

WHAT HAPPENS TO READING COMPREHENSION WHEN VISUAL THINKING MAPS ARE USED IN READING INSTRUCTIONS?

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Teaching Context

The English Language Learning (ELL) students in this study were part of Minneapolis Public Schools, Wellstone International High School, Lehmann Center. Minneapolis Wellstone International High School is designed for students ages 17-21 who are new to the country and have little or no English skills and often no formal schooling in their history. Students age 21 must exit at the end of the school year. The researcher, the principal at Wellstone, worked in class with the reading teacher. This study was conducted from February to June 2005 for students in a medium level reading class. Classes had three parts that rotated during the class hour: computer pronunciation, small reading discussion group and individual reading time. The languages included Russian, Hmong, Somali, Amharic, Anuak, France, Malay, English dialect, Oromo, Spanish, Swahili and Tibetan.

The class met 5 days a week, from 1:40-2:30, with a total of 4.16 hours a week. Students had at least a 10 minute exercise every day using the Thinking Maps. Twenty-two students participated in this study.

The Problem

Often students had decoding skills. However, most were not fluent readers. Reading comprehension was often the problem. They could read but not be able to tell you what the story was about. Comprehension skills and practice had to include visuals to get the word across to so many different languages in one class. Often, students could read aloud but not comprehend enough to answer the questions about the reading.

Students were frustrated that they were not moving faster in their comprehension and most knew they would move out to the “adult program” as the year progressed. Because younger students were in their other classes, the 21 year old students were anxious to learn in a shorter period of time. The purpose of this study was to determine if Thinking Maps impact comprehension.

Research Question

What happens to reading comprehension when visual Thinking Maps are used in reading instructions?

To address the research question the following steps were taken:

- Students age 21 that would exit Wellstone High School June 2005 were identified.
- Thinking Maps that are visual-verbal learning tools, each based on a fundamental thinking process and used as a tool for showing relationships, were chosen.

The teacher in this classroom had training in Thinking Maps through the National Urban Alliance Project.

- The next step was practicing using Thinking Maps with different readings every day. This helped students become familiar with working with Thinking Maps and help them practice reading and writing in English.
- The three maps chosen were based on lessons previously given that showed glaring errors in the following: brainstorming, putting events in order or sequencing, and showing a relationship between cause and effect. The three thinking maps are described below.

1. The Circle Map

The Circle Map defines in context a topic or concept. It is used for brainstorming ideas and for showing prior knowledge about a topic by providing context information. In the center circle are words, numbers, pictures, or any other sign or symbol to represent the object, person, or idea you are trying to understand and define. In the outside circle, the student writes or draws any information that puts this topic in context. Below is an example:

- In the center of the circle is the topic “the United Nations.”
- The students had prior knowledge about the United Nations from reading a text selection.
- The outer circle lists: to keep peace, bring harmony between nations, to stick together, staying in contact, democracy, being fair, etc.
- The Circle Map provides an in-the-moment assessment of students’ prior knowledge, basic vocabulary, bits of information, and sometimes conceptions and misconceptions students have about a topic.
- The frame around the Thinking Maps supports dialogue and discussion of different points of view within the context of differing frames of reference such as: voting, freedom, taxpayer, elections, etc.

2. The Sequence Map

The Sequence Map identifies the relationship between stages and sub-stages of an event (or order of numbers, operations steps, etc). The most common and effective use of the Sequence Map is finding out the plot of a story. Words such as first, then, next, second all give clues to the reader of sequence.

- In the outside rectangle write the name for the event, or sequence.
- In the target rectangles—flowing from left to right—the major stages of the event are written, and in the smaller rectangles below, the sub-stages of each major stage are written.
- After students work through a story on any subject, ask each student to create a sequence map showing every step they take. This will give a way to assess how they are thinking and give students a tool for thinking about and looking back on how they are thinking.

3. The Cause and Effect Map

The Cause and Effect Map shows visually the relationship between cause and effect, of an event. For example:

- In the center rectangle, write in an important event that occurred.
- On the left side of the event, write in the effects of the event.

- As more causes and effects are identified, they are added to the Map. If a system is being studied, it will be found that there are effects in the systems which, in turn, influence initial causes.

Data Collection

- A CASAS Appraisal #20 was given. The use of the Form 20 Appraisal was to confirm higher level reading ability. This was an attempt to give students an opportunity to see where they scored on such a test and to encourage them to stay in school after reaching age 21.
- Pre-post assessment lessons on comprehension were collected. An assessment lesson written by Deborah Adococh, Camdor Publishing Services, 1995, was used. It included the following 12 areas for a pre and post test on comprehension:
 - Finding the main idea
 - Recalling facts and details
 - Understanding sequence
 - Recognizing cause and effect
 - Comparing and contrasting
 - Making predictions
 - Finding word meaning in context
 - Drawing conclusions and making inferences
 - Distinguishing between fact and opinion
 - Identifying author's purpose
 - Interpreting figurative language
 - Distinguishing between real and make-believe

Data Analysis

- A spread sheet was created with the following:
 - a. Student name and I.D. number
 - b. Scores of Appraisal # 20 to indicate CASAS level
 - c. Scores of pre and post comprehension assessment before use of Thinking Maps and after use. For example, the pre-test showed 9 errors on Finding the Main Idea and 2 errors after teaching thinking maps, etc. See chart on page 5.

