

cartoons: when are they effective?

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Would the use of an illustrated format significantly increase comprehension among audiences with limited reading abilities? A Florida research project using limited-resource¹ gardeners and college students as subjects provided the answer: Both groups learned significantly more from publications that were cartoon illustrated. Results also showed that both limited-resource clients and other more traditional Extension audiences have a positive attitude toward these materials.

. . . cartoon-styled publications have tremendous potential for increasing the effectiveness of Extension educational programs directed toward limited-resource clientele. . . .

Literature Review

During recent years, studies using Extension audiences have found that illustrated publications have a positive effect on comprehension by limited-resource audiences. A North Carolina study found that comic books could be used effectively to reach EFNEP (Expanded Food and Nutrition Education Program) homemakers with educational information.² This same study also concluded that adults could be expected to have positive attitudes toward illustrated publications if they were done well and in good taste. Research conducted for the Extension Service/USDA showed that knowledge of nutrition concepts increased significantly among low-income youth when the lessons were illustrated with comic books.³ However, research has shown that in some cases an increase in humor yielded a decrease in rated persuasiveness and author credibility.⁴

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What effect would educational materials designed for limited-resource clients have on other audiences? Using Extension audiences, Carter found that educational publications specifically targeted for limited-resource individuals also significantly increased comprehension among audiences with higher reading abilities (as measured by the Gilmore reading test).⁵ In addition, research has also shown that comic readership is highest among individuals with above-average income and education.⁶

Study's Objectives

The objectives of this study were to:

1. Determine if limited-resource individuals exposed to the cartoon-styled publication would have significantly higher comprehension of the subject matter than limited-resource individuals exposed to the original publication.
2. Determine if limited-resource individuals would have significantly lower comprehension of the subject matter than individuals with higher reading abilities when both groups were exposed to the same cartoon-styled publication.
3. Determine if limited-resource individuals have a significantly higher opinion of cartoon-styled publications than non-limited-resource individuals.

Sample Selection

The sample in this study included: (1) limited-resource gardeners living in an urban area of northern Florida, (2) University of Florida journalism students participating in a communications course, and (3) audience members attending an Extension home landscaping and design meeting.

The study compared two Extension publications about the same subject—an existing home vegetable gardening guide and a revised version developed for gardeners with limited education and financial resources.

Test Publications

The original publication was a four-page cucumber fact sheet developed to help audiences with at least average education and learning abilities. This publication used illustrations to depict parts of the cucumber plant and to demonstrate differences in cucumber varieties, but contained no illustrations to demonstrate proper gardening procedures.

The revised publication was a four-page, cartoon-styled cucumber fact sheet targeted specifically for audiences with limited education and learning abilities.⁷ Text materials were

developed based on the lifestyle, interests, and abilities of limited-resource audiences. Illustrations were used to demonstrate soil preparation, planting, and plant maintenance. Hand-lettering was used, instead of set type, to create a more personal communication (see Figure 1).

Both the original and the revised publications were tested using the Fry and Flesch readability tests. Results showed the original publication was written at the 11th-grade level, while the revised one was written at the 4th- or 5th-grade level. A pilot study indicated that differences in the effectiveness of these two types of publications warranted further investigation.

The Study

Subjects for the initial phase of this study (Groups I and II) were 80 limited-resource individuals participating in an urban vegetable gardening program taught by paraprofessionals. Group I received the cartoon-styled publication and Group II received the original publication. Both groups then took a 15-question test to determine their comprehension of the subject matter. The questions were pretested for accuracy and clarity using a sample audience from other limited-resource groups meeting in the same area. In addition to the comprehension questions, respondents were asked:

1. If they felt the fact sheets contained enough information.
2. If they liked the format.

Subjects for Groups III and IV were 119 journalism students working on bachelor's degrees in mass communications. These individuals were selected to test Carter's findings that audiences with higher reading abilities also have increased comprehension of the same materials. For the purposes of this study, it was assumed that college students would have higher reading abilities than limited-resource audiences. Group III received the cartoon-styled publication and Group IV received the original publication. Both groups then took the 15-question comprehension test.

