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Brenda D. Smith
Georgia State University

Joan M. Elifson
Georgia State University

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DO PICTURES MAKE A DIFFERENCE IN COLLEGE TEXTBOOKS?

Brenda D. Smith
Joan M. Elifson
Georgia State University

When we compare college social science textbooks popular in the 1960's with those used in the 1980's, the first change that strikes us is the proliferation of pictures. The number of pictures has not merely doubled or tripled in twenty years; in many cases pictures have increased exponentially.

The data in Table 1 illustrate this dramatic shift. Six history texts, published by major companies and selected because of their popularity and availability, were compared. For each text, the number of pages, number of maps, and number of pictures are listed. The pictures in these counts are generally pictures of people, landscapes, buildings, and artifacts; the counts do not include charts, graphs, and diagrams of processes. The number of pages and the number of maps have not changed significantly, but the number of pictures has increased, in the first example in each column, from one every 59.1 pages to one every 1.3 pages.

Table 1
Number of Pictures
per History Textbook, 1960's vs 1980's

Popular in the 1960's	Popular in the 1980's
<u>History of the Modern World</u>	<u>Western Civilization</u>
Knopf, 1959	Norton, 1980 (9th Ed.)
Pages = 945	Pages = 956
Maps = 41	Maps = 46
Pictures = 16	Pictures = 753
Pages/Picture = 59.1	Pages/Picture = 1.3

Europe in Our Time

D. C. Heath, 1958

Pages = 913

Maps = 30

Pictures = 18

Pages/Picture = 50.7

Civilization Past and Present

Scott, Foresman, 1978 (5th Edition)

Pages = 900

Maps = 75

Pictures = 387

Pages/Picture = 2.3

The National Experience

Harcourt, 1963

Pages = 809

Maps = 119

Pictures = 157

Pages/Picture = 5.15

American History: A Survey

Knopf, 1983 (6th Edition)

Pages = 976

Maps = 70

Pictures = 238

Pages/Picture = 4.1

The logical questions which emerge from such comparisons are "What purposes do the pictures serve?" and "Do the pictures contribute to reading comprehension and vocabulary development?" The reasons for the proliferation of this narrowly defined type of illustration need analysis; in order for reading specialists and college instructors to determine the best pedagogy to utilize the pictures which accompany social science text, they must understand what impact they have on the college reader.

Review of Relevant Literature

The literature on the relationship between pictures and reading comprehension points in two directions. Most of the research conducted prior to 1975 seems to indicate that pictures have a negative effect on reading comprehension (Baker & Madell, 1965; Braun, 1969; Concannon, 1975; Harris, 1967; Samuels, 1967, 1970; Silverman, Davids, & Andres, 1963), whereas research after 1975 points to a positive relationship (Lesgold, DeGood, & Levin, 1977; Lesgold, Levin, Shimron, & Gutterman, 1975; Levin, Bender & Lesgold, 1976). To judge the relevance of this research to the relationship of college textbook pictures and reading comprehension, it is important to note that most of these studies were conducted with first graders learning sight vocabulary rather than upper level readers. It would thus seem inappropriate to apply conclusions from these classic

studies to college textbook reading.

Two studies conducted with college students confirm a relationship between pictures and comprehension, but the illustrations are of a technical nature rather than the kind that have proliferated in college texts. Rigney and Lutz (1976) asked college students to learn the concepts of electrochemistry involved in a simple primary cell. For half the students, definitions were elaborated in a graphic display, whereas the other students read a description of what the illustrations represented. The picture group showed superior comprehension on this task for which the information in the picture was critical to the text. In another study, Royer and Cable (1976) concluded that a beginning passage with a line drawing about the structural relationships of objects helped college students better understand a second passage written in abstract terms.

Both studies involving college students used technical illustrations essential to the understanding of the passage. In a study with seventh graders, Hayes and Readence (1983) found that "illustrations enhance transfer of learning from text to the extent that the text depends on the illustration." After analyzing a study by Rohwer and Harris (1975) of fourth graders in a 1980 review of the literature, Schallert concludes that "pictures can facilitate comprehension if they depict information that is central to the text and that is tapped in the comprehension measures."

The majority of the pictures that are used in college history books are neither technical illustrations nor are they referred to directly in text; therefore, the text is not picture dependent. Maps, often an integral part of text, have not tended to increase in number. The comparison of the 1960's and 1980's textbooks does show that pictures of people, places, and things, all of which are rarely an integral part of text, have increased dramatically. Do these pictures actually make a difference?

