MultiTex: Process-based assessment of multiple documents comprehension

Motivation for the project

In order to cope with the demands of their studies, university students of all subjects have to be able to familiarize with different topics and find out important information in a self-regulated way. In the context of university learning, they are usually confronted with multiple sources and (text) documents that might provide redundant and complementary but also conflicting information. These demands comprise more than comprehension of single texts as information of multiple sources have to be related to and integrated with each other. Previous research indicates that students often fail to integrate information from multiple documents and sources appropriately.

Aim of the project

In this project, we develop and in part validate a computer-based instrument for assessing university students' competence of multiple documents comprehension (multiple documents literacy, MDL). Especially, we focus on additional process-based measures.

We use process-based measures 1) as additional diagnostic information and 2) in order to identify strategies of processing multiple documents and to test theories of multiple documents comprehension.

The aims of the project are:

1. Development of a theoretically informed **computer-based test of MDL**
2. Empirical **testing of assumptions of theories of MDL**
3. Analysis of processes of multiple documents comprehension and development of **process indicators**
4. **Validation** of the test with 2 cohorts of university students at 2 universities majoring in 2 subject groups

Computer-based test of MDL

Assessment of MDL

Based on the following dimensions:

1. **Text type:** relevant for university students:
   - expository texts
   - literary (e.g., literature studies) texts
   - narrative (e.g., history) texts
2. **Cognitive requirements:**
   - cross-text inferences
   - cross-text finding of information
   - cross-text evaluations
   - source evaluation (who to believe and what to believe, cf. Bromme, Kienhues, & Porsch, 2010)
3. **Relation of information:** across texts either
   - redundant,
   - complementary or
   - conflicting (e.g., Bråten, Anmarkrud, Brandmo, & Strømsø, 2014).

Students work (read, highlight, note-taking) on multiple documents and subsequently answer questions (test items). Advanced types of items are highlighting and commenting. In addition, an „empty sheet" will be available where students can take notes and process comments or highlights.

Process data are available for both working on the documents and working on the test items. These are used to identify strategies.

Testing assumptions of theories of MDL

So far, only a few theories of MDL exist. These are complementary to each other. The Documents Model Framework (e.g., Britt & Rouet, 2012) makes assumption on the cognitive representation of multiple documents while the MD-TRACE-Model (Rouet & Britt, 2011) focuses on the (self-regulated) process of finding, evaluating, processing, and using multiple documents. The Content-Source-Integration-Model (Stadtler & Bromme, 2014) refers to dealing with conflicting information. In our own work (Schoor, 2015; Schoor & Artelt, 2015) we assume cross-text comparison to be an important process.

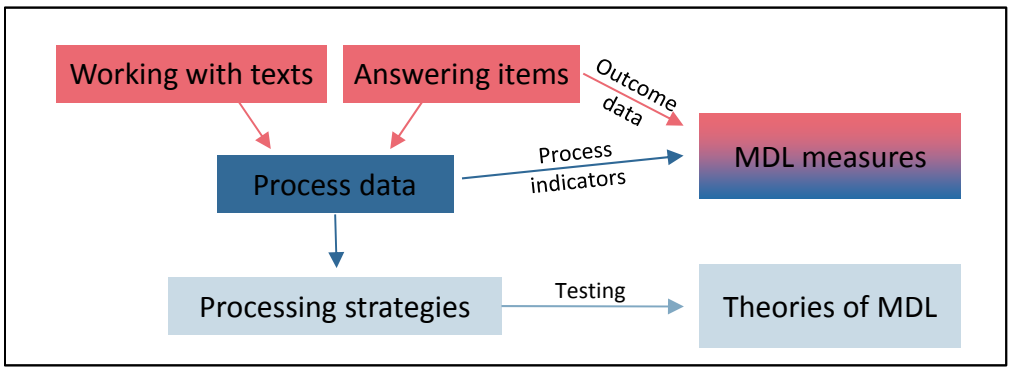
Process data can be used to identify processing strategies. This allows to test assumptions of MDL theories, for example, whether effective students indeed compare information across texts.

Process indicators for diagnostics

Process indicators are analyzed taking two perspectives into account:

Diagnostic-psychometrical perspective: Process indicators are used for expanding more traditional measures of MDL. The family of Generalized Linear Mixed Models (GLMM) is used in order to analyze process indicators in, e.g., explanatory item response models (De Boeck & Wilson, 2004).

Educational-psychological perspective: We analyze from an educational-psychological perspective which strategies of multiple documents comprehension students use. Therefore, the processes that are most predictive of optimal and suboptimal strategies of students are identified on the basis of theoretical considerations and empirical data.



Validation study

Planned sample:

400 students of universities of Bamberg and Frankfurt

- Educational science and psychology (multiple sources used but not a central theme)
- Literature studies and history (multiple sources more important)
- Bachelor 1. semester
- Master last semester

Hypotheses:

- MDL is different from reading competence. Reading competence is a necessary, but not sufficient, condition of MDL.
- MDL is lower at the beginning of university studies (bachelor 1. semester) than at the end (master last semester).
- This gain in MDL is expected to be stronger for literature and history students than for education and psychology students.

Further analyses:

- Characteristics of items (e.g., salience of conflicting information)
- Relationship of MDL with process indicators

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