Picture This: Using Imagery as a Reading Comprehension Strategy

Timothy V. Rasinski
The Ohio State University

WESTERN MICHIGAN UNIVERSITY
**Dorothy J. McGinnis
Reading Center and Clinic**

PICTURE THIS:
USING IMAGERY AS A
READING COMPREHENSION STRATEGY

Timothy V. Rasinski
Dept. of Educ. Theory & Practice
The Ohio State University

Have you ever been so caught up in a book or so interested in a descriptive piece of writing that you create a mental picture of what you read? Imagery, this ability to represent in visual images episodes from written language, is a powerful tool that many readers intuitively use to aid their reading comprehension.

Yet, surprisingly, imagery does not appear to be a reading strategy that is fostered to any great extent in the schools. A survey of most reading methods textbooks revealed little mention of imagery as a reading technique to be developed in children. The few texts that do give it some mention usually suggest it as a means for teaching word recognition, suggesting that pictures be added to word cards. It is a rare text that gives the teacher advice in using imagery as an instructional strategy for reading comprehension.

Research of the past few years seems to suggest that imagery can be used as an effective instructional tool. It is the purpose of this paper to review the promising work in the connection between imagery and reading which has been going on recently. We may thus find ways in which research findings can be turned into productive classroom practices to aid reading comprehension.

Imagery

Foss and Hakes (1978) define imagery as an ability to internally propose and construct representations of external objects or events. In terms of language or reading this could be an internal representation of either the sounds and written symbols or the underlying meaning. Generally, it is the meaning that is represented in an internal visual display.

Piaget and Inhelder (1969) see certain similarities between imagery and language. Both are manifestations of the symbolic function in humans. Both allow for an internal representation of something from the external world. Unlike language, however, imagery is made up of symbols that can be different for each individual.

Language, on the other hand, represents with signs. Signs are conventions or uniform symbols among groups of people. Language can only represent concepts or concrete objects. Imagery, through its ability to represent objects and the past perceptual experience of the person, can play a complementary role to language in assisting comprehension.

Winn (1980) suggests that stimuli perceptions (e.g., reading) can be encoded differentially within a person's cognitive structure depending upon the purpose for which the information is to be put to use. When the task is recall and manipulation of data the information tends to be coded as images. When the task requires the learning of the meaningful connection between logical concepts the information tends to be encoded in sequential word-like structures. And when the task requires comparisons between visual and verbal information, or when the learners must solve relatively complex problems on the basis of visual information, then the information tends to be encoded propositionally. Propositions are very abstract representations of information that encode concepts and the relationships between them. Thus, it appears that imagery may be optimal for certain types of comprehension. Winn suggests that imagery is best suited for recall and manipulation of a particular information set.

Imagery and Comprehension

Several studies over the past few years have strongly suggested that imagery can play a positive role in aiding reading comprehension. In one study, Guttman, Levin, and Pressley (1977) read stories to kindergarten, second and third-grade children under various conditions. These conditions were sets of pictures that only partially represented the text, instructions to create internal images as the text was read, and a control condition of no image instructions and no pictures. The kindergarten children were able to remember more of the texts presented with the full pictures only. However, as the children increased in age their ability to use partial pictures and internal images to remember texts also increased relative to the control condition. This tends to support Piaget and Inhelder's (1969) argument that children's ability to image becomes more sophisticated over time.

In a study of reading behavior Lesgold, McCormick, and Golinkoff (1975) instructed third and fourth-grade

students to draw simple cartoons of ideas and events depicted in stories after they read them. Later they instructed the students to construct mental images ("imagine the cartoons") of stories. The students instructed in the imagery strategy and reminded to use it remembered more than students receiving a more general non-imagery training. Pressley (1976) found that a training session in internal image construction of only 20 minutes aided the comprehension of eight-year-old children reading a 950 word story. The experimental training consisted of instructing the children to make up a separate picture in their heads for six orally presented sentences. Following each sentence they were shown an example of a well-formed image for the sentence.

