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Learning progress assessment and goal setting: Effects on reading achievement, reading motivation and reading self-concept

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ABSTRACT

This study investigates the effects of learning progress assessment (LPA) combined with student-set goals on students' reading achievement, reading motivation, and reading self-concept in fourth grade. Classes ($n = 41$) were assigned to either an LPA group with goal setting (LPA-G), an LPA group only (LPA), or a control group (CG). Students of both LPA groups completed eight LPA tests over a period of six months, and teachers received information about their learning progress. Students in the LPA-G group specified goals before the tests and reflected their goal achievement afterwards. Results indicate that growth in reading was higher for students in the LPA group compared to students in the two other groups. Unexpected negative effects of the goal-setting procedure were found on the development of intrinsic reading motivation and individual reading self-concept. The results are discussed with regard to teacher behavior and the use of diagnostic information for instruction.

1. Introduction

Providing teachers with diagnostic information on their students' achievement is one basic principle to support a sensible execution of individualized instruction (Connor, Morrison, & Petrella, 2004). Moreover, diagnostic information concerning the *learning progress* reveals an even more continuous feedback to teachers and students. As a consequence teachers get objective information if their instruction leads to desired effects, and students see if effort and learning strategies result in an improvement of achievement. In this sense, learning progress assessment (LPA) is one prominent tool in the field of formative assessment which can serve teachers as well as students to optimize learning and instruction (Black & Wiliam, 2009; Clark, 2012). Reviews of the literature on effects of LPA show that this approach has a high potential to foster student learning (e.g. Stecker, Fuchs, & Fuchs, 2005). However, research has primarily focused on low-achieving students and it usually was applied to single children of a classroom. In addition, studies on LPA usually investigated teachers' use of the diagnostic information to adapt instruction. Thus, research mainly focused on teacher behavior. However, feedback of learning progress and information about goal achievement are also key elements in self-regulated learning (Zimmerman, 1990). Hence, LPA might be a helpful tool to support self-regulated learning when students are actively involved in LPA (Clark, 2012). Asking students to set personal goals and reflect their goal achievement is one way to foster their involvement. While some studies investigated effects of teacher-defined goals (Fuchs, Fuchs, & Hamlett, 1989; Jenkins & Terjeson, 2011), effects of student-set goals have hardly been investigated yet.

Dealing with goals immediately leads to the question if providing teachers and students with diagnostic information about learning growth will have an impact on motivation and self-concept. While several studies have found positive effects of LPA on student achievement, effects of LPA on motivation and self-concept have been addressed very rarely. Taken together, the aim of our research was to evaluate effects of LPA on reading achievement, reading motivation, and reading self-concept in whole classrooms in general education. In addition, this study addresses the question if the combination of LPA and goal-setting procedures will lead to superior effects on reading and motivation.

1.1. Learning progress assessment

Curriculum-Based Measurement (CBM) (Deno, 1985) is a well-established method for learning progress assessment (LPA) that provides teachers with diagnostic information on students' learning progress. In CBM, assessment of student progress is conducted by applying parallel forms of short tests at intervals of a few

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days up to two weeks throughout the school year (Fuchs, 2004). Each CBM test simultaneously assesses the skills required for competent year-end performance, thus slope can be used to quantify rate of learning.

Studies on the effectiveness of LPA using CBM have demonstrated that providing teachers with diagnostic information about their students' progress leads to increased student achievement (Stecker et al., 2005). In a meta-analysis examining the results of 21 controlled studies on formative evaluation, Fuchs and Fuchs (1986) determined the average effect size to be .70 for enhanced student achievement. Some of the CBM studies investigated options to further increase effects of the CBM approach using three-group designs in which a CBM condition is compared to a CBM condition with additional support and a control group. These studies found positive effects on student achievement when teachers are supported in their instructional decision-making process (e.g. Allinder, Bolling, Oats, & Gagnon, 2000; Fuchs, Fuchs, Hamlett, & Stecker, 1991).

The most frequently used CBM measure to monitor student reading progress and the most researched CBM measure is oral reading fluency (ORF) (Reschly, Busch, Betts, Deno, & Long, 2009). It is defined as the number of words read aloud correctly in 1 min from a grade-level passage. ORF is hypothesized to be a higher-order skill that requires the integration of lower-level reading skills (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Overall, correlations among ORF and standardized reading assessments are strong (Reschly et al., 2009).

