Learning and Instruction 39 (2015) 123–136

Contents lists available at ScienceDirect

Learning and Instruction

journal homepage: www.elsevier.com/locate/learninstruc

The impact of elaborated feedback on text comprehension within a computer-based assessment

Stefanie Golke [a, *], Tobias Dörfler [b], Cordula Artelt [a]

[a] Department of Educational Research, University of Bamberg, 96045 Bamberg, Germany
[b] Institute of Psychology, University of Education Heidelberg, 69120 Heidelberg, Germany

ARTICLE INFO

Article history:
Received 17 February 2014
Received in revised form
28 April 2015
Accepted 27 May 2015
Available online 19 June 2015

Keywords:
Elaborated feedback
Text comprehension
Inferences
Motivation
Feedback presentation type

ABSTRACT

We investigated what impact elaborated feedback has on sixth graders' deep-level comprehension of texts within a computer-based assessment. Experiment 1 (N = 566) focused on the contents of computer-provided elaborated feedback (i.e. inference-prompts, error explanations, or monitoring-prompt) using a control-group design. Results showed that none of the feedback treatments had an effect on performance. This appeared to result from participants' low commitment to processing the feedback. Experiment 2 (N = 251) focused on the feedback presentation type by varying computer-mediated and person-mediated inference-prompts within a control-group design. Results showed that only the person-mediated inference-prompts had significant effects on performance with respect to the correction of initially false answers to comprehension questions and the performance on subsequent test questions. Findings of both experiments indicate the impact of inference-prompts on text comprehension within performance assessments, highlighting the need to explicitly account for motivational issues in feedback interventions on higher-order reading processes.

© 2015 Elsevier Ltd. All rights reserved.

1. Feedback on text comprehension

The term feedback has a rather broad meaning that can refer to a wide range of interventions. It comes in various types and it applies to many educational settings. The objective of our feedback intervention was text comprehension, a complex and in many parts higher-order process of constructing meaning from written information. It is well documented that students often experience difficulties in text comprehension (e.g. Allington & McGill-Franzen, 2009), particularly in deeper understanding (Denton et al., 2015). Assisting readers in overcoming comprehension difficulties plays an important role in education.

Our approach to assistance was to provide instructional feedback when students encountered comprehension difficulties while reading texts and asking students to answer comprehension questions for these texts. The feedback helped students perceive their own comprehension difficulties, as indicated by incorrect responses to the comprehension questions, and offered (meta-) cognitive hints that the reader could use to deliver a correct response and to transfer the knowledge to new questions.

Using feedback in this manner is based on Vygotsky's notion of the zone of proximal development, which is thought to represent a learner's potential in a specific performance domain. The learner's potential, which in our case is the potential to comprehend text, is assumed to manifest itself in the extent to which performance is enhanced after providing feedback. This concept is used in what are called “dynamic tests”, which attempt to assess a person's current level of performance as well as one's potential in the performance domain (see Sternberg & Grigorenko, 2002). The present studies were conducted as part of the development of a dynamic test on text comprehension, though the theory and findings of dynamic testing itself are not in the scope of this article. Moreover, the feedback intervention used in our studies is not merely restricted to the specific concept of dynamic testing. It can instead be regarded as a general intervention approach to assist readers' comprehension construction in different instructional settings.

1.1. Text comprehension

Text comprehension is the process of actively constructing meaning from written information. It essentially consists of reconstructing the situation described in the text in order to get an

* Corresponding author. Present address: Department of Educational Science, University of Freiburg, 79085 Freiburg, Germany.
E-mail address: stefanie.golke@ezw.uni-freiburg.de (S. Golke).

http://dx.doi.org/10.1016/j.learninstruc.2015.05.009
0959-4752/© 2015 Elsevier Ltd. All rights reserved.

idea of what is conveyed in the text. Meaning is constructed from the complex integration of explicit text information and the reader's background knowledge. This integration process is influenced by characteristics of the text and the reader's (meta-)cognitive skills, resources (especially knowledge) and motivation in reading (Clinton, 2015; Zwaan & Radvansky, 1998).

The construction of meaning involves various interacting processes starting with low-level processes like word decoding or forming the meaning of sentences. Specific to the comprehension of texts, however, is the integration of individual sentence meanings into a coherent text-level representation. The reader therefore needs to be able to relate the explicit statements in the text along different dimensions, for example causality or chronology of events (Zwaan & Radvansky, 1998). This requires the generation of connections to and across sentences using surface cues or signaling devices in the text and/or background knowledge (Graesser, Millis, & Zwaan, 1997). These connections are mostly implicitly stated or suggested in the text and therefore need to be inferred (i.e. generating inferences). Inferences that establish coherence relations (bridging inferences) are essential for building a coherent text representation. Furthermore, inferences are required to elaborate on the information given in the text. These elaborative inferences typically lead to a deeper understanding of the text (Graesser, Singer, & Trabasso, 1994; Singer, Harkness, & Stewart, 1997).