In a similar set of studies with older students (college and secondary), Rasco, Tennyson, and Boutwell (1975) found that instructions to form images and/or use drawings aided the comprehension of reading passages (400 to 2500 words) for all groups. The least effective condition included neither imagery nor drawings. Kulhavy and Swanson (1975) instructed fifth- and sixth-grade children to create mental images as they read a 20 paragraph text and took an accompanying test. A second group was instructed only to read carefully. Immediate tests of comprehension tended to favor the imagery group, though not significantly. However, a delayed posttest one week later demonstrated that the imagery group recalled significantly more than the non-imagery group. They concluded that students will remember more of a text that they read if they try to construct mental images during their reading.

Anderson and Kulhavy (1972) found that high school seniors instructed to form mental images while reading a 2,000 word text passage learned no more than those students asked only to read carefully. However, on post experimental analysis it was found that half of the control group used imagery while one third of the imagery group did not.

Anderson and Hidde (1971) gave students sentences to rate, half the group by pronunciability and the other half by imagery evoking value. Later they were asked to recall the verbs and objects of the sentences when presented with the subjects. The group receiving the imagery instructions recalled over three times as many words as the pronunciability group. They argued that the imagery prompt facilitated learning by causing the subjects to process the sentences in a more meaningful fashion.

Anderson (1971), in two experiments, asked college
students to recall the subject noun in a series of
sentences they previously heard. The stimulus was either
the verbatim predicate of the sentence or its paraphrase.
The group instructed to use imagery had consistently
higher levels of recall than the group that was told
simply to repeat the stimuli to themselves.

Moore (1983) compared children's ability to integrate
meanings from the text (semantic information) involving
several experimental conditions. One comparison involved
a read-sentence only condition and a read-sentence with
instructions to produce images and an awareness of subse-
quent tasks condition. The children in the task awareness
plus imagery group integrated the paragraph information
(i.e.,were able to select true inferences from the text)
significantly better than the children in the read-sen-
tence only group. Further, Moore found that showing
pictures related to the text after the reading task
helped another group in integrating the information they
had read.

Steingart and Glock (1979) studied the effects of
imagery instructions and text organizations on what is
learned from reading a passage. Three types of text
organizations were used: scrambled, designated referent
(i.e. each paragraph had only one referent), and attri-
but (i.e. paragraphs were grouped by particular attribute
sets). Regardless of the text organization, the subjects
instructed to form composit images of objects in the
passages recalled significantly more correct text rela-
tions than subjects instructed to repeat the information
to themselves.

Several studies investigated the use of imagery with
differential aspects of subjects. Rohwer and Matz (1975)
had high SES white and low SES Black fourth-grade stu-
dents listen to three stories either accompanied by the
printed text or a pictorial version of the story. All
children who saw the pictures had better comprehension
than those who saw the printed text. The effect, however,
was far greater for the Black students. Further, the
Black children who saw the pictures did markedly better
on verifying inferences than their peers who saw the
print. Overall, the pictures reduced the comprehension
differential between the Black and white samples.

Levin (1973) found that visual imagery instructions
(e.g. think of a picture corresponding to the sentence
read) was more beneficial on a reading comprehension
task for poor comprehenders with good vocabulary skills

than poor comprehenders with correspondingly low vocabulary scores on standardized tests. Indeed, the readers with adequate vocabulary skills using imagery read at a slightly higher level than good readers in the reading without imagery condition. This suggests that imagery helps those readers who have difficulty in obtaining and organizing meaning from texts. McCoy and Weber (1981) compared the abilities of normal and learning disabled readers to image texts. Their results suggest that learning disabled children have a smaller image capacity than normal children.

Several studies that investigated the use of pictures on orally presented prose materials have been reviewed by Levin and Lesgold (1978). They conclude that there is a great deal of empirical evidence that supports the use of pictures as a factual comprehension aid to fictional materials presented to children. They caution that the pictures must convey the same information as the text. The positive effects of pictures tend to generalize across various student characteristics and methods of presentation. In a similar review on the use of illustrations in aiding reading comprehension Schallert (1980) also reports that illustrations can aid comprehension. In fact, her review extends the conditions that Levin and Lesgold (1978) set under which illustrations can be beneficial. She notes "that illustrations benefited reading as well as listening comprehension, adults as well as children, expository as well as narrative prose, and nonredundant as well as redundant text" (p. 519).

