

Design of a Learning Dashboard in “Self-Regulator” to Support Planning for Distributed Online Learning

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Abstract

“Self-Regulator” is a system embedded in a learning management system (LMS) to support students’ regulation of online learning focusing on the forethought phase in the self-regulated learning (SRL) academic cycle. Previous research indicates that, through its careful instructional design, Self-Regulator is effective in assisting students’ planning before actual learning and in reducing procrastination behavior. The purpose of this research is to present a new function, a learning dashboard, in order to improve Self-Regulator and thus foster students’ effective planning for learning regulation based on the learning regulation theories of SRL and co-regulation of learning (CoRL).

Keywords: Self-regulation, Co-regulation, Planning, Distributed Learning, Online Learning

1. Introduction

Because of its flexibility (the lack of restrictions in the time and space for learning), online learning requires an increase in students’ self-regulation of learning. This flexibility is one of the main advantages of online learning, but it can also be a cause of dropout from courses. Although the popularity of massive open online courses (MOOCs) is increasing, the completion rate has been reported to be as low as 15% (Onah & Sinclair, 2017). Thus, the highest priority issue for online learning may be that of reducing the dropout rate. Then, the second highest priority issue is the high rate of procrastination, even though students may complete the course. Previous research indicates that about 70 to 80% of students are procrastinators (e.g., Schouwenburg, Lay, Pychyl, & Ferrari, 2004) and that procrastination leads to difficulties with learning (e.g., Tan et al., 2008) in both face-to-face and online learning settings (Klingsieck, Fries, Horz, & Hofer, 2012).

Notwithstanding the concept of active procrastination—postponing strategically to increase one’s concentration and performance with the time available—many studies show academic procrastination as a problematic behavior in learning. Goda et al. (2015), for example, identified seven types of online learning behaviors, characterized as (1) procrastination, (2) learning habit, (3) random, (4) diminished drive, (5) early bird, (6) chevron, and (7) catch-up. They reported that the students with the learning habit type—or distributed learning—scored significantly higher in a standardized language test than did the procrastinators. In short, a reduction in the dropout rate and distributed learning rather than procrastinated learning are necessary for effective online learning.

“Self-Regulator” is a system embedded in a learning management system (LMS) that focuses on the forethought phase in the self-regulated learning (SRL) academic cycle to support students’ regulation of

online learning. It was initially developed in 2015, reflecting research results related to SRL in online learning since 2009 (Yamada et al., 2017). Previous research has indicated the effectiveness of Self-Regulator in assisting students' planning before their actual learning and in reducing procrastination behavior through a careful instructional design (Matsuda et al., 2017; Yamada et al., 2017). According to the previous research also, supporting time management for learning seems to be desirable since it fosters learners' SRL skills. The purpose of this research is to present a new function, a learning dashboard, to improve Self-Regulator by fostering students' effective planning for learning regulation based on the learning regulation theories of SRL and co-regulation of learning (CoRL).

SRL is defined as “[s]trategically planning, monitoring, and regulating cognition, behavior, and motivation,” while CoRL is “[e]mergent interaction mediating regulatory work” in which “[r]egulatory expertise is distributed amongst people and activity systems” (Hadwin et al., 2011, p. 67). These theories are applicable in both individual and collaborative (group) task contexts. Hadwin et al. (2011) also discussed the relevant pedagogical mechanisms; modeling, feedback, and instrumental supports from more capable people are necessary for SRL, while a distribution of expertise used to influence SRL (including situational affordances and constraints) is required for CoRL.

The first development phase of Self-Regulator considered SRL theory. Now, the second phase incorporates both SRL and CoRL to design a learning dashboard. In order to design the learning dashboard, that is, CoRL as well as SRL has been adopted for the promotion of distributed planning to prevent procrastinated learning. In Section 2 of this paper, a brief description of the overall design is given, and in Section 3, the learning dashboard design is illustrated.

2. Overall Design of Self-Regulator

The learning support system Self-Regulator helps students to make a learning schedule during the forethought phase in the SRL academic cycle, thus leading to scheduled learning. A detailed description is available in Yamada et al. (2017). After logging into Self-Regulator, which is embedded in Moodle, learners are required to make a learning schedule for each set of learning materials uploaded.

