Optimizing the 3R study strategy to learn from text

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Overview

- Aim and original plan of the project
- Important elements
- First experiment
- Preparation second experiment
- The future
Aim and original plan of the project

- Optimizing the 3R study strategy
- Focus on self-testing
- Testing instructional interventions
  - Taking notes (read)
  - Answering non-specific short-answer questions (recite)
  - Selective reviewing (review)
  - Intervention study in class
Important elements experiment 1

• Students prefer to take notes during reading (Palmatier & Bennet, 1974) and to reread text during the learning process (Karpicke, Butler, & Roediger, 2009).

• Active retrieval of information leads to better test performance compared to rereading text (Carpenter & DeLosh, 2006; Kang, McDermott, & Roediger, 2007).

• Testing can have a positive influence on learning outcomes (Karpicke & Roediger, 2008).

• In education, testing should be used more often (Leeming, 2002).
Important elements experiment 1 (2)

• Testing effect

• The 3R study strategy
  – Read: reading a text or text passage
  – Recite: retrieving information from memory
  – Review: reviewing a text or text passage

• Adjunct questions

• Alignment
Experiment 1: Research questions

- What is the effect of offering different types of questions on final test performance?
- What is the effect of alignment on final test performance?
- What is the effect of adding adjunct questions on final test performance?
Experiment 1: Hypotheses

- Answering higher order questions (comprehension questions) leads to deeper text processing compared to answering lower order questions (factual questions). This will possibly lead to better final test performance.

- Alignment between encoding and retrieving information leads to better final test performance compared to no alignment.

- Offering adjunct questions within the 3R study strategy will lead to better final test performance compared to the traditional 3R study strategy.
Experiment 1: Method

• N = 131
• 5 conditions
  – Factual - factual
  – Factual - comprehension
  – Comprehension - factual
  – Comprehension – comprehension
  – 3R study strategy
• Prior knowledge test – experimental phase – final test
• Statements
• Text about the industrial revolution
• Contrasts (3R study strategy was control condition)
Results repeated factual questions

- Participants in condition 1 performed significantly better on repeated comprehension questions than participants in condition 5 ($p = .032$)

<table>
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<tr>
<th>Experimentele groep</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
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Results new factual questions

- Marginal differences between condition 1 and 5 ($p = .061$)
- Marginal differences between condition 3 and 5 ($p = .062$)
- Scores of participants in condition 4 and 5 are good
Results repeated comprehension questions

- Significant differences are found ($p = .000$)
- Participants in condition 4 outperform participants in condition 5 on repeated comprehension questions ($p = .000$)

<table>
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</table>
Results new comprehension questions

• Significant differences are found ($p = .037$)

• Participants in condition 5 outperform participants in condition 1 ($p = .009$)

• Participants in condition 5 outperform participants in condition 2 ($p = .042$)

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Experiment 1: Conclusion

- Memory effects are found for repeated factual questions and repeated comprehension questions (effect of alignment).

- On new factual questions participants in condition 4 and 5 perform well (comprehension questions and free recall promote deeper processing).

- Scores on new comprehension questions are low, but participants in condition 5 perform well (free recall is not worse than answering comprehension questions).
Preparation second experiment

• Shift to secondary education
• Simple design
  – Read – comprehension questions – review
  – Read – recite – review
  – Read – read – read
• Including motivation / cognitive load scale
Future experiments

• Manipulation read phase
  – Activating prior knowledge
  – ??

• Manipulation review phase
  – Review of whole text / text passages
  – ??
Thank you for your attention!

Questions?

Contact

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