



What makes rubrics effective in teacher-feedback? Transparency of learning goals is not enough



Mareike Wollenschläger ^{a,*}, John Hattie ^b, Nils Machts ^c, Jens Möller ^c, Ute Harms ^a

^a IPN—Leibniz Institute for Science and Mathematics Education, University of Kiel, Olshausenstraße 62, 24118 Kiel, Germany

^b Melbourne Education Research Institute, University of Melbourne, 100 Leicester Street, Melbourne, Victoria 3010, Australia

^c Department of Psychology, University of Kiel, Olshausenstraße 75, 24118 Kiel, Germany

ARTICLE INFO

Article history:

Available online 30 November 2015

Keywords:

Feedback
Rubric
Performance
Calibration accuracy

ABSTRACT

This study aimed at identifying the determining factor in making teacher-given rubric feedback effective on student performance (planning experiments in science class), motivation, and calibration accuracy. In a pre–post experimental design, secondary school students ($N = 120$) were randomly assigned to three different variations of rubric feedback incrementally graded with respect to the quantity of included feedback information: in condition 1, the rubric was handed out to the students to make learning goals transparent (*transparency information*). In condition 2, the rubric as well as information on the students' actual task performance was provided (*individual performance information*). Condition 3 included not only the rubric and actual task performance information but also individual cues on how to proceed (*individual performance improvement information*). Students who received improvement information showed a significantly better performance in planning scientific experiments, perceived themselves as being more competent, and were also more accurate in their self-evaluative performance judgments. This calibration accuracy could be identified to be a partial mediator of the positive effect of rubric feedback on performance. Thus, results indicate that the crucial variable in making teachers rubric feedback effective appears to be the successful use of *performance improvement information*. Implications for educational research and practice are discussed.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Providing feedback in classrooms has been found to have a very powerful impact on students' learning with an overall effect size of $d = 0.79$ (based on 12 meta-analyses, 196 studies and 6972 effect sizes; Hattie, 2009). However, feedback effects are not necessarily beneficial and reported effect sizes can vary considerably (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Kulhavy, 1977). Therefore, further research needs to be undertaken to investigate more specifically how feedback works effectively in the learning process. Shute (2008) argued that a worthwhile way to undertake such research is to concentrate on task-specific feedback and mediational effects on the impact of feedback on performance.

One promising approach for task-specific feedback in classrooms is rubric feedback, since there is empirical evidence of its

positive effects on learning (Panadero & Jonsson, 2013). Rubrics are “a type of matrix that provides scaled levels of achievement or understanding for a set of criteria or dimensions of quality for a given type of performance” (Allen & Tanner, 2006, p. 197). In their review, Panadero and Jonsson (2013) conclude that rubrics make learning goals explicit and, in turn, this transparency leads to improved student performance and self-regulation processes.

However, findings concerning this explanation are inconsistent. In some studies where rubrics have only been handed out to students, i.e., without any specific training (e.g., Duke, 2003; Toth, Suthers, & Lesgold, 2002) or without any further feedback information (Wollenschläger, Möller, & Harms, 2011; 2012), no significant effects on students' performance, motivation, or self-regulation could be found, although learning goals and assessment criteria were transparent to the students. Thus, it seems that transparency is not enough to make rubric feedback effective. Therefore, the first question of this study is: Is it really the transparency of learning goals that makes rubric feedback effective? Or is there another factor that is crucial to rubric feedback effectiveness on students' performance, motivation and self-regulation processes?

In the second step, this study investigates a mediating effect underlying feedback effectiveness on performance, focusing on self-regulation processes as suggested by Shute (2008). In doing so,

Tel.: +49 176 70696700; Fax: +49 7071 757 2009. E-mail: mareike.wollenschlaeger@gmx.net.

* Corresponding author. IPN—Leibniz Institute for Science and Mathematics Education, University of Kiel, Olshausenstraße 62, 24118 Kiel, Germany.

E-mail address: mareike.wollenschlaeger@gmx.net (M. Wollenschläger).

¹ Permanent address: Rottenburger Straße 15/1, 72070 Tübingen.

pathways of feedback effects can be understood. Our second research question is: Is there a direct effect of teacher feedback on students' performance? Or is externally provided feedback rather mediated through an indirect effect of students' internal self-regulation processes?

To elaborate on these questions, we first present relevant theories and findings on feedback effectiveness in general.

1.1. Feedback and its effectiveness

Feedback is defined as the information given on a task or a learning process that aims to reduce the gap between the current and the desired learning outcome (Mory, 2004; Narciss, 2008; Sadler, 1989). Meta-analyses have identified important aspects of feedback effectiveness: feedback should elucidate specific learning goals, include cues on the current state of the learning process, and give information on how to improve task performance (Black & William, 1998; Hattie, 2009, 2012; Kluger & DeNisi, 1996; Mory, 2004; Sadler, 1989, 1998; Shute, 2008). Hattie and Timperley's feedback model (2007, p. 87) summarizes the empirically identified effectiveness criteria by means of three feedback questions—"Where am I going?" (transparency of learning goals), "How am I going?" (information on the current task performance), and "Where to next?" (individual cues on how to reach desired task performance). According to Hattie and Timperley (2007), effective feedback needs to answer all three feedback questions whereas the third question "Where to next?" is assumed to be the most important one (Hattie & Gan, 2011; Hattie & Wollenschläger, 2014). In computer-based learning environments, this kind of informative and individualized feedback that shows what the student has to do next was identified as highly effective (Johnson, Reisslein, & Reisslein, 2015; Narciss et al., 2014). To date, studies which experimentally investigate feedback in classrooms systematically varied with respect to the three feedback questions are lacking. Our study addresses this gap in feedback literature by combining effective feedback questions with teacher rubric feedback.

