Upland Farmers' Comprehension of Pictorial Messages on Environmental Protection

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R.S. Gravoso and T.H. Stuart

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This study was conducted to explore upland farmers’ comprehension of pictorial messages on environmental protection. Eighteen visuals dealing with interrelated topics on environmental protection applied in the uplands were used in the study. Data were gathered through individual interviews and focus group discussion. Results showed that except for the line drawing and reverse reproduction, the visuals were not significantly different in terms of comprehensibility. Age was inversely related to visual comprehension. Educational attainment, visual exposure, and knowledge of environmental protection positively influenced visual comprehension.

The ACE Archives

The material in the ACE archives is organized into 22 series, newsletters, the journal, annual meetings, board minutes and so on. These valuable documents are stored in 51 acid-free boxes and more than 400 acid-free file folders. There are also two oversized boxes for larger materials. ACE is fortunate to have had archivists for more than 60 years. The first was Clara Bailey Ackerman of USDA’s Extension Service. She was named archivist at the 1939 AAACE meeting at Purdue University. When she retired in July 1954, Ralph Fulghum, Assistant Director of Extension Information was appointed. He was followed by James McCormack, an assistant director in USDA’s Office of Information. He served from 1975 to 1980 when I was appointed by Lorraine Kingdon.

Dues

When AAACE was organized in 1913, the annual dues were $2. They remained $2 for 35 years until 1948, when they were increased to $3. In 1950, the dues were raised to $5 and stayed at this rate until 1957 when they were again increased to $10.

Over the next 23 years, dues gradually rose to $15 (1972), $25 (1978), $45 (1982), $75 (1990), and to the current rate, $100 in 1999.

In 87 years, ACE has grown from a core of six men meeting in Illinois to more than 700 members meeting in every state except nine—Arkansas, Connecticut, Iowa, Maine, Maryland, Montana, Nevada, West Virginia and Wyoming. ACE has met in Washington, D.C., seven times and in Canada once. It is a growing, viable organization, and its members should feel proud of what ACE has accomplished.

Key words

ACE, AAACE, agricultural editors
tions, in one of the buildings near the place of meeting of the Conference.”

In the early 1920s, there were 13 classes in the exhibits program. They were, Class 1, exhibit as a whole; Class 2, popular bulletin; Class 3, technical bulletin; Class 4, syndicated press service; Class 5, extension service news periodical; Class 6, published agricultural or home-economics newspaper; Class 7, published feature or human-interest article; Class 8, best weekly service or short paragraphs; Class 9, photograph; Class 10, poster; Class 11, most effective piece of advertising printed matter; and Class 12, rural verse. In 1925, Class 8 was dropped, and two new classes were added: Class 11, light rural verse; Class 12, serious rural verse; and Class 13, handbook for county agents. The September 1924 newsletter includes a four-page paper on “Poetry and Agriculture.”

The third meeting also included a report of “The Committee on Use of Words.” The report is excerpted here. The opening paragraph recommends: “The committee on the common-sense use of words advocates in general, any tendency toward simplicity in the matter of usage and specifically recommends the following:

1. The omission of hyphens and use as single expressions of such words as livestock, cornmeal, bluegrass, cornfield, etc....

2. As a rule, make all breed and variety names lower case unless plainly derived from a proper name; and in the latter case the tendency should be to decapitalize as rapidly as possible.

3. When two words ordinarily used separately are combined in an adjective sense, they should be connected by a hyphen; as, nitrogen-free extract.

4. Use “plot” rather than “plat” to designate a small space of ground.

5. Write “bur clover” rather than “burr clover.”

The committee concluded in its report, “that the proceedings of this association be printed in accordance with the above regulation.”

Inspired by the truism that “a picture is worth a thousand words,” communicators use visuals to teach people improved techniques and to motivate them to use these innovative strategies. The rationale for this is the iconic nature of pictures, which make them less abstract, hence, easier to understand (Dale, 1969).

With their special capacity to represent the environment (Espe, 1990) and as concrete referent for ideas (Heinich, Molenka, Russel, & Smaldino., 1996), visuals have a special niche in the communication process. Evidence abounds that visuals attract and direct attention, make learning more enjoyable, facilitate comprehension (Saunders, 1978; Levine & Lentz, 1982; Brody & Legenza, 1980; Bernard, Peterson, & Alley, 1981; Donald, 1983; Anglin, 1987), and make it possible to communicate even with illiterates and people with reading constraints (FAO, 1990; 1994).

However, there are instances where visuals fail to communicate the message. These instances occur, according to Wileman (1986), because visual communication, like communication through language, is a complex and difficult process, especially when attempting to produce visuals aimed at instructing people who have limited experience with illustrations.

