



# Formative assessment as a future step in maintaining the mastery-approach and performance-avoidance goal stability<sup>☆</sup>



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## ABSTRACT

The study presented in this article examines which achievement-goal pattern students pursue in a formative assessment practice that facilitates mastery and learning opportunities. An explanatory mixed-method design with three complementary data-analytic approaches (differential continuity, mean-level change and individual-level change) and four focus-group interviews were used to examine this topic. In five preparatory engineering courses “seven principles of good feedback practice” were implemented as an educational tool to facilitate and create a formative assessment practice aimed at promoting the significance of mastery and learning experiences. In contradiction to previous research, the findings in this study suggests an alternative achievement-goal pattern, and has to some extent succeeded in avoiding the proliferation of unfortunate motivational patterns found in earlier studies.

The findings of this study argues for the importance of teachers’ efforts in relation to the development of students’ achievement-goal patterns, and furthermore for maintaining achievement-goal stability.

## 1. Introduction

Performance feedback has been identified as an important variable in students’ achievement-goal patterns within higher education. For instance, poor performance on an achievement task is associated with a decrease in mastery-approach goals and an increase in performance-avoidance goals (Senko & Harackiewicz, 2005). The discovery of this unfortunate pattern has given rise to an important question in the research literature: How can we maintain stability in students’ pursuit of mastery-approach goals (Fryer & Elliot, 2007; Muis & Edwards, 2009)? Fryer and Elliot (2007) illustrate this:

As educators, we would clearly like our students to endorse mastery-approach goals and steer clear of performance-avoidance goals. However, if students initially endorse mastery-approach goals, are these likely to remain stable of their own accord over time, or will substantial effort on the part of teachers and administrators be required to ensure that high levels of these goals are maintained? (p. 712)

The research literature on formative assessment describes feedback as an extremely important, if not critically important part of students’

learning processes (Black & William, 1998; Hattie & Timperley, 2007). Specifically, with respect to higher education, the position generally taken has been that feedback is vital for the development of effective learning, in part because assessment procedures play a key role in shaping learning behaviour, and feedback can significantly accelerate that process (Sadler, 2010). Nonetheless, as seen in research on achievement-goal stability and change, feedback can also lead to less favourable patterns in that negative performance feedback can cause a decline in mastery-approach goals and an increase in performance-avoidance goals, a motivational pattern that undermines students’ learning (Midgley, Middleton & Kaplan, 2001). As an educational tool, performance feedback should ideally promote students’ wishes to resolve their misconceptions and increase their understanding. It should not inhibit students’ desire to learn, which a decrease in mastery-approach goals and an increase in performance-avoidance goals may suggest. If the contribution of performance feedback is inhibition, it may be appropriate to reflect on the meaning of performance feedback, and more importantly, consider the *assessment practice* that underlies it. Feedback does not exist in a vacuum; it is part of a larger assessment

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context, a context which might be worth exploring. A relevant question to ask is whether educators are doing something wrong if feedback, which is intended to function as an educational tool, contributes to inhibition instead of strengthening the students' desire to learn.

The aim of this article is to expand on existing research literature on achievement-goal stability and change by studying students' achievement goals within a continuous formative and mastery-based assessment practice. To portray a broader picture of students' achievement-goal patterns, the study presented in this article uses theory of formative assessment as a framework to facilitate and create a mastery-based assessment practice in mathematics. The overriding *objective* is to examine which achievement-goal patterns students pursue within this context. Furthermore, the aim is to explore these observations with students' interviews and existing research literature in the fields of achievement-goal stability and change and formative assessment. The pedagogical framework for this objective is “*seven principles of good feedback practice*” by Nicol and Macfarlane-Dick (2006).

### 1.1. Formative assessment and the seven principles of good feedback practice

Assessment literature normally distinguishes between two types of assessment, *summative* and *formative*. The former is designed to rank, approve or control students' skills, and measures whether defined learning goals have been achieved (Sadler, 1998). Feedback information is provided after a particular type of work has been completed – normally given as a grade or some sort of achievement mark. In contrast, assessments can also generate feedback *during* a learning process, which enables students to improve their own learning and achievement. When an assessment serves these last-mentioned purposes, it is called *formative assessment* (Sadler, 1998). An increasing focus within the research literature on formative assessment is aimed at the students and how they can evolve from dependency on teacher-led feedback to being able to generate their own feedback on learning and progression and thus develop as independent learners who are able to monitor, evaluate and regulate their own learning (Cartney, 2010; Nicol & Macfarlane-Dick, 2006; Nicol, 2010). This means placing the development of student self-regulation at the core of feedback processes (Carless, Salter, Yang & Lam, 2011).

