Acha, J. (2009). The effectiveness of multimedia programmes in children's vocabulary learning. *British Journal of Educational Technology, 40* (1), 23-31.

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Summary: In this study, 135 3rd and 4th grade students were shown a short English language story, presented on a computer program. Twelve previously unknown words (key words) were embedded within the story. Students were presented with verbal annotations (written translation), visual annotations (picture representation), and a combination of the two to assist in their understanding of the twelve key words. Recall of word translations was highest for students who received verbal annotations only. These findings suggest a challenge for the effectiveness of self-learning multimedia programs in second language vocabulary acquisition.

Assumptions:

- Some previous research has indicated that adding a picture to a word, in an unknown language, may enhance the student's acquisition and storage process for that particular word.
- The word and picture strategy may connect the new word to a previous experience in the student's long-term memory.
- Simultaneous verbal and visual representations have not always been successful in self-regulated learning environments due to overloading the working-memory capacity, i.e., cognitive load.
- Some learners with high visual and verbal capacity may benefit from self-regulated multimedia programs.

Results:

- The 'word-only' presentation mode was more efficacious in its recall rates than 'picture-only' or the combination of the two modes.
- The 'picture only' words led to a higher cognitive load resulting in less effective learning.
- Using the 'word-only' presentation mode allows the student to work in a direct connection between the native language and its foreign equivalent.

Conclusion:

- Adding a picture to a self-regulated vocabulary word program involves extra cognitive resources, resulting in inefficiencies.
- With picture presentation modes, students must translate an ambiguous picture into a non-ambiguous word meaning.
- Results confirm previous findings with adults, in which adults with low cognitive ability were hindered when pictures were introduced into their vocabulary program.

Suggestions for Teachers:

- When choosing instructional material, consider the cognitive load of the program. Picture representation of words, even though not advantageous in this study, may be used in other learning contexts in which coaching is provided for the student

Suggestions for Literacy Leaders:

- Literacy leaders should help curriculum developers identify the cognitive process for a particular task before designing a framework.
- Literacy leaders may want to identify the "functions of the elements provided to trigger" (Acha, 2009, p.29) particular knowledge. That is, "do they help to complement, categorise or integrate" (Acha, 2009, p. 29).
- Multimedia programs should be designed in accordance with the learner's stage in the learning process. Therefore, determining where the student is located within a particular learning process, in this case vocabulary will help in aligning multimedia programs with the students' skill level.