The pre and post test assessment indicated the following:

| PRE (-) = Errors | POST- after teaching Thinking Maps |
|-------------------------|---|
| • -9 Find main Ideas | -2 |
| • -3 Facts, Detail | -2 |
| • -11 Sequence | -3 |
| • - 5 Cause/Effects | -1 |
| • -2 Compare/Contrast | -1 |
| • -5 Predict | -5 |
| • -1 Word Meaning | -1 |
| • -0 Conclusion | -0 |

- -5 Fact/Opinion -5
- -3 author's Purpose -2
- -8 Figurative Language -6
- -6 Real/Make Believe -3

Findings

The findings from my research indicate the following:

- There was a decrease in error responses in three areas:
 - a. Finding the main idea (9 errors to 6 errors)
 - b. Sequence (11 errors to 3 errors)
 - c. Cause and Effect (5 errors to 1 error)
- Many learners had prior school experience. Their CASAS Form 20 scale scores reflected that they could take Forms 33 and 35. Because they were able to score at this CASAS level, they were able to grasp the concepts of finding the main idea, sequencing, and cause and effect.
- Students' practice in using Thinking Maps increased reading comprehension in the 3 areas studied.

Conclusions

The answer to my research question, "What happens to reading comprehension when visual Thinking Maps are used in reading instruction?" is that, with this group of students, the Thinking Maps directly improved understanding. Learners showed improvement in the 3 areas studied.

There was another result of this research. Students started asking if I would give them a short story so they could practice a skill with Thinking Maps.

There is potential for this Thinking Map process to help in other areas of reading. I presented the sample Thinking Maps to 3 other teachers who now use at least one of the three maps in their classroom. One of the most impressive was a sample in math class.

Next Steps

Because of positive feedback from learners, I was invited to present with teachers from Wellstone International High School in the June 2005 Principal Workshop the use of Thinking Maps to improve reading comprehension.

CHART A

| TESTED | STUDENT | #20 | SCALE | CASAS |
|---------|---------|-----|-------|-------|
| 3/11/05 | 828 | 5 | 198 | 33 |
| 3/3/05 | 820 | 17 | 227 | 35 |
| 3/3/05 | 331 | 16 | 227 | 35 |
| 3/3/05 | 357 | 12 | 216 | 35 |
| 3/3/05 | 189 | 17 | 227 | 35 |
| 3/3/05 | 813 | 15 | 224 | 35 |
| 3/3/05 | 268 | 17 | 227 | 35 |
| 3/3/05 | 917 | 18 | 227 | 35 |
| 3/3/05 | 805 | 11 | 213 | 34X |
| 3/3/05 | 919 | 10 | 211 | 33 |
| 3/3/05 | 796 | 11 | 213 | 34X |
| 3/3/05 | 532 | 11 | 213 | 34X |
| 3/3/05 | 342 | 7 | 204 | 33 |
| 3/3/05 | 630 | 8 | 206 | 33 |
| 3/3/05 | 181 | 9 | 209 | 33 |
| 3/3/05 | 745 | 13 | 218 | 35 |

Not post tested because of difficulty scheduling because of state testing.

References

Adcoch, Deborah. Comprehensive Assessment of Reading Strategies, Curriculum Associates, Inc. Lesson 9: Reading passage adapted from Rainbow: Walk in my Shoes, by Camedon Publishing Services. Copyright, 1995.

CASAS, ESL Appraisal Form 20.

Hyerk, David. Thinking Maps: Tools for Learning, Innovative Learning Group, 1995.

| Fact/Detail | | Sequence | | Cause/Effect | | Compare/Contrast | | Predict | | Word meaning | | Conclusion | | Fact/Opinion | | Author's Purpose | | Figurative Language | | Real/Make Believe | |
|-------------|------|----------|------|--------------|------|------------------|------|---------|------|--------------|------|------------|------|--------------|------|------------------|------|---------------------|------|-------------------|------|
| pre | post | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post |
| N | N | N | Y | N | Y | Y | Y | N | N | Y | Y | Y | Y | N | N | Y | Y | Y | N | N | N |
| Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | N | N |
| Y | Y | Y | Y | N | N | N | Y | Y | N | Y | Y | Y | Y | N | N | N | Y | N | N | N | N |
| Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Y | Y | Y | Y | Y | Y | Y | Y | N | N | N | N | Y | Y | Y | Y | Y | Y | Y | N | Y | Y |
| Y | Y | N | Y | Y | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y |
| Y | Y | N | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y |
| Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Y | Y | N | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y | N | N | N | N | Y | Y | Y | Y |
| Y | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y |
| Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y |
| Y | Y | N | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | N | Y | Y | Y |
| N | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | Y | N | Y | Y | Y |
| Y | Y | N | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | N | Y |
| N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| (-3) | (-2) | (-11) | (-3) | (-5) | (-1) | (-2) | (-1) | (-5) | (-5) | (-1) | (-1) | (-0) | (-0) | (-5) | (-5) | (-3) | (-2) | (-8) | (-6) | (-6) | (-3) |

Key:
N indicates an incorrect answer
Y indicates a correct answer
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