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Supporting students' motivation for e-learning: Teachers matter *on* and *off*line

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ABSTRACT

In e-learning environments that are characterized by minimal peer and teacher regulation, motivation is particularly critical but poorly understood. Students' prior experience with computers and smartphones, as well as the teacher support they receive during in-class instruction (in blended learning scenarios), are essential components of the e-learning experience that must be accounted for when seeking to explain students' motivation and learning outcomes in these contexts. This study therefore aimed to test the longitudinal effects of teacher support, prior subject competence, and prior experience with computers and smartphones, on student motivation for e-learning and finally e-learning completion. Employing five data points collected over one academic year, first-year Japanese university students (n = 975) studying English as a foreign language completed surveys at three time points. Cross-lagged panel structural equation modelling was undertaken with the finalized latent variables, prior subject competency (standardized test), and year-end e-learning completion rates. Perceived teacher support was found to have a broad range of direct and mediated effects on students' motivations for e-learning. Effort beliefs were consistent predictors of task value and ability beliefs after accounting for auto-lagged effects. E-learning completion was chiefly predicted by ability beliefs. The practical and theoretical implications for e-learning are discussed.

1. Introduction

Learning is a complex endeavour that necessitates a synergy of sustained cognitive, behavioural, and affective engagement (Reeve, 2012). Although a variety of factors influence learning outcomes, few are as important as time on task (Van Gog, 2013). This is true across most academic disciplines, but it is acutely felt in the domain of foreign language education (Fredrick & Walberg, 1980). The difficulty of time on task for this domain arises primarily from a scarcity of opportunities for exposure to the target language (i.e. few native speakers available; Fryer, Ozono, Carter, Nakao, & Anderson, 2013). This is a reality for students learning English as a foreign language within formal education across a considerable portion of the world. In such contexts, educators are obligated to employ every available resource to ensure sufficient exposure to learning materials. In many cases this means assigning online e-learning in addition to more traditional pen and paper independent study tasks. E-learning, as well as being relatively inexpensive and increasingly easy to access, allows students to engage with audiovisual materials that may otherwise be unavailable. These useful characteristics have made e-learning increasingly attractive to foreign language programmes at universities internationally.

As with other forms of independent study, the successful introduction of e-learning into a curriculum is contingent upon the students engaging with it in a meaningful way. In a previous study, Fryer, Bovee, and Nakao (2014) sought to address the issue of low e-learning completion rates. The e-learning under investigation was a mandatory component of a compulsory English language course (i.e. students could not graduate without having completed the course). The critical questions were less about why students were motivated to engage with it than about why they were not — a seemingly contradictory motivational response to an explicitly required task. This person-centred, longitudinal study found that lack of task value and ability were key areas of concern. Furthermore, the study revealed that students who began with critical deficits were unlikely to improve over the course of an academic year of e-learning study. Seeking to address these results, we designed a longitudinal cross-panel study to investigate factors that may ameliorate students' motivational deficits. It was also important to understand the longitudinal cross and auto-lagged relationships between different motivational deficits. Finally, modelling students' actual e-learning persistence as a concrete outcome was essential to ascertain the relative impact of the different motivational deficits under investigation.

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1.1. Blended learning in compulsory education

Online technologies have rarely proven powerful enough to effectively replace the personal guidance provided by a face-to-face teacher (Nielson, 2011); technology-based learning tools appear to best serve their purpose when the pedagogical approach includes an element of face-to-face instruction in a blended learning format (Cheung & Slavin, 2012; Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011; Means, Toyama, Murphy, & Bakia, 2013). Teachers of blended courses must often contend with concomitant motivational issues that hinder the integration of unfamiliar educational approaches. Such issues become more pronounced in compulsory educational contexts, where students must overcome a number of affective and technological barriers in order to successfully engage with online homework. By definition, such students lack the autonomy to select their own courses – a fact which imposes large motivational deficits even before the students set foot in their first class. Prior research has shown that students who were amotivated to engage with compulsory online homework became even more amotivated over a four-month period due to low task valuation and ability beliefs (Fryer, Bovee, et al., 2014). These types of motivational problems are not specific to online study; they are endemic to compulsory education in a range of contexts (e.g., Fryer et al., 2013; Fryer, 2013; and more broadly see Hidi & Harackiewicz, 2000). However, the common perception that online homework is somehow fundamentally different from traditional pen-and-paper homework appears to situate it in a separate mental category in terms of pedagogical importance and personal responsibility. It is therefore important to understand how such motivational deficits develop and how they might be ameliorated, specifically as they relate to compulsory online learning contexts.

