

ANALYSING THE INFLUENCE OF READING GOALS AND CONTEXTUALIZATION ON QUESTION GENERATION ABOUT SCIENTIFIC TEXTS

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Resumen

Analysing the influence of reading goals and contextualization on question generation about scientific texts.

This paper presents the results of two empirical studies, which were designed to analyse the influence of reading goals on question asking on scientific texts. According to the framework that relates questions to obstacles, given the same textual input one would expect different obstacles, and therefore different questions, depending on the immediate representation goal.

Results confirmed the influence of goals on questioning and evidenced text characteristics as a moderator variable of that relationship.

OBJECTIVS:

This paper presents the results of two empirical studies, which were designed to analyse the influence of reading goals on question asking on scientific texts.

INTRODUCCION:

We address question generation when subjects process written information. The immediate goal of a reader consists in creating an internal representation of discourse appropriate for the attempted task. Obstacles may be found in this attempt and information seeking questions (ISQs) may be asked to overcome them (Ishiwa *et al.*, 2008). These obstacles depend on the comprehension goal instantiated as the level of discourse representation attempted by readers: surface structure, textbase or situation model (Kintsch, 1998). Building a situation model representation involves generating inferences that elaborate the content beyond the textbase. Thus, the main obstacles found should correspond to difficulties in generating these inferences (Graesser, Millis & Zwaan, 1993; Otero, 1998).

According to this framework that relates questions to obstacles, given the same textual input one would expect different obstacles, and therefore different questions, depending on the immediate representation goal (Otero, 2009).

METODOLOGY:

The first study, focused on 145 students attending the 9th grade and the representation goals were manipulated on two different ways. First through two different tasks: reading for rewriting the text vs. reading in order to carry out an experiment. To make sure that an attentive reader would find processing difficulties, a difficult key sentence was included in the paragraph. The effect of context in creating different mental representations and on identifying different obstacles to carry out the tasks constitutes the second way of text manipulation, which was achieved by presenting the text in an academic, non contextualized condition and in a "situated" condition. Considering the categorization proposed by Ishiwa *et al.* (2008), questions were classified in Type I, Type II and Type III. We assume these three types of inferences also occur in expository texts. The three inferences correspond to the three types of questions that may be asked when readers try to create a situation model for an expository text: questions linked to associations, explanations, and predictions. The first kind of questions addresses the need to adequately represent the entities of a system. The second kind of questions focuses on explanations or justifications for these entities. Finally, there are questions addressing the need to foresee consequences.

The second study was conducted with 60 students attending the 9th grade. In this case the analysed condition was text characteristics. Reading goals were similar to those on first study, and the context was not considered. A new text paragraph was elaborated on the same subject with two differentiated paragraphs. The first one, introductory, basically described states and provided a scene for the second one. This second paragraph described a procedure to test metal alloys.

CONCLUSION:

Results evidenced that students asked more Type I questions in general and also in "planning and conducting the experiment" condition, while on "rewrite the text" more Type II questions were formulated. However, these results reverse when 'key sentence' was analyzed. No context effect was found and an extremely small number of Type III questions were put. This shows that question asking has a weak dependence on contextual conditions. For the key sentence $n \text{ Type II experimenting} = n \text{ Type II rewriting}$, but $n \text{ Type I experimenting} > n \text{ Type I rewriting}$, as in the whole paragraph. The obstacle in the key sentence is not directly causal. Students ask on the characteristics of entities in the key sentence.

In the second study, more Type II questions are asked in the rewriting condition than in the experimenting condition, as in the first study. Also, more Type I questions are asked in the experimenting condition than in the rewriting condition. But this difference appears to exist for the procedural paragraph but not for the setting paragraph.

Results confirmed the influence of goals on questioning and evidenced text characteristics as a moderator variable of that relationship.

PEDAGOGIC IMPLICATIONS

Considering the results obtained, there is strong evidence that the goals established influenced the students questioning. Therefore, it is important that the teacher formulates and presents objectives in a clear way. As type I questions are associated with experiment and type II questions associate with understanding, a sequential and also hierarchical model can be established that guides the organization of pedagogical situations.

There exists also a moderate evidence that the text features are associated with the formulated questions, namely the kind of relations associated with paragraphs. This is an important information that should be considered when writing scientific texts. Nevertheless deeper investigation is needed in this area.

Finally, results concerning the influence of the context on questioning are quite surprising. Further research on this topic is also needed before being considered on the organisation of pedagogical situations.

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