Subjects for the final phase of this study (Groups V and VI) were 100 audience members attending a home landscaping and design meeting. The agent conducting the meeting estimated the participants had above-average incomes and education. These individuals were selected to determine if materials developed for limited-resource audiences could be used in programs that included participants with higher reading abilities. Group V received the cartoon-styled publication and Group VI received the original publication. Then, both groups were tested to determine their opinion of the two styles of publication.



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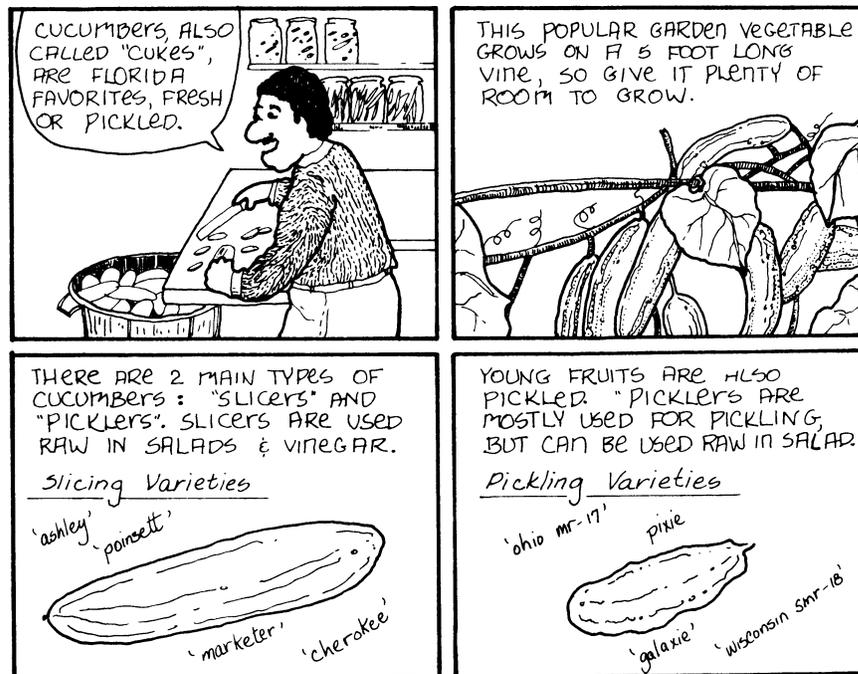


Figure 1. The revised publication was a cartoon-styled fact sheet targeted for audiences with limited education and learning abilities.

Analysis of Data

The t-test was used to evaluate differences in means of test scores between Group I and Group II, and between Group I and Group III.

The data were also analyzed using the chi-square test for independent samples. The .05 level of significance was selected as the criterion for rejection of the null hypothesis.

Results

Our first objective was to determine if limited-resource individuals using educational materials targeted to match their interests and abilities and supplemented with cartoon-styled illustrations would have higher comprehension of the subject matter than limited-resource individuals exposed to materials that were untargeted and unillustrated.

In this study, we found, as shown in Table 1, that limited-resource participants using the cartoon-styled publication (Group I) averaged 1.71 wrong answers in a 15-question test compared to 2.65 wrong for limited-resource individuals exposed to the original publication (Group II). Therefore, the null hypothesis (no difference in comprehension) was rejected.

Our second objective was to determine if limited-resource individuals using educational materials targeted to match their interests and abilities and supplemented with cartoon-styled illustrations would have lower comprehension of the subject matter than individuals with higher reading abilities who were exposed to the same materials.

Table 1. Comparison of comprehension scores.

