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Learning from text in late elementary education. Comparing think-aloud protocols with self-reports.

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Abstract

Although measuring pre-adolescents' text-learning strategy use with self-report inventories is most convenient for large-scale research, their use is accompanied with some concerns and their validity has been criticized. This study compares two different measurement methods (i.e., self-report and think aloud). More specifically, the relationship between subscale and item scores of the Text-Learning Strategies Inventory and the occurrence of the corresponding coded behavior in students' think-aloud protocols is studied. Moderate to high correlations were found for the subscales reflecting overt and covert cognitive text-learning strategies. Uncovering the relation between metacognitive self-reported and observed strategy use was more difficult.

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Keywords: text-learning strategy use, elementary education, self-report, think-aloud

1. Introduction

1.1. Text-learning strategies

Students are gradually confronted with more informative texts when progressing through their educational carrier, as they are increasingly used in classroom practice to reach instructional objectives (Schellings & Broekkamp, 2011). Therefore, equipping students with the necessary strategies for text-based learning arises as an important educational goal in late elementary education. Text-learning strategies encompass many individual learning techniques (e.g., highlighting, rereading) that promote students' text processing (i.e., selection and

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organization of text) and text learning (i.e., integration and recall of text information) (Merchie, Van Keer, & Vandevelde, 2013; Wade, Trathen, & Schraw, 1990). From a broad self-regulated learning perspective, these strategies are in essence either cognitive (e.g., organization), metacognitive (e.g., monitoring), or motivational (e.g., self-efficacy) in nature (e.g., Pintrich, 2004; Weinstein & Jung, 2010; Weinstein & Mayer, 1986). Some text-learning strategies can be executed overtly, making them easily observable (e.g., text-noting techniques, such as summarizing), whereas others are applied more covertly (e.g., mental learning techniques, such as paraphrasing or mentally rehearsing text) (Wade et al., 1990). Finding an appropriate way to map and gain insight into those strategies at the early stages of strategy development is important, not only to orient strategy instruction towards students' spontaneous study activities (Pressley & Harris, 2006), but also to register students' strategy repertoire evolution throughout a longer time span.

1.2. Measuring text-learning strategies: think-aloud protocols versus self-reports

Many attempts have been made in the literature to measure learning strategies in various contexts with different data gathering methods (Schellings, 2011; Scott, 2008). Two methods are specifically related to learning from text. First, think-aloud methodology has been frequently applied (e.g., Fox, 2009; Greene, Robertson, & Croker Costa, 2011). Here, data are gathered on-line during task execution as learners are asked to verbalize all their ongoing actions and thoughts (Scott, 2008). In this way, text processing and learning activities are directly revealed without delay and are expressed in students' own wordings. Afterwards, the verbalizations are transcribed by the researcher into a think-aloud protocol (TAP), which is subsequently coded with a TAP-coding instrument. The occurrence of the coded categories are used afterwards for analysis purposes. Using the think-aloud method is, however, also associated with some concerns. For example, elementary school children may find thinking aloud very demanding due to their verbalization skills, concentration, or reactivity. It could also influence their strategic actions (i.e., they might process the text differently) or affect their later recall (Caldwell & Leslie, 2010).

Second, also task-specific self-report instruments can be used to gain insight into students' strategy use during learning from text (e.g., Samuelstuen & Braten, 2007; Schellings & Van Hout-Wolters, 2011; van Hout-Wolters, 2009). Here, data are gathered off-line, as students are asked to report on their strategy use after they have finished a certain learning task. More specifically, they are asked to rate the degree to which they executed the mentioned learning activity on a Likert-scale. This method can be advantageous as opposed to thinking aloud during studying as the completion of the inventory items implies less cognitive demands. Furthermore, students are able to complete the inventory at their own pace and are not disturbed by the researcher, which occasionally prompts students to keep on verbalizing their thought processes during the thinking aloud process.

The above mentioned description makes clear that both methods for mapping students' text-learning strategy use are associated with some advantages and disadvantages, which are more extensively discussed in various other studies and are briefly enumerated in Table 1 (Braten & Samuelstuen, 2004, 2007; Caldwell & Leslie, 2010; Schellings, 2011; Schellings, van Hout-Wolters, Veenman, & Meijer, 2012; Scott, 2008; van Someren, Barnard, & Sandberg, 1994; Veenman & Alexander, 2011; Young, 2005). Based on the mentioned disadvantages, the validity of both measurement methods could be questioned. However, especially the use of self-report measures has most often been criticized in the literature, as they merely contain students' own perceptions about their strategy use, which might differ greatly from their actual behavior (Braten & Samuelstuen, 2007). To address this recurring concern, previous studies have tried to explore the correspondence between self-report inventories and think-aloud measures to substantiate their validity (e.g., Schellings, 2011; Schellings et al., 2012). In this respect, this study focusses on the correspondence between two data gathering methods both aiming at measuring pre-adolescents' spontaneous text-learning strategy use, i.e., by means of on-line thinking-aloud and off-line self-report.