drive to learn them. From a cognitive perspective, Noels, Pelletier and Vallerand et al. (2000) introduced Deci and Ryan's (1985) self-determination theory into the field of language learning, and used it to arrive at the concept of motivational orientation: broadly defined as a person's reasons for learning a new language. Given our focus on cognition, we chose self-determination theory as the guiding theoretical perspective for our analysis of motivation.

Application of self-determination theory to language-learning research has distinguished two types of motivation: intrinsic and extrinsic (Deci & Ryan, 1985; 1995). The former refers to doing something because it is inherently satisfying, while the latter refers to doing something to attain external rewards or other positive outcomes. Extrinsic motivation can be further categorized as identified, introjected, or external regulation, based on the level of autonomy manifested: from high (identified) to low (external). Identified regulation refers to the moment when an individual values his/her behavior and accepts the regulatory process: for example, when a language learner realizes that learning a language is good for her. In introjected regulation, in contrast, learners behave in a particular way without fully accepting the value of doing so, to avoid feeling guilty or to maintain their self-esteem: e.g., studying a language because feelings of guilt would attach to not knowing it, or to knowing only one language. And in external regulation, the least autonomous behavior in this category, behavior is governed by external pressures, expectations, or rewards: for instance, learning a language to get a better job.

The role of intrinsic motivation in L2 learning has long been acknowledged (Noels, Clément, & Pelletier, 1999; 2001; Noels et al., 2000), while extrinsic motivation is not necessarily harmful to learning, nor incompatible with intrinsic motivation (Gonzales, 2011; Lin, McKeachie, & Kim, 2001; Mezei, 2008; Wang, 2008). For example, Gonzales reported that Filipino L2