	Limited-resource individuals	College students
<i>Cartoon illustrated</i>		
N=	42	63
Number wrong	72	108
Average number wrong	1.71: Group I	1.71: Group III
<i>Original fact sheet</i>		
N=	38	56
Number wrong	101	142
Average number wrong	2.65: Group II	2.53: Group IV
		N=199
		p<.05

Again as Table 1 shows, we found that limited-resource participants using Extension materials targeted for their use and supplemented with illustrations (Group I) averaged 1.71 wrong answers in a 15-question test, compared to 1.71 wrong answers for individuals with higher reading abilities (college students) who were exposed to the same materials (Group III). Therefore, the null hypothesis (no difference in comprehension) could *not* be rejected.

Our third objective was to determine if limited-resource individuals using educational materials targeted to match their interests and abilities and supplemented with cartoon-styled

illustrations (Group I) would have a higher opinion of that publication than *non*-limited-resource individuals exposed to the same materials (Group V).

The chi-square test for independent samples was used to test the difference in opinions between Group I (limited-resource) and Group V (above-average income and education).

Eighty percent of the *non*-limited-resource individuals using the cartoon-styled publication (Group V) liked the format of these materials (40 out of 50), compared to 88% of the limited-resource individuals (Group I) exposed to the same materials. The chi-square test showed no significant difference. Therefore, the null hypothesis (no difference in opinion) could *not* be rejected.

Conclusions

Illustrated educational materials specifically targeted for audiences with limited learning abilities resulted in higher comprehension of the subject matter by those audiences. Individuals with average or above-average income and education expressed positive opinions about the format used in the publication developed for limited-resource audiences. However, this study didn't indicate that materials targeted for limited-resource audiences will result in increased comprehension by other audiences.

Summary

It's evident that cartoon-styled publications have tremendous potential for increasing the effectiveness of Extension educational programs directed toward limited-resource clientele. However, additional research is needed to answer two key questions:

- Will audiences with greater learning abilities actually use materials developed for limited-resource audiences?
- Will the attitudes of Extension agents and leaders adversely affect the use of these types of materials?

Limited-resource participants in this study indicated their enthusiastic approval of these materials; however, participating agents reported that most of their limited-resource clients disapproved of the materials because they were "childish." In a survey of all Extension offices in Florida, a significant majority of the responding agents expressed general approval of publications targeted for limited-resource audiences, while stating a preference for non-targeted materials in their own programs.

Further research can more effectively determine the potential for targeted, illustrated publications in general Extension programs, and the attitudes of the agents in using them. For

instance, research has shown that cartoons are helpful only when the material is already readable. In a comparison of easy and difficult texts, the cartoons made the difficult text seem even less readable.⁸ Extension 4-H field staff could investigate these factors to increase effectiveness of publications they're presently using. Also, research has shown that while illustrations reemphasize information to increase comprehension, they also can switch the reader into a "fantasy" mode that reduces credibility.

Extension field staff working with limited-resource audiences could determine within their own programs if increased comprehension would make reduced publication credibility acceptable. Extension educators need additional information to analyze the effects of these publication strategies before targeting materials for their audiences.

Footnotes

1. Limited-resource individuals are adults with below-average income, education, knowledge, or skills.
2. Curtis Trent and Rachel Kinlaw, "Comic Books: An Effective Teaching Tool," *Journal of Extension*, XVII (January/February, 1979), 18-23.
3. Sydelle Stone Shapiro and others, "An Evaluation of the Mulligan Stew 4-H Television Series, Volume I, Executive Summary" (Washington, D.C.: Extension Service/USDA, 4-H Youth Development Division, 1974), p. 18.
4. Jennings Bryant and others, "Effects of Humorous Illustrations in College Textbooks," *Human Communication Research*, VIII (Fall, 1981), 53.
5. Lawrence Carter, "The Effect of Readability on the Comprehension of Consumer Laws by Adults Reading at Varying Grade Levels" (Ph.D. dissertation, The Florida State University, Tallahassee, 1976).
6. Trent and Kinlaw, "Comic Books: An Effective Teaching Tool."
7. James Nehiley and Ray William, "Targeting Extension Publications," *Journal of Extension*, XVIII (November/December, 1980), 11-17.
8. Bryant and others, "Effects of Humorous Illustrations in College Textbooks."