1.2. Rubric feedback and its effectiveness

Rubric feedback is defined as "listing the assessment criteria by describing levels of quality in relation to each of these criteria" (Panadero & Jonsson, 2013, p. 130). The described rubric levels have the potential to answer the "Where am I going?" question through making learning goals transparent. The "How am I going?" question might be answered by including information on students' task performance. Finally, including information on the rubric levels that have been and have not yet been reached, the "Where to next?" question, can be answered because students get individual cues on how to reach desired task performance, as in the next level. Although rubric feedback has the potential to answer all three questions individually and/or in different combinations, the variation of feedback questions hasn't yet been studied systematically. To date, rubric feedback in schools has been mostly studied for self-assessment purposes (e.g., Andrade, Wang, Du, & Akawi, 2009; Reddy, 2007), showing beneficial effects on middle school students' performance in writing (Andrade, Du, & Mycek, 2010; Goodrich Andrade & Boulay, 2003). These studies compared rubric feedback either to other forms of self-assessment or to a no-feedback-condition. Also, teacher-given rubric feedback on performance and motivation was shown to be beneficial in comparison to a no-feedback-condition (Wollenschläger, Möller, & Harms, 2011). Since the different forms of teacher-given rubric feedback haven't been compared so far, the main factor of its effectiveness is unclear. Panadero and Jonsson (2013) suggested that transparency of learning goals is crucial in making rubric feedback effective. This conflicts with Hattie and Timperley's (2007) notion of task improvement information as the crucial variable of

feedback information. Thus, by including an incrementally graded quantity of feedback questions into the rubric feedback and systematically comparing these feedback conditions according to their effects on student learning, one can identify which question is the determining one to make teacher-given rubric feedback effective: Is the "Where am I going? question (transparency) enough, or is the "Where-to-next?" question (task improvement information) necessary?

Apart from the three feedback questions, the effectiveness of externally provided feedback is also assumed to be influenced by internal strategies of the learner which results in a multidimensional feedback conceptualization (Butler & Winne, 1995; Hattie & Wollenschläger, 2014). Feedback multidimensionality is described by Hattie and Timperley (2007) through the interaction of feedback levels: feedback information provided on task performance (task level) or on processes to complete the tasks (process level) is influenced by the motivational orientation and self-regulative processes of the learner themselves (self-regulation level), thereby determining the effectiveness of feedback on task and process level. This interaction of motivational and monitoring processes and effective learning is also described in self-regulation literature.

1.3. Motivational orientation, calibration accuracy and performance

In self-regulation literature (e.g., Zimmerman, 2002; Cleary & Zimmerman, 2004), the learning cycle is seen as three phases: a cyclical pre-active forethought, a performance, and a post-active self-reflection phase. In the forethought phase, students' motivational orientations like attribution styles (e.g., Möller & Köller, 2000), interests, and self-competence (Murphy & Alexander, 2000) determine strategy selection (Duijnhouwer, Prins, & Stokking, 2011), which in turn has an impact on task completion in the performance phase. Following Pintrich and De Groot (1990), besides using cognitive and metacognitive strategies, students also must be motivated to use adequate learning strategies. Therefore, students' individual motivational orientations about learning are relevant to cognitive engagement and classroom performance. The theoretical framework for conceptualizing student motivation is the expectancy value model of motivation (cf., Wigfield & Eccles, 2000). The expectancy value model proposes two central determinants impacting on students' learning behavior: an expectancy component, which includes students' beliefs about their own ability in a certain domain, and a value component, which includes students' interest of the task. With regard to the value component, students who are intrinsically motivated to carry out a learning activity comprehend materials at a deeper level, e.g., by engaging in enhanced inference processes and using more complex self-regulation strategies (Schiefele, Schaffner, Möller, & Wigfield, 2012). With regard to the expectancy component, the question is: "Can I do this task?", whereas with regard to the value component the question is: "Do I want to do this task?". Both questions have implications for the self-regulated behavior and both are affected by achievement feedback (Möller, Pohlmann, Köller, & Marsh, 2009; Wigfield, Hoa, & Klaua, 2008). Further, accurate students' evaluation of their own task performance (Kitsantas & Zimmerman, 2006; Metcalfe & Finn, 2008) is identified to be critical in influencing cognitive processes in strategy selection and performance improvement (Bol, Hacker, O'Shea, & Allen, 2005; Chen, 2002; Dunlosky & Rawson, 2012; Horgan, 1990; Kruger & Dunning, 1999; Labuhn, Zimmerman, & Hasselhorn, 2010; Nelson & Dunlosky, 1991; Panadero, Alonso-Tapia, & Huertas, 2012; Schraw, Potenza, & Nebelsick-Gullet, 1993; Winne & Jamieson-Noel, 2002). The magnitude of consent between learners' true and self-evaluated task performance is called calibration accuracy (Schraw, 2009; Schraw et al., 1993). Accurately calibrated learners' task performance equals their self-evaluated task performance. Divergence in true vs. self-evaluated performance judgments, displaying either

Download English Version:

<https://daneshyari.com/en/article/352566>

Download Persian Version:

<https://daneshyari.com/article/352566>

[Daneshyari.com](https://daneshyari.com)