Where to look, when to do it - and for what reason?

Introduction

For a person with dyslexia, reading is a huge cognitive effort. Looking at a picture engages different areas of the brain than reading, giving rise to additional gaze patterns (Henderson 2003). It is reasonable to ask how well a person diagnosed with dyslexia presented with both texts and pictures in an expository text is able to process them both. Eye-tracking studies have shown that when presented with both text and picture, readers tend to prioritize the text (Schmidt-Weigand, Kohner et al. 2010). If unimpaired readers prioritize the text, what do readers with dyslexia do? Is there a risk that people with dyslexia miss out on the information embedded in pictures?

Objective

To investigate whether multimodal documents - documents with texts integrated with pictures rather than text alone - contribute to or obstruct reading comprehension in people with dyslexia. This project is funded by the Swedish Research Council dnr 2010-5379.

Method

- Eye-tracking to record eye-movements over a text and pictures
- Interviews and reading comprehension questions answered orally

Results are drawn from a pilot study of individuals aged 18-24 diagnosed with dyslexia (n=4) and a control group of individuals without (n=5).

Respondents read expository texts integrated with pictures while their eye-movements were recorded.

Theoretical framework

The research relies upon variation theory (Marton, Runesson et al. 2004) in which a prerequisite for learning is the ability to simultaneously discern and experience prerequisite for learning is the ability to simultaneously discern and experience irrelevant aspects of visual stimuli also. Eye-tracking studies have shown that when presented with both text and picture, readers tend to prioritize the text (Schmidt-Weigand, Kohner et al. 2010). If unimpaired readers prioritize the text, what do readers with dyslexia do? Is there a risk that people with dyslexia miss out on the information embedded in pictures?

Impact on Research Field

The research described here may clarify whether or not reading comprehension improves for dyslexic readers when texts are integrated with pictures. Teachers need to know for a fact whether or not this is true, pupils are not helped when teachers guess or think that they know. The question remains; how should texts and pictures be designed in order to enable people with dyslexia to retrieve information from pictures when needed?

Results from pilotstudy with eye-tracking

The eye-tracking data collected thus far has been analysed using heat maps and areas of interests. Results indicate that individuals with dyslexia hardly looked at the pictures, in contrast to the others, who used the pictures as an alternative information source.

Sven as subjects saw it

Soldaderrit (Soldatmobil på polska) bildades dåmed i augusti 1980 och gick nu i täten för motståndet mot regeringen. Ledare för Soldaderit var Lech Wałęsa. Soldaderit hade 12,5 miljoner medlemmar 1980-81 och var däremot Europas största tackörförening någonsin.


Areas of interest, red=text, blue=picture, HiSpeed system, 4 subjects

Areas of interest, lightblue=text, blue=picture, HiSpeedsystem, 4 subjects

References