Efforts to harness the potential of visuals as communication media have been confined in various research projects. One such project is the study by Munoz (1986) which examined the differences in perception among farmers with different literacy levels. Munoz also pointed out the flaw in the way in which communicators use visuals. According to him, communicators use illustrations based on subjective feelings of design and on the concepts of pictorial composition that are intuitive rather than scientific in nature. As a result, pictures are sometimes misunderstood by the audience.

With the current worldwide efforts to reverse the deteriorating global ecological situation, pictures will be used by communicators in transmitting environmental messages to the people. To be effective, however, Wileman (1986) said that communicators should consider the total communication process. According to him, when using visuals as communication channel, it is not enough that people are able to identify the visual. They should also believe what they see and value it.
To provide communicators, therefore, with pertinent information regarding visuals, this study was conducted to explore upland farmers’ comprehension of pictorial materials carrying environmental messages. This paper compares the comprehensibility of the different pictorial representations and explores the variables that affect visual comprehension.

**Methods**

**Respondents**

This study was conducted in two upland communities in Leyte (a province in Eastern Visayas, Philippines) which were sites of the Rainfed Resources Development Project (RRDP) implemented by the Department of Environment and Natural Resources in Eastern Visayas. Among others, the project aimed to develop the forest reserve in the area and to improve the socio-economic condition and quality of life of the farmers. Accordingly, farmers have generally low crop productivity due mainly to soil erosion and rapid siltation of canals, creeks, and rivers, brought about by deforestation. To address this problem, the project sought to teach farmers appropriate soil and water conservation measures.

Following the survey research design, the study included 60 farmers drawn randomly. This group represented 50% of the total number of RRDP-beneficiaries in the area. Since the study involved comparing comprehensibility of various visual representation techniques, respondents were grouped into two groups, Group A and Group B. Group assignment was done at random—that is, the first name drawn was assigned to Group 1, while the second, to Group 2. This process was followed until the desired number of respondents for each group was reached.

**The Visuals**

Visuals used in this study dealt with interrelated topics on environmental protection applied in upland environment. Some of the visuals were adapted from various publications, while the others were conceptualized by the researcher. Artist-illustrators who have sufficient experiences in making visuals for communication materials were requested to draw. For the photographs, a professional photographer was requested to take the photos. To ensure technical accuracy, subject matter specialists (SMS) in agroforestry and ecology were asked to...
From the beginning in 1919, until Vol. 26, No 1 (February 1943), newsletters were reproduced by mimeograph. Beginning with the 1943 issue, the newsletter announced with a banner headline, “ACE Goes Highbrow.” It was the first newsletter “printed from set type.” According to the lead article, printing was less expensive than mimeograph or multilith, and produced a better product. The next month, photographs were used for the first time.

From December 1959, through May-June 1968, two newsletters were published. One was mimeographed at the University of Illinois, the other was printed at Auburn University. The Auburn edition was called a magazine. However, since it is newsletter format, it is classified as such in the archives. The two newsletters do not duplicate each other.

Over the years the newsletter has been called “The A*C*E,” “ACE,” “AAACE Newsletter,” “The ACE Communicator,” and “Signals.”

The earliest issues of the ACE newsletter were from two to four pages with some as many as a dozen pages. Content included details of the annual conferences, including verbatim copies of papers presented, a list of those attending, a roll call of the states with someone from each state itemizing what was going on in his/her state, and many personal items about what AAACE members were doing. Also included were survey results and the ever-present reminder about paying your dues. One item in the September 1923 newsletter said, “Dues are Due - Please Do.” In those days, the dues were $2 a year. (More on dues on page 19).

Today, the ACE newsletter, Signals, includes much more information on technical subjects, such as electronics, World Wide Web sites, digital photography, telecommunications and digitized images. These are techniques unheard of 25 years ago.

Evolution of the Quarterly

The first quarterly, named “aaace”, is Vol. 51, No 1 and was issued in October 1968. The issue you are reading is Vol. 84. You wonder, where are the other 50 volumes? They do not exist. When newsletter volume and issue numbers were discontinued following Vol. 50, No. 6, May-June 1968, the editors picked up the sequence by numbering the quarterly, review the visuals. With the aim of comparing their comprehensibility, the visuals were grouped into two sets — Form A and Form B. During the data-gathering, visuals under Form A were shown to Group 1, while in Form B, to Group 2. Table 1 presents the test visuals.

Data Collection

Data were gathered through individual interviews using an interview schedule translated into the dialect of the respondents. Prior to data collection, the schedule was first pretested with upland farmers who matched the characteristics of the intended respondents. In the pretest, it was observed that the questions could elicit the desired responses. Technical terms, however, which farmers found inappropriate, were changed, as suggested by the farmers themselves and the SMS.

