Influence of Verbal Subjoined Information on Cognitive Development

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1. Research Question and Hypothesis

The question addressed in this study is related to working memory and cognitive process. Increasing number of juvenile crimes has conduced to enthusiastic discussion on educational systems and problems in family and society. The main cause hidden in this serious circumstance might arise from undeveloped cognitive system or thinking process of children.

Most of the teachers have criticized that many a student cannot understand complex information or hesitate to try to think deeply. Not a few students would response reflectively and automatically. After all this results in their learning style and their less proficiency.

Since introduced into families in 1960's, TV has played main role in receiving information at homes. The average watching TV time of junior high school students is reported 3.2 hours, and that 16 percent of them watch TV more than 5 hours a day. On TV, speech is often summarized by letters and depicted on the screen. We, TV viewers, tend to read the visualized information, not listening to the speaker carefully. The summary facilitates our understanding, but it doesn't train our cognitive operation ability. This summarization often appears in the variety shows, which juveniles are likely to watch.

As drawn in Pajet's cognitive development, there are four stages; period of sensory-monitor intelligence, preoperational period, concrete operational period, and formal operational period. The former three periods, under 12-year-old, are consequent, but during these ages the children have been exposed to TV a lot, and they will build their cognitive structure, in which they rely on summary done by the others and they don't have to comprehend long texts by themselves.

When students copy English or Japanese text, they wave their heads like pendulum. This might show that the length of chunking can be shortened. Conceptual chunking develops as children grow to maturity and enhances the efficiency with which working memory can operate. Less proficient ability of chunking will lead to less proficient function of working memory, which might result in poor thinking ability.

2. Method
2.1. Participants

The study was conducted with a sample of 80 students from Grades 10, 15 or 16 years old, and college students, 18 or 19 years old.

2.2. Design

A2(15 or 16 years old vs. 20 or 21 years old)×2(less vs. more proficient readers) design was used.

2.3. Stimulus Materials

Text written in Japanese for junior high school students, the length of which is 600 words.

2.4. Procedure and Measures

The times of looking back to the text was counted. And how many words were memorized per one looking was calculated.

3. Results

There was no significant difference considering the ages, but proficiency of reading posted relatively high correlativity with the number of words stacked.

4. Discussion

Nowadays multimedia teaching has been highlighted to facilitate learners understanding. It is definitely true for the learners, especially those who have not developed their cognition. However, too much use of multimedia can deprive the chance of developing their cognition.

School age children, especially true for younger children who in the preoperational period or concrete operational period, have to learn to comprehend the text presented by mono-media. As in dual-coding hypothesis, audiovisual information is stored in memory in two separate but associated code – one verbal and one visual–whereas text-only information is stored in one verbal code only. It is easier to recall audiovisual information than verbal one. Easy task brings less development.

In the stage of drill or exercises but introduction, multimedia teaching materials should be avoided.