There is a substantial and growing body of evidence showing that feedback in the context of formative assessment has a strong impact on learning (Evans, 2013; Hattie & Timperley, 2007). Feedback has also become an increasingly important aspect of higher education learning and teaching strategies (Brown, 2010). However, even though there has been considerable development in research on feedback in recent years, there is surprisingly little awareness of what needs to be done to improve it and good ideas are often not translated into action (Boud & Molloy, 2013). In other words, although some principles of effective assessment feedback design have been established, the implementation of such designs has been demonstrably more problematic (Evans, 2013). This implies that current feedback practices within higher education are not fit for purpose (Carless et al., 2011; Evans, 2013) and in need of re-engineering (Carless, 2013). Furthermore, feedback is highlighted as one of the most problematic aspects of college student experiences (Blair, Wyburn-Powel, Goodwin & Shields, 2014; Carless et al., 2011).

According to Sadler (2010), the main challenge within higher education lies less with the quality of the feedback than with the assumption that telling, even detailed telling, is the most appropriate route to improvement in learning. In other words, the student role in feedback processes is in need of enhancement (Blair et al., 2014; Carless et al., 2011; Sadler, 2010). In an attempt to encourage more interaction with feedback, a number of academics have pointed to the need to engage students in interactive dialogues and thus reflect the reality of communication being a two-way process. (Black & McCormick, 2010; Blair et al., 2014; Carless et al., 2011; Carless, 2013; Donovan, Rust &

Price, 2016; Hounsell et al., 2008; López-Pastor & Sicilia-Camacho, 2017; Nicol and Macfarlane-Dick, 2006; Sadler, 1998). The core of this argument is the need to step away from the “transmission” feedback model (Blair et al., 2014).

In 2006, Nicol and Macfarlane-Dick analysed extensive research material on formative assessment and feedback. Their aim was to create a shift in focus whereby students could be seen as having a proactive rather than a passive role in generating and using feedback. Based on the analysis, they identified the following seven principles of good feedback practice:

Good feedback practice:

1. helps clarify what good performance is;
2. facilitates the development of self-assessment in learning;
3. delivers high-quality information to students about their learning;
4. encourages teacher and peer dialogue around learning;
5. encourages positive motivational beliefs and self-esteem;
6. provides opportunities to close the gap between current and desired performance;
7. provides information to teachers that can be used to help shape teaching.

These are familiar principles; their underlying value is supported by a substantial amount of research and they are all defined in terms of their contribution to the development of self-regulatory learning (Nicol, 2007).

### 1.2. Achievement goals

In recent decades, achievement-goal theory has emerged as an important theoretical perspective on students' motivation in school (Han, 2016; Kaplan & Maehr, 2007; Schunk, Pintrich & Meece, 2010). This theory is concerned with the purposes a learner adopts for achievement behaviour (Middelton, Kaplan & Midgley, 2004).

This article examines the trichotomous goal framework that includes the mastery-approach (students whose primary purpose of engaging in academic activities is to develop their competencies), the performance-approach (students who strive to appear competent and demonstrate high ability) and the performance-avoidance approach (students who strive to conceal their relative incompetence and avoid negative judgments). Similar to the distinction between the performance goals, a distinction has also been assigned to mastery goals, although the avoidance component of mastery goals still remains somewhat undefined theoretically and operationally (Tuominen-Soini, Salmela-Aro & Niemivirta, 2011).

Most research that has adopted the trichotomous goal framework has focused on various consequences of pursuing different achievement goals. A large body of research has compared the effects of these goals on important educational outcomes and each achievement goal has been associated with different patterns of cognition, affect and behaviour. These results have been summarised by others (e.g. Ames 1992; Elliot, 1999; Schunk et al., 2010) and will not be described here. Although achievement-goal research is a prominent approach to motivation, only a small number of studies have explored the issue of stability and change in students' achievement-goal endorsement over time (Fryer & Elliot, 2007; Han, 2016; Muis & Edwards, 2009; Senko & Harackiewicz, 2005; Tuominen-Soini et al., 2011).

A common underlying assumption in the research literature is that students' pursuit of achievement goals in a particular course remains relatively stable over time (Senko & Harackiewicz, 2005). One reason to anticipate this stability is that achievement goals represent concrete aims that emerge from personality characteristics, such as achievement motives and temperaments (Harackiewicz, Barron & Elliot, 1998). However, this is an assumption that recent research has begun to challenge, suggesting that although achievement goals may be stable, they can also be subject to substantial change (Fryer & Elliot, 2007;

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