Finally, several studies have looked at the comprehensibility of texts of various image-inducing potential. In a study by Montague and Carter (1973) subjects read one of two versions of four concrete narrative paragraphs. The versions were different in their image-evoking potential. The versions with greater vividness potential produced higher levels of recall. Jorgenson and Kintsch (1973) had subjects verify the truth or falseness of 39 sentences. They found that high-imagery sentences were verified more quickly than low-imagery sentences regardless of instructions to use or not to use imagery. They concluded that image utilization is a natural and effective strategy for subjects in verifying tasks.

Discussion and Implications

The evidence presented here seems to suggest that an imagery strategy can play an important role in aiding children's comprehension. Pressley (1977) feels that

children can benefit from instruction to construct mental images for texts they hear or read. Further, the literature suggests that some types of children benefit more than others from imagery use. How, then, can the teacher use this information to benefit students? The rest of this paper will address this question.

Some of the ways to bring imagery into classroom instruction that are cited in the literature, such as having children recall their dreams, watch cloud formations, or image words and then spell them backwards (Forrest, 1981), need to be treated with a great deal of care. The teacher needs to keep in mind the reason for using imagery. In this case it is to aid reading comprehension. Imagery suggests, then, need to be evaluated in terms of this outcome. If a suggestion bears little relation to comprehension it should not be used.

Other classroom activities found in the literature seem more appropriate. Miccinati (1981), for example, suggests having students identify words from a list that they recognize in pictures, or produce images of specific sentences and paragraphs. Vaughan, Crawley and Mountain (1979) suggest a vocabulary scavenger hunt to develop images for words. The hunt is a type of word-sort activity in which children bring in pictures of items that represent particular words. The children manipulate these pictures in various ways, e.g., they might sort the items by size or function.

In general imagery activities should combine sign and symbol. More specifically, the activities should connect language to images and images to language. The language could be verbal as well as mental constructions. With this principle in mind a variety of activities to develop imagery as a comprehension strategy can be devised. Only a few are mentioned here:

1. Have a student read a text and make a drawing of what s/he read. A second student reads the text and reacts to the first student's drawing. After discussion, they develop a new drawing.

2. Have all students draw pictures from a text they read, and compare their drawings and reactions.

3. Have students write a text, after seeing a picture, that changes the still picture into a dynamic episode. Share the texts and have students decide which text most accurately represents the picture.

4. Help students to induce a particular mental image.

Then read a text to them. After reading, ask them in what ways they had to modify their image in order to accommodate the text. Ask if imagery helps them to recall.

5. Use pictures when reading a book to children. Try sharing the pictures before, during, and after reading.

6. Use facsimile artifacts related to a character in evoking images in children before or during a book. These aid in building a background of knowledge for the reading.

7. Allow students to see movies or filmstrips of stories prior to reading them. After the reading, discuss which version was preferred.

8. Use visual image activities as enjoyable culminating events to stories that are read. Use pictures or cartoon or dramatize certain events from the story.

9. Extend a completed story by having students draw an 8 or 12 frame cartoon of a succeeding chapter.

10. Describe an ordinary item, orally or in writing, by its elements. Have students draw a representation of the object from the verbal description. Compare drawings.

11. Show the students only a portion of a picture. Ask them to verbally, using oral or written language, describe the entire picture.

12. Have students hypothesize an upcoming chapter or episode in a book by drawing a cartoon of their predictions. Follow up with evaluations of their predictions.

Other activities can easily be generated with a bit of creative contemplation. The main point to remember is that the imaging should be connected to language use. This gives children opportunities to convert language into images and images into language. Activities such as these help to build flexibility and power in image and language use.

It should be noted that the use of imagery to facilitate reading comprehension with younger children should be approached with care. Children below eight or nine years of age seem unable to construct useful images without help (Wittrock, 1983).

