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Research Notes

Influence of anticipated and actual grades on studying intentions



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ABSTRACT

This study explores two questions regarding differences between students' anticipated and actual grades in university courses: what factors contribute to those differences arising, and which of those differences influence students' subsequent studying? The research surveyed 278 students in a first-year undergraduate business course. Students with stronger academic abilities tended to have smaller (less negative) gaps between their grades and goals, while students with higher personal control scores tended to have wider (more negative) gaps. These gaps narrowed later in the course as students' goals decreased to match their actual grades more closely. Students increased their studying if their actual grades were lower than their original goals, and/or lower than their updated goals. By contrast, the difference between students' subjective grade goals and their objectively forecast final grades did not influence their studying intentions.

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1. Introduction

1.1. Background

Feedback is an integral part of education (Hattie & Timperley, 2007; Mory, 2003; Schartel, 2012; Shute, 2008). Ramaprasad (1983: 4) defines feedback as “information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way”. The *self-regulated learning model* (Thurlings, Vermeulen Bastiaens, and Stijnen, 2013), for example, supposes that students establish goals for each course (reference level), assess the grades they get as feedback on their progress (actual level), and adjust their effort as needed to achieve their goals (Butler & Winne, 1995; Nicol & Macfarlane-Dick, 2006).

Students' behaviour in this context can be affected by their sense of *control*; i.e., their perceived ability to influence a process to obtain an outcome. A sense of control has been related to many outcomes, including achievement, motivation, and success (Skinner, 1996).

Students' behaviour may also be affected by their perceived performance. Unfortunately, students' self-assessments often only approximate their actual learning (Nowell & Alston, 2007; Sitzmann, Ely, Brown, & Bauer, 2010), despite their receiving

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outcome feedback such as test grades. Students tend to over-estimate their learning progress and likely course outcomes, with weaker students being more prone to this tendency (Kruger & Dunning, 1999). This over-estimation could impede students' success by making it less likely they will recognize the need to adjust their studying.

Instructors can reduce this problem by helping students make better self-assessments. For instance, they can ask students to keep journals in which they reflect on their learning challenges (Finch, Peacock, Lazdowski, & Hwang, 2014). Instructors can also provide *cognitive feedback* to encourage good study practices and more self-awareness (Feys, Anseel, & Wille, 2011). For example, Purdue University's Signals system displays color-coded dashboards on students' cell phones to indicate whether they are following good study habits (Pistilli & Arnold, 2010). These tools inform students about their past or current status in a course.

By contrast, some experiments have offered students *predictive* or *prognostic feedback* about their future status: where they are heading, rather than where they have been. Armstrong (2013) gave undergraduate business students a spreadsheet that enabled them to forecast their own final course grades while the course was ongoing. In that experiment, 29% of students said the quantitative forecast was lower than expected, versus only 6% who said it was higher. After the exercise, 47% said they were studying more than previously intended, while only 3% reported studying less. An informal study by Swenson (2015) obtained similar results with grade forecasting in an undergraduate mathematics course. Rahal and Zainuba (2016) included a grade forecasting spreadsheet along with several other innovations in their undergraduate business course. Their combined changes helped average and above-average students obtain better marks, but had less impact on below-average students.

Armstrong (2013) seems to have been the first study of quantitative grade forecasting done by students for their own use. Some previous research had students "predicting" their own course grades, in the sense of simply asking them what grade they expect to receive, without providing them with any quantitative tools (e.g., Nowell & Alston, 2007). Other studies involved quantitative forecasts for use by university staff. For example, Beck and Davidson (2001) used orientation surveys and high school marks to predict first-year university grades, so that counsellors could identify the students most likely to fail. The only prior research where the students themselves received the forecasts was Beyer (1971). He gave new university students forecasts of their first-semester grade point averages. Half of these forecasts were biased upward, to see whether that manipulation would affect student performance. No significant impact on end-of-semester grades was found.

One surprise in Armstrong (2013) and Swenson (2015) was that the difference between participants' objective grade forecasts and their own prior subjective grade expectations did not seem to influence studying intentions. For example, students whose forecast grade was lower than they had expected did not increase their studying; instead, students studied more after receiving a low forecast, even if it matched their prior expectations. This presents a puzzle. If students do not react to differences between the forecast grades and their prior expectations, as predicted by various learning theories, then to what do they react?

1.2. Which grade differences influence studying?

Our first objective in this study is to explore which grade differences cause students to adjust their studying. We primarily do this by examining a larger set of potential triggers for increased studying than what Armstrong (2013) and Swenson (2015) considered. Those studies surveyed students at only one point, near the end of the course; they compared each student's own subjective grade expectation at that time to an objective grade forecast. Our study surveys students twice, in the second and eighth week of the course, to collect two subjective goals and two objective grades. This enables us to look for responses to three differences in grades:

- (a) Between the target grade the student set at the beginning of the course, and their actual current grade as of week eight;
- (b) Between their current grade in week eight, and the grade they say at that time that they expect to achieve by the end of the course; and,
- (c) Between that final grade that they expect, and the final grade that they quantitatively forecast.

We measure the goals of only the students, as opposed to those of their instructors or parents. As Sadler (1989) argues, only when the learner takes ownership of the goal can it play a significant role in self-regulation. Since goals are frequently dynamic (Ramaprasad, 1983), measuring them twice also reveals how they change as the course progresses.

In addition to examining a wider set of grade differences, we also collect more precise data about grades and participants than the earlier studies did. We ask students to report specific numerical values for their grades (e.g., "76%"), instead of the broad categories (e.g., "70–79%") that Armstrong (2013) collected. This allows us to calculate exact differences between grades, and thereby make the analysis more sensitive. Students also report their gender and high school location (i.e., foreign or domestic) so that we can control for those factors.

Our experiment differs from previous work in several other respects. The earlier studies involved courses whose content was mostly (Armstrong, 2013; Rahal & Zainuba, 2016) or entirely (Swenson, 2015) quantitative, whereas the course material in our study is about 97% qualitative. The earlier studies involved students in a second-year (Armstrong, 2013; Swenson, 2015) or third-year (Rahal & Zainuba, 2016) course. By contrast, we study students in a first-year course, who have much less experience with university-level work. Finally, we ask students for their reactions immediately after the forecasting

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