1.2. Online learning in second language education

1.2.1. Increasing time on task

Language acquisition is a notoriously time-intensive endeavour. For many European languages, it is estimated to take at least 360 h of study to progress from a total beginner level to B1 (threshold intermediate) based on the Common European Framework of Reference (B1 is the third out of six proficiency levels in the CEFR, signifying an ability to confidently hold a conversation on everyday topics; Castella, 2013). This 360 hour investment represents a baseline time-on-task that cannot be significantly shortened through the application of more efficient learning techniques.

Moreover, time-on-task alone is insufficient for successful acquisition; exposure to the target language must be frequent in order to support proceduralization and automatization (DeKeyser, 2007). Closely spaced intensive study sessions across a week of study are therefore more optimal for learning than those separated by larger intervals, particularly for lower-level learners (Serrano, 2011). At minimum, online study completed between classes in a blended format can help decrease the intervals between study sessions and increase the total number of hours that students spend engaged in learning the language. Automated e-learning that instantly provides feedback to the learner particularly lends itself to the memorization of basic linguistic elements that learners must acquire at the earliest stages.

In compulsory curricula that take a blended approach, we believe that drill-and-practice e-learning can be instrumental, ensuring that all students acquire and operationalize foundational knowledge. This is chiefly due to the considerable time commitment necessary for substantive language learning to occur — a commitment that even highly self-regulated students can find difficult to maintain outside the classroom. In addition to this expansion of time-on-task, e-learning based drills, relative to pen-and-paper, offer enhanced opportunities for students to engage with carefully structured tasks that integrate multiple language skills (reading, listening and listening). However, despite the benefits of such an approach to e-learning, there are potential motivational costs. These costs and their potential amelioration are addressed by the current study.

1.2.2. Integration into a compulsory curriculum

In order for language acquisition e-learning to be successfully integrated into a compulsory curriculum, it must take into account the motivational characteristics of the learners. Automated e-learning, as a solitary undertaking, is no different from traditional homework. Immediate external influences, such as the teacher and classmates, are not physically present when completing homework, a fact that makes engagement and learning all the more difficult for students with significant motivational deficits. In our experience, we have found that the key factors to motivating students to engage with e-learning are, 1) to directly connect the e-learning to other homework and to in-class activities, and 2) to hold students accountable for their work. We have attempted to achieve this by designing a curriculum that ties together classroom instruction, traditional pen-and-paper homework, and e-learning into a unified whole, one that students are held accountable for on a weekly basis to ensure regularly spaced study intervals.

1.3. Prior computer and smartphone competency

As the current study involves students at a Japanese university, it is important to consider how technology usage patterns of Japanese youth may influence motivation to use e-learning in a formal educational context. Japan remains one of the most technologically advanced nations in the world that ranks highly in literacy, numeracy, and problem solving skills (OECD, 2015a). The nation ranks sixth in the world for the number of households with Internet access (87%). Yet in spite of these facts, Japan ranks last amongst OECD nations when it comes to youth having a command of basic ICT skills. Nearly a quarter of Japanese youth aged 16 to 29 lack basic computer literacy; the OECD average stands at under 10% (OECD, 2015a). At school, Japanese students were found to use computers for drilling language or mathematics the least amongst the OECD nations (OECD, 2014).

It may be tempting to assume that mobile devices have filled this technological gap. A 2014 survey found that some 90% of first-year high school students owned smartphones. These were used an average of two hours a day on weekdays and three hours a day on weekends (Benesse Corporation, 2014). As might be expected, mobile Internet is ubiquitous in Japan, with the nation second only to Finland in its number of wireless broadband subscriptions (OECD, 2015b). However, smartphones have only partially replaced computers in terms of acquiring fundamental ICT skills such as proficiency in productivity software, Internet skills, and file manipulation. Youth are reportedly using their smartphones primarily for email, social media, and games. Thirty-eight percent of high school students reported habitually using messaging apps while completing homework (Benesse Corporation, 2014), and the average smartphone user in Japan was found to regularly use fewer than eight dedicated software applications, one of the lowest in the OECD (OECD, 2014). These statistics suggest that although smartphones are used extensively in Japan, they have supplanted computers only for a narrow range of functionality such as email and social media.

1.4. The role of teachers

The part teachers play within education changes with the needs and constraints of the learning environment. Their fundamental role in instructing and supporting students, however, remains consistent across contexts. Discussion regarding how these two fundamental aspects of teaching might be done best goes back at least as far as Socrates. The comparatively young field of educational psychology has approached these components of teaching from many perspectives. From the perspective of student motivation, autonomy-support focused researchers (e.g., Reeve, 2009; Reeve, Bolt, & Cai, 1999; Reeve, Jang, Hardre, & Omura, 2002; Sierens, Vansteenkiste, Goossens, Soenens, &