Research Study

The purpose of the study is to examine the effects on reading comprehension that pictures in college textbooks may bring about. Do pictures of people, artifacts, landscapes, and buildings--the types of pictures which are typical of college social science textbooks, really improve

a student's understanding of the material? To answer the question, a passage from a history book was chosen. The 1108-word passage discusses the changing role of women in society in the 1800's. The contributions of three women are initially highlighted, followed by a general discussion of the increased responsibility assumed by women during the Civil War. In keeping with the trend in United States history textbooks of depicting people, the investigators selected three pictures of women to illustrate the passage. The first picture, a drawing of a bloomer girl on a bicycle, was placed at the beginning of the passage. The second, a picture of Sojourner Truth appeared in the middle of the passage, and a picture of a woman working in the fields was placed at the end. The pictures specifically supported the text to the extent that pictures of people can. The contributions of Amelia Bloomer and Sojourner Truth are specifically discussed and serve as illustrations of two trends which the passage describes. The third picture also directly supports the text in that it portrays a woman taking part in a task previously left to men, also a concept discussed in the text.

Following the reading of the passage, students were asked to complete fifteen multiple-choice comprehension questions that tested both literal and implied meanings. The passage and questions, but not the pictures, also appear on pages 133-135 of Bridging the Gap: College Reading, 2nd edition.

The subjects for the study were students in developmental reading classes at Georgia State University. A total of 140 students in eight different classes took the test. By random selection, four of the classes were given the history passage with pictures, while the other four received the history passage without pictures. Students were allowed fifty minutes to read the passage and answer the questions.

Findings

Student comprehension scores were derived and mean scores for each group were calculated. A T-test was used to test for significance (see Table 2). The alpha level was set at .05.

There is no significant difference in the performance

Table 2

Mean Scores for the Picture and the Non-Picture Groups on Measures of Reading Comprehension and Vocabulary

Variable	No. of Cases	Mean	Standard Deviation	Degrees Freedom	T-Value
Compre- hension					
Pictures	72	7.44	1.87		
No Pictures	68	7.12	1.74		
				138	1.07

of the two groups on the measures of reading comprehension, depending on whether the passage which the student read included pictures or did not include pictures.

Follow-up Study

Following the completion of the research described above, one of the instructors who had conducted part of the experiment used the passage for instructional purposes with a class which had not participated in the study. She did not have enough copies of the passage with pictures for everyone in the class, and so she completed a class set with copies of the passage without pictures. She instructed students informally to pick up a copy of the passage and read it for further discussion. She noticed that students chose the passage with pictures until they ran out, and only then did students pick up copies without pictures. She reported this phenomenon to the researchers.

The following quarter, a second study was conducted to formally test student preference for passages with pictures: Do students prefer reading textbook material with or without pictures? Students in developmental reading classes at Georgia State University were used for the study; classes, however, were chosen for this study only if they did not include students who had been involved in the study the previous quarter. For this study, 145 students in seven different reading classes were tested. The same two forms of the history passage on the changing role of women were used; one including three pictures, the other no pictures.

Students were asked to read the passage for a class discussion. Instructors told the class that they had brought two sets of the passage because they were not certain whether there were enough of either set for everyone in the class. Students were also told that the sets were alike in information and number of words, the only difference being that one had pictures and one did not. The passages were placed side by side near the instructor's desk. After instructions were given, students were asked to complete an intervening assignment before selecting a copy of the passage. Thus, students came to the stacks of passages at different times, which allowed each student to make an independent choice rather than being influenced by the selection of someone else.

Student preference proved to be overwhelmingly in favor of pictures. Of the 145 students, 119 chose the passage with pictures, while only 26 chose the passage without pictures. The passage with pictures was preferred by 82% of the students.

A random group of students was later asked to explain their passage preference. Students who preferred the pictures typically said, "Pictures seem more interesting," "I was interested in seeing what the article was describing," and "I like pictures." For the non-picture group, most said, "It seemed shorter," or "It was closer to me." One student said, "Pictures can be distracting;" and another said he preferred to use his "mind's picture" rather than rely on the picture in the text.

Conclusions

Two conclusions can be drawn from this research:

1. Including pictures, such as those of people, buildings, artifacts and landscapes in college history text material does not seem to increase a college student's comprehension of the material, even when the pictures have been selected because they support the main ideas of the text.

2. College students prefer material which includes pictures.

Summary and Implications

The answer to the question, "Do pictures make a difference?" is both "No" and "Yes."

As demonstrated by the study, pictures do not seem to increase a student's understanding of the text. Thus, there seems to be no cognitive benefit for the student which would warrant publishers' dramatically increasing the use of pictures. On the other hand, pictures seem to have an affective impact on students, as evidenced in their overwhelming choice of illustrated text. Given this strong student preference, pictures do indeed seem to make an affective difference to the reader although the nature of that difference was not determined by this research.

Instructors who wish to make use of pictures to aid students' reading comprehension tend to help students make connections between pictures and text. Such instruction can foster positive affective responses to a text by drawing further attention to the pictures but does not guarantee improved reading comprehension.

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