REFERENCES

Anderson, R.C. "Encoding processes in the storage and retrieval of sentences". Journal of Experimental Psychology, 91, 1971, 337-340.

Anderson,R.C. and Kulhavy,R.W. "Imagery and prose learning." Journal of Educational Psychology, 63, 1972, 242-243.

Anderson,R.C. and Hidde,J.L. "Imagery and sentence learning." Journal of Educational Psychology,,62, 1971, 526-530.

Forrest,E. "Visual imagery as an information processing strategy." Journal of Learning Disabilities, 14, 1981, 584-586.

Foss,D.J. and Hakes,D.T. Psycholinguistics. Englewood Cliffs, NJ: Prentice-Hall, 1978.

Guttmann,J., Levin,J.R. & Pressley,G.M. "Pictures, partial pictures, and young children's oral prose learning." Journal of Educational Psychology, 69, 1977, 473-480.

Jorgensen,C.C. and Kintsch,W. "The role of imagery in the evaluation of sentences." Cognitive Psychology, 4, 1973, 110-116.

Kulhavy,R.W. and Swenson,I. "Imagery instructions and the comprehension of text." British Journal of Educational Psychology, 45, 1975, 47-51.

Lesgold,A., McCormick,C., and Golinkoff,R. "Imagery training and children's prose learning". Journal of Educational Psychology, 67, 1975, 663-667.

Levin,J. "Inducing comprehension in poor readers: A test of a recent model." Journal of Educational Psychology, 65, 1973, 19-24.

Levin,J.R. and Lesgold,A.M. "On pictures in prose." Educational Communication and Technology,26, 1978.

McCoy,K. and Weber,R. "Image and perceptual representation of words in learning disabled and normal children". Learning Disability Quarterly, 4, 1981, 76-81.

Miccinati,J. "The influence of a six-week imagery training program on children's reading comprehension". Journal of Reading Behavior, 14, 1982, 197-203.

Miccinati,J. "Use visual imagery to enhance recall of information". Reading World, 21, 1981, 139-145.

Montague,W. and Carter,J. "Vividness of imagery in recalling connected discourse". Journal of Educational Psychology, 64, 1973, 72-75.

Moore,P.J. "Imagery, pictures and the semantic integration of paragraphs." Paper presented at 28th IRA Convention, Anaheim, CA, 1983.

Piaget,J. and Inhelder,B. The Psychology of the Child. New York: Basic Books, 1969.

Pressley,M. "Mental imagery helps eight-year-olds remember what they read." Journal of Educational Psychology, 68, 1976, 355-359.

Pressley,M. "Imagery and children's learning: Putting the picture in developmental perspective." Review of Educational Research, 47, 1977, 585-622.

Rasco,R., Tennyson,R. and Boutwell,R. "Imagery instructions and drawings in learning prose." Journal of Educational Psychology, 67, 1975, 188-192.

Rohwer,W.D. and Matz,R.D. "Improving aural comprehension in white and black children: Picture versus print." Journal of Experimental Child Psychology, 19, 1975, 23-26.

Schallert,D.L. "The role of illustrations in reading comprehension", in R.J.Spiro,B.C.Bruce, and W.F. Brewer (eds), Theoretical Issues in Reading Comprehension. Hillsdale,NJ: Lawrence Erlbaum, 1980.

Steingart, S.K. and Glock,M.D. "Imagery and the recall of connected discourse". Reading Research Quarterly, 15, 1979, 66-83.

Vaughan,S., Crawley,S. and Mountain,L. "A multiple-modality approach to word study: Vocabulary scavenger hunts". The Reading Teacher, 32, 1979, 434-437.

Winn,W. "Visual information processing: A pragmatic approach to the 'imagery question'". Educational Communication and Technology, 28, 1980, 120-133.

Wittrock, M. C. "Education and recent research on attention and knowledge acquisition". In S. Freedman and R. Peterson (eds.). Neuroscience and Education. New York: Academic Press, 1983.