During the actual data-gathering, interviews were conducted by pairs. One of the interviewers showed the visuals and asked the questions, while the other recorded the farmers’ responses. Simultaneous with the individual interviews, the focus group discussion (FGD) was conducted. Participants in the discussion were 8 farmers who were not included in the individual interviews. During the discussion, the group was shown the visual and asked to tell what they saw in it and the message it conveyed.

Results

Respondents’ Profile

Respondents’ ages ranged from 18 to 71. Most of the respondents were middle-aged, tenants, had been farming for about 1 to 56 years and were members of community organizations. All of them had formal schooling. Based on their reported monthly income, respondents’ mean monthly income was P5,803.3 (approximately $145). Although this amount indicates the poor economic status of these farmers, this figure may not be very accurate. As experienced, when asked for their income, farmers do not consider non-cash as part of their income.

Many of the respondents were literate. Because of their low exposure to such media as posters, leaflets, technoguides, comics, newspapers, books, slide tape presentations, TV, video, and movies, most of them had low visual exposure. However, many of them had a high knowledge level of envi-
The newsletter opens with: “Make the acquaintance of The Ace, which, being interpreted, means Agricultural College Editors.” The editor continued, “Somebody once apologized for being such an unconscionably long time in dying. The Ace is sorry to have been such a long time in getting born....”

The original of this first issue is not in the ACE archives. However, there are several ditto (spirit duplicator) copies in the archives duplicated exactly as the original. Volume II, Number 2, December 1919, was also missing as were all copies for 1920.

Since “The A*C*E” was born at Cornell University, I wondered if Cornell might have the missing copies. With this thought in mind, a letter went to the Cornell University archives in the Krock Library at Ithaca, New York. A second letter went to the Rare and Manuscripts Collection in the Krock Library. Neither responded. A letter was then sent to William B. Ward, Professor Emeritus at Cornell, to see what he could find. Ward was ACE president in 1954-55.

In November 1997, Ward wrote to say the early ACE newsletters were in the Special Collections of the Mann Library, in the College of Agriculture and Life Sciences, not in the Krock Library. After six months of correspondence and telephone calls, the original newsletters were sent to the Special Collections at the National Agricultural Library at Beltsville, Maryland, for copying.

The original newsletters were photo-copied, then returned to Cornell. Now, there are copies of every ACE newsletter in the archives except three—July 1924, April 1947 and August-September 1958.

We like to think of ourselves as professionals (i.e., we do not make (too many) mistakes). The early editors and writers of our newsletter were not infallible. There have been many inconsistencies. Issues have been mis-numbered, or not issued, some have been issued monthly, others have been issued bi-monthly.

In 1968, newsletter volume and issue numbers were discontinued when AAACE headquarters moved to Auburn University. From then until the advent of Signals in January 1990, newsletters showed only the month and year of issue.

<table>
<thead>
<tr>
<th>Table 1 The Test Visuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPIC</td>
</tr>
<tr>
<td>Colored and black-and-white photograph and illustration</td>
</tr>
<tr>
<td>Colored photograph of a contoured farm</td>
</tr>
<tr>
<td>Colored illustration of a contoured farm</td>
</tr>
<tr>
<td>Realistic and cartoonized illustration</td>
</tr>
<tr>
<td>Line drawing and reverse reproduction</td>
</tr>
<tr>
<td>Check mark (to mean &quot;proper way of plowing a hilly farm&quot;)</td>
</tr>
<tr>
<td>“X” (to mean &quot;don’t burn farm stubbles&quot;)</td>
</tr>
<tr>
<td>Arrow as a visual cue</td>
</tr>
<tr>
<td>Sequential visuals connected by arrows and numbers</td>
</tr>
<tr>
<td>A - Preparation of materials</td>
</tr>
<tr>
<td>B - Tying the upper ends of the longer poles</td>
</tr>
<tr>
<td>C - Tying the stone</td>
</tr>
<tr>
<td>D - Marking the crossbar</td>
</tr>
<tr>
<td>E - An A-frame ready for use</td>
</tr>
<tr>
<td>Sequential visuals arranged horizontally and vertically</td>
</tr>
<tr>
<td>A - Denuded forest</td>
</tr>
<tr>
<td>B - Upland farm with stunted corn plants</td>
</tr>
<tr>
<td>C - Heavy rain, storm, typhoon</td>
</tr>
<tr>
<td>E - Sad family</td>
</tr>
<tr>
<td>F - Family migrating to urban areas</td>
</tr>
</tbody>
</table>
Panel moderators at the 1950 Texas conference, at Mo-Ranch, near Hunt, Texas, were called “foremen.” At this conference, breakout sessions began to be used. The sessions covered press, radio, visual aids, and publications. During the 1950s, we began to see sessions on television and more emphasis on programs for the wives. From my early days in AAACE, many families brought their children and there were special programs for them including baby sitters for the youngest. Very few children attend AAACE/ACE conferences today.