The generation and integration processes at the text level, including the generation of inferences, are in most parts higher-order processes that mostly demand controlled or strategic processing (Kintsch, 1998). This applies particularly for longer texts and texts about complex or unfamiliar subjects. Part of these higher-order processes is the continuous monitoring of comprehension. Comprehension monitoring is the process of consciously supervising and validating one's own understanding of the text while reading. It clearly determines the accuracy and coherence of the mental text representation (Otero, 1998).

It is widely acknowledged that students often struggle or fail to construct a coherent text-level representation (Coté, Goldman, & Saul, 1998; Graesser, McNamara, & Louwerse, 2003), even despite well and normal-for-age developed decoding abilities (Nation, 2005). Although comprehension may fail for many reasons, inference generation and comprehension monitoring play an important role in comprehension difficulties for readers with normal-for-age decoding abilities (e.g. Cain, Oakhill, Barnes, & Bryant, 2001; Long, Oppy, & Seely, 1997).

Readers with low comprehension skills at the higher-order discourse level generate less inferences (Cain & Oakhill, 1999; Cain et al., 2001), and they are less likely to suppress non-relevant information in constructing meaning from text (Gernsbacher & Faust, 1991; Gernsbacher, Varner, & Faust, 1990). Low inference generation relates to both bridging inferences and elaborative inferences (Bowyer-Crane & Snowling, 2005). In this regard, poor comprehenders often have difficulty integrating text information into a coherent text representation and realizing where or when inferences are necessary and permissible (Oakhill & Yuill, 1996). However, this does not seem to be due to a general inability to draw inferences (Cain et al., 2001); but rather that poor comprehenders fail to perform them spontaneously (Cain & Oakhill, 1999).

It seems these difficulties do not primarily result from a general lack of relevant background knowledge (Cain et al., 2001) or from low working memory capacity, at least with regard to extraneous cognitive load of text comprehension tasks (Cain & Oakhill, 1999; Oakhill, Hartt, & Samols, 2005). On the other hand, generating inferences and monitoring processes require conscious processing, which involves resources of the working memory. This view is supported by Perfetti, Marron, and Foltz (1996), who argue that poor readers struggle to mentally represent a bundle of information that is required for a specific text comprehension task, hence poor comprehension.

Besides low inference generation, poor comprehenders have also been shown to not engage in constructive comprehension monitoring (Oakhill et al., 2005). For example, they are less likely to resolve anomalies or inconsistencies in text, particularly when the relevant pieces of information are nonadjacent in the text (see Nation, 2005). Whether deficits in comprehension monitoring are a sign or a cause of comprehension difficulties is controversial. The same applies for poor inference skills (Cain & Oakhill, 2007). From a more integrative point of view, it might be assumed that the cause-effect relationship works both ways. However, using feedback that aims at comprehension monitoring or generating inferences acknowledges the view that deficits in these skills can cause comprehension difficulties.

1.2. Instructional feedback

In the context of learning and instruction, feedback is commonly defined as information provided to a learner regarding certain aspects of his/her performance or understanding (Hattie & Timperley, 2007). Feedback is primarily used in order to enhance knowledge and performance. Hence it is typically provided for false responses or incorrect performance in general. On the other hand, the current research on feedback pays less attention to faultless performance. This focus on error correction is grounded in the information-processing paradigm that claims learning progress is mainly accomplished by addressing gaps in knowledge (Mory, 2004). Feedback, therefore, is information that the learner can use "to (…) overwrite, add to, tune, or restructure extant knowledge and beliefs" (Butler & Winne, 1995, p. 275). However, it does not function automatically. It instead demands an active learner who is motivated to process the feedback information and to conduct the required (meta-)cognitive processes (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991).

The effectiveness of feedback is influenced by its content, timing, and type of presentation. In regard to timing, research suggests that immediate feedback to false responses is generally preferable to delayed feedback (Bangert-Drowns et al., 1991; Kulik & Kulik, 1988). Furthermore, the type of feedback presentation (e.g. person-mediated or computer-delivered) has to date rarely been investigated. However, Kluger and Adler (1993) did examine the effects of person-mediated versus computer-delivered verification feedback (i.e. correct/incorrect) on students' performance on a mathematics test. It was found that the presentation type in general had no influence on performance. However, their data did suggest that feedback from a person produced task-irrelevant cognitions in the learner: person-mediated feedback caused a decline in performance relative to a condition where a person observed the student, but did not deliver feedback. That means the presence of a person (i.e. the experimenter) resulted in a general performance boost, but when this person provided feedback to a student, performance declined to the level of computer-delivered feedback. The study also showed that participants were more likely to seek feedback from a computer than from a person. Furthermore, Comer (2007) revealed that a person as feedback source was less accepted by students, especially when the feedback was on erroneous performance.

Compared to timing and presentation type, the content of feedback is regarded to be most relevant to the effectiveness of feedback interventions (Bangert-Drowns et al., 1991). A broad distinction can be made between simple and elaborated types of feedback. Simple feedback basically either informs whether a

Download English Version:

https://daneshyari.com/en/article/365508

Download Persian Version:

https://daneshyari.com/article/365508

Daneshyari.com