Some researchers, however, do not endorse using ORF as an indicator of reading fluency. Based on the automaticity theory for guidance (LaBerge & Samuels, 1974), Samuels (2007) argued that readers must not only identify words but concurrently need to construct their meaning to comprehend text. He emphasized this simultaneity of decoding and comprehension to be "the essential characteristic of reading fluency" (p. 564). While readers with highly automatized word recognition skills can simultaneously decode and comprehend the text, beginning readers first focus their cognitive resources on word recognition before they switch their cognitive resources to construct meaning. Riedel (2007) found that about 15% of the students were misidentified by the ORF test as good readers, when, in fact, they had poor reading comprehension. Likewise, Lerkkanen, Rasku-Puttonen, Aunola, and Nurmi (2004) identified a group of technical readers who were characterized by high levels of word reading but low levels of text comprehension. The authors note that teachers may misidentify technical readers as skilled readers because of their excellent word reading skills. Moreover, if these children do not receive special support to foster their reading comprehension, the neglect could result in a serious risk of failure when reading comprehension is needed to learn new subjects. Thus, Samuels concludes that new test-concepts are needed that require the reader to simultaneously decode and comprehend text.

Shapiro, Solari and Petscher (2008) investigated the contribution of a comprehension measure in addition to ORF. They found that information about reading comprehension generally improved the prediction of students at risk for reading difficulties. In addition, their findings suggest that the addition of a comprehension measure was more essential in higher elementary grades, which should be no surprise given that readers differ in lower-level *and* higher-level reading processes with the latter becoming more meaningful as reading experience and reading performance increase (Daneman, 1991).

To summarize, we conclude that reading progress of all students in a classroom should be monitored to identify stagnating or regressive developments at an early stage and to evaluate whether students with different ability levels benefit from the given instruction. Furthermore, the growth rate of ORF appears to be relatively similar across students after first grade (Kim, Petscher, Schatschneider, & Foorman, 2010), but the growth rate of reading comprehension may be different across students in higher grades, and thus give valuable information for instructional modifications (Förster & Souvignier, 2011). Hence, reading progress should be assessed using differentiated measures of reading fluency and reading comprehension that provide teachers with detailed information about specific needs in the instructional decision-making process. Hierarchical models of text comprehension (Kintsch, 1998) and reading competence models (Mullis, Martin, Gonzalez, & Kennedy, 2003) may provide the theoretical basis for a new test concept.

1.2. Goal setting

To decide whether instructional modifications are needed, teachers compare students' growth rate with a goal line. Thus, learning goals play an important role in LPA (Fuchs & Fuchs, 1998). Fuchs, Fuchs et al. (1989) found that teachers who used dynamic goals employed more ambitious goals and achieved higher learning gains than teachers who used static goals. Among other aspects, more ambitious goals increase the number of instructional change prompts (Jenkins & Terjeson, 2011).

Most of the studies investigating effects of LPA have focused on teacher behavior and thus examined effects of teacher-set goals. The active involvement of students in this assessment procedure has received little attention in the literature.

One way to more actively involve students during LPA is to implement self-selected goal setting and reflection of goal achievement. Both strategies play an important role in self-regulation theory (Zimmerman, 1990), and might augment the learning progress. For example, Fuchs, Bahr, and Rieth (1989) found that high school students with self-selected goals improved their performance in mathematics more than students with assigned goals. Furthermore, Swain (2005) examined the effects of student-set goals in LPA of 19 students in 6th and 7th grade. Results show that significantly more students of the goal-setting group were able to state a specific reading goal than students without goal setting. However, students had difficulties setting realistic goals, indicating that they would need additional support to better understand the assessment procedure and the meaning of goals. As most research on LPA, both studies have been conducted with only few students with learning disabilities. Yet, personal goal setting has been found to be a key element in fostering achievement and motivation also for children in regular elementary schools (Rheinberg & Krug, 1999).

1.3. Reading self-concept and reading motivation

Research on LPA has predominantly focused on achievement as a student outcome. Little is known about the effects of monitoring individual progress on motivational outcomes. However, given that "to become a good reader, students must possess both the skill and the will to read" (Watkins & Coffey, 2004, p. 110), it should be investigated if and to what extend motivation is affected by monitoring student progress. Following the expectancy-value theory of motivation (Wigfield & Eccles, 2000), expectancies about one's competence (self-concept), and the value of the activity (motivation) should be considered when investigating the relationship between LPA and motivational outcomes.

Reading self-concept plays a central role in reading motivation research (e.g., Chapman & Tunmer, 1997; Retelsdorf, Köller, & Möller, 2011; van Kraayenoord & Schneider, 1999) and has shown to be related to reading achievement (Aunola, Leskinen, Onatsu-Arvilommi, & Nurmi, 2002; Chapman & Tunmer, 1995, 1997; Chapman, Tunmer, & Prochnow, 2000; Retelsdorf et al., 2011). The