








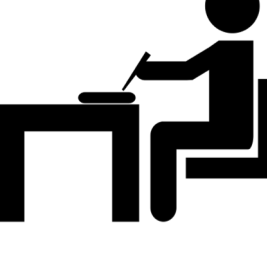
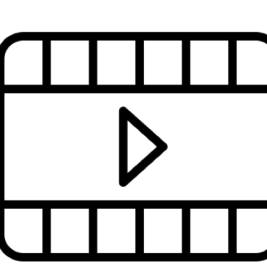
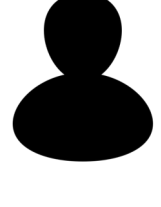

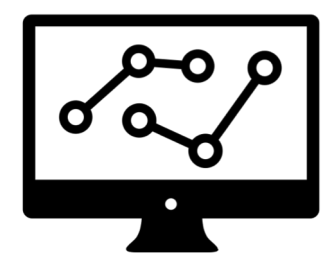


# Tracing spontaneous spatial text-learning strategies in late elementary education: comparing trace data, digital writing pen data and eye tracking data

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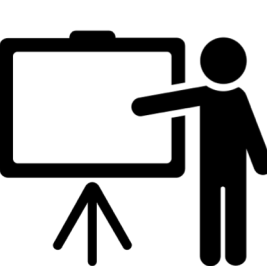
## Introduction

Spontaneous spatial text-learning strategies are associated with better learning outcomes (Fiorella & Mayer, 2017).

- Less is known about this strategy use in late **elementary education**  $\Leftrightarrow$  increasing academic demands for independent text study (Duchesne, Ratelle & Roy, 2011).
- **How can we capture** these strategies **in detail** at this age?  $\Rightarrow$  The present study compares **three different methodologies** to investigate these strategies in fifth and sixth grade.

 <b>STUDY 1:</b> Offline trace data	 <b>STUDY 2:</b> Online trace data	 <b>STUDY 3:</b> Eye tracking data
 644 students from 17 classes  Students studied a 500-word informative text. They were allowed to use scratch paper.  Scratch papers were analyzed with a detailed scoring rubric (e.g., scoring structure, color use, integrating key words, content etc.).	 18 students from 12 classes  Students schematized a 300-word informative text with a Livescribe® digital writing pen.  Pencast analyses (e.g., writing periods, elaboration approaches, construction steps)	 44 students from 4 classes  Students studied a digital mind map of an informative text. The SR EyeLink Portable duo® was used for eyetracking.  Area of interest (AOI) and scan path analyses (ongoing).
 <b>ADVANTAGES</b>		
<ul style="list-style-type: none"><li>• Straightforward data gathering</li><li>• Permits assigning overall quality scores of (spatial) text-learning strategy use</li></ul>	<ul style="list-style-type: none"><li>• Uncovers (meta-)cognitive strategies such as planful approach and evaluating</li><li>• Applicable during regular classroom tasks</li></ul>	<ul style="list-style-type: none"><li>• Uncovers (meta-)cognitive strategies such as planful approach, rereading, monitoring</li><li>• Collecting <math>\neq</math> processing measures (e.g., what they looked at, how long, sequences, etc..).</li></ul>
 <b>CONCERNS</b>		
<ul style="list-style-type: none"><li>• Some (meta-)cognitive strategies are not revealed (e.g., planful approach, monitoring, reviewing)</li></ul>	<ul style="list-style-type: none"><li>• Interpretation of students' strategic actions during pre- and post writing</li><li>• Technical errors = data loss</li></ul>	<ul style="list-style-type: none"><li>• Expensive technology</li><li>• Students cannot interact with the material</li><li>• Brief materials studied for a short period</li></ul>

## CONCLUSION & IMPLICATIONS for research and practice

-  Time and labor intensive though promising methodologies
- Substantiate measures with concurrent think aloud or retrospective interviews
- Possible correlations with self-report measures?
-  Promising for (online) modeling explicit strategy instruction by means of pencasts or EMME (eye movement modeling examples).

## QUESTIONS

- Suggestions for the efficient analysis of eye tracking data?
- (How) can we attune tasks and measures to study multiple document literacy?

STUDY 1



STUDY 2



MORE INFORMATION

- Study 3: manuscript in preparation.
- A more detailed reference list can be obtained from the author of this poster.