



# Text Readability and Simplification

## LEAD intramural projects evaluating relevance & impact in education

### Overview

#### Aims

- Evaluate the utility of computational approaches to readability and simplification in educational settings.
- Study the correlations between computational linguistic and cognitive models of text complexity.

#### Projects

- I. Cognitive Correlates Project
  - Link linguistic & cognitive measures of text complexity.
- II. REBIL: Towards appropriate reading materials for Bilingual classrooms
  - Evaluate the role of linguistic complexity analysis and text simplification in authentic learning contexts.
- III. Reading Demands Project
  - Compare the linguistic complexity of German school books across grades and school types.

### 1 The Cognitive Correlates Project

#### Research Questions

- How does linguistic complexity of texts affect the reading behavior?
- Which alterations in texts will have the biggest impact on students' reading processes and outcomes?
- How do the linguistic measures of text complexity correlate with cognitive measures like reading time?

#### Team

- Sowmya Vajjala, Detmar Meurers, Katharina Scheiter, Alexander Eitel

**Method:** Eye-tracking studies

#### • Reading materials:

- Texts belonging to two reading levels, prepared by experts at OneStopEnglish.com.
- Original texts are from The Guardian newspaper.

#### • Evaluation:

- recall and comprehension questions after reading.
- eye-tracking measures like reading time, fixation duration etc.,

#### Current Status

- The eye-tracking experiments are designed and will be run as the semester starts.

**Duration:** October 2013 – March 2015

### 2 The REBIL Project

#### Research Questions:

1. Are the native language texts different from bilingual texts in terms of their linguistic complexity?
2. How does the linguistic complexity of a text affect
  - the student's learning gains i.e., text comprehension?
  - the student's motivation and emotions while working with the text?

#### Team

- Sowmya Vajjala, Kathrin Jonkmann, Jörg-U. Kessler, Detmar Meurers

**Duration:** June 2014 – June 2015

#### Project Plan

1. Procure the English textbooks used in bilingual and native schools (US/UK) and digitize them.
2. Analyze their linguistic complexity using our readability model (Vajjala & Meurers, 2014).
3. Prepare simplified versions of native texts using our simplification approach.
4. Evaluate student comprehension with simplified vs unsimplified versions of texts.

### 3 The Reading Demands Project

#### Research Questions

- Do German school books across grades and school types differ in terms of their linguistic complexity?
- Can we build computational models that classify school textbooks based on their text complexity?

#### Approach

- Start with German text complexity measures from Hancke, Vajjala & Meurers (2012) and Hancke (2013).
- For more details on current status, visit Karin's poster!

#### Team

- Karin Berendes, Sowmya Vajjala, Detmar Meurers, Doreen Bryant, Tobias Kolditz, Lisa Nassif, Harriet-Sophie Biedermann

**Duration:** October 2013 – October 2014

#### References

Detailed discussion of the approaches and results so far can be found in five peer-reviewed publications (IJAL, EACL-14, PITR-14, COLING-12, BEA-12) online at:

<http://purl.org/dm/papers.html>