At this stage, learners cannot access Moodle directly due to the web server settings. Once they have set a schedule for a learning item in a course, however, they can access Moodle and should follow their schedule to learn the material—thus, they can only gain access at the times they have scheduled. This reduces the flexibility of learning, which is one of advantages for online learning. Here, the students have active involvement in their learning when they plan it, which increases their learning ownership. Advanced self-regulators are able to responsibly organize the flexibilities and freedom of their learning. Generally, planning and conscientiousness in following the schedule with Self-Regulator helps to reduce procrastination and other problematic behavior.

3. Design of the Learning Dashboard

Self-Regulator allows students to schedule to learn multiple learning items at a time, according to the instructor's course design. Scheduling multiple materials involves students' considering when and how they learn, which requires effective planning skills. To foster learners' effective learning, a learning dashboard has been designed, based on SRL and CoRL. Advanced SRL learners use the learning dashboard to distribute learning dates through the learning period, and they tend to schedule the learning materials in meaningful chunks (by chapter, same content, similar learning objectives, etc.). A design image of the dashboard is shown in Figure 1.

The dashboard gives the learning progress of the learner, her/his classmates, and a fastest completion of the learning materials assuming that s/he studies the learning materials regularly and is an advanced SRL learner. It should prove helpful for students to assess their progress by comparing it with that of others, while the information on the dashboard will enable students to check their planning and learning. The development of the dashboard will be completed by mid-March, 2018. In future research, the effectiveness of the new function will be examined from the perspectives of dropout-rate reduction and distributed learning.

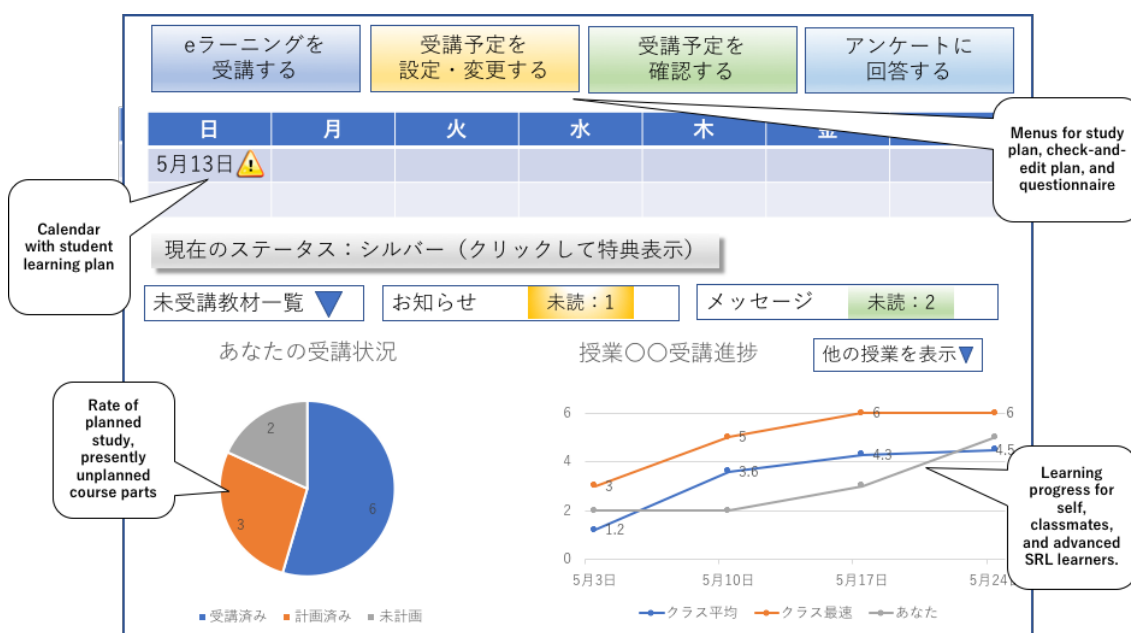


Fig 1. Design Image of Learning Dashboard for “Self-Regulator”

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