THEORETICAL BACKGROUND

The experiment attempts to envisage the cognitive differences between two phases in bottom-up approach (phase1: non-focused reading; phase2: focused reading), top-down (TD) and bottom-up (BU) reading approaches in text-picture comprehension (TPC).

It is noticed that:

• secondary school students are required to have skills in comprehending both text and pictures, esp. in scientific textbooks (Otero et al., 2002).

• very few studies have involved younger learners (Mason et al., 2013).

• research on TPC has flourished during the last two decades, the value of cognitive processes in TPC has only recently been recognised (Mason et al., 2013).

• secondary school students are required to have skills in comprehending both text and pictures, esp. in scientific textbooks (Otero et al., 2002).

• eye movements can reflect continuous mental procedures and reveal the structure of cognitive processing with external representations (Just & Carpenter, 1976).

AIMS AND OBJECTIVES

• Text: to explore the differences of cognitive processing between two phases in BU approach and TD and BU approaches.

• Picture: to investigate the differences of cognitive processing between TD and BU.

• Text & Picture: to analyse and identify the differences in school and grades and to shed light on pedagogical implications.

PILOT STUDY MATERIAL

Material:

• IQ test

• grade:

• intelligence:

• age:

• school:

• sex:

• academic background:

• reading approach:

Sample:

• 62 (11 males, 5 females)

• mean age: 12.7 years (SD=3.4 months)

• school: 8 (lower track), 9 (higher track)

• Grade: 3 (5th Grade), 9 (6th Grade), 3 (8th Grade)

• intelligence: M=32.1 (SD=4.5)

Procedure:

• IQ test

• Six units were presented on Tobii Eye-tracker and eye movements were recorded.

• Eye-tracking is conducted. Regarding to the characteristics of young participants, Tobii eye-tracker was selected due to its unique tolerance and comfort for head movements.

PILOT STUDY RESULT

Design:

2x2 (x3x3x2x2) factorial design

• 2 between factors:

—school types (Gymnasium/ Realschule Plus)

—grades (5/ 8).

• 4 within factors:

—task difficulty (easy/medium/difficult)

—hierarchical level (1/2/3)

—image type (realistic images/graphs)

—reading approach (top-down and bottom-up).

Table1. Sequence of six units (mosaics, bananas, pregnancy, audibility, sources, Europe)

Table2. Means, standard deviations and p value of two phases in bottom-up approach.

Table3. Means, standard deviations and p value of bottom-up and top-down approaches.

Table4. Means, standard deviations and p value of bottom-up and top-down approaches.

PILOT STUDY

REFERENCES