Program titles do not tell in detail what was discussed. By the mid-1950s however, there was increased emphasis on radio and television. “How Can Radio Hold Its Own?”, “Putting TV in Its Place,” “A New Look at Television,” and other related topics were covered. At the Nebraska conference in 1955, breakout sessions were held on press, radio and television, public relations and visual aids. The Nebraska meeting also had special programs for the wives including a style show, and trips to Boys Town, the stockyards and Offutt Air Force Base.

By the mid-1980s, technology began to creep into ACE conferences with a teleconference at the Alaska meeting in 1985. The session was a Pacific Rim seminar with participants in Washington, D.C. (the Secretary of Agriculture), and Australia. By the 1990s, conference topics covered the Internet, distance learning, developing a World Wide Web site, applications of CD-ROM, hypertext and multimedia, electronic publishing and other technical topics. What would our founding fathers think?

The Agricultural Communicators of Tomorrow (ACT) came into being at the 1970 Cornell meeting. According to the conference program, “To these future communicators, who are now planning the development of this new student affiliate, AAACE extends a hearty welcome.”

**Evolution of the Newsletter**

The primary vehicle for keeping AAACE members in touch has been the newsletter. Six years following the founding of AAACE, the first newsletter was issued. Volume I, Number I, November 1919, was published at Cornell University by Millard V. Atwood, AAACE president in 1922-23. The first newsletter was a single sheet, two-sided publication called “The A*C*E.”

Environmental protection related to upland farming. This high level of knowledge could be attributed to the implementation of the RRDP in the area.

**Comprehension of Visuals**

In this study, visual comprehension, alternately referred to as visual literacy, was defined as respondents’ ability to interpret the messages on environmental protection depicted by the visuals. This was determined by asking the respondents to give the message that the material conveyed to them. Answers were then compared vis-a-vis the intended message. A score of 1 was given to the answer that matched the intended message and 0 if wrong and/or if the answer veered away from the message. The number of respondents who correctly interpreted the message was taken as the visual’s comprehensibility rating.

Table 2 shows respondents’ comprehension of the visual materials. Results from the t-test showed that among the visuals, only the line drawing and reverse reproduction were significantly different in terms of comprehensibility.

Results further showed that only the photographs had relatively higher comprehensibility scores. Between the colored and black-and-white photos, the colored ones had higher comprehensibility. For instance, the colored photograph had a 76.33% comprehensibility rating while the black-and-white, 63.33%. The same trend was observed in the colored and black-and-white illustration (i.e., the colored illustration had a 60% comprehensibility rating while the black-and-white, only 50%).

As regards the realistic and cartoonized drawings on contour bund/canal establishment, the realistic rendition was more comprehensible than the cartoon (43.33% as against 30%, respectively), although the comprehensibility rating of both drawing types was low.

Meanwhile, the line drawing came out to be more understandable than the reverse reproduction. The line drawing had 71.66% comprehensibility score, while the reverse reproduction, 18.33%.

The photograph and illustration of a farmer plowing along the contour with a check had an equal comprehensibility rating of 36.66%. However, the photograph of a farmer burning
“Enlarging the Usefulness of Agricultural Colleges and Experimental Stations Thru Publicity.” At the third annual meeting, the Committee on Resolutions resolved, “that this association recommend that the words ‘information service’ be substituted for the word ‘publicity.’”

By the ninth conference in 1922, at Missouri, there was a session on “The Agricultural Movies.” At this conference, there were also three sessions on advertising. The program does not detail what these sessions covered.

At the South Dakota conference in 1924, Reuben Brigham led a session on “An Agricultural Picture Service.” According to the August 1924 newsletter, “Reuben Brigham showed some of his good pictures and told something of the difference between good and poor photographs.” Discussions on radio began to show up in the early 1920s. At the 10th annual conference at Virginia Tech in 1922, Professor H. E. Dudley of Wisconsin discussed “Movies and Radio.” This was only two years following the advent of commercial radio by Pittsburgh station KDKA.

Regional meetings were first mentioned at the fifth annual conference in 1917 at Cornell University. “In his opening address, President McClintock ... raised the question of holding small sectional meetings yearly, with perhaps a national conference every two years.”

By the mid-1920s, conference topics focused mainly on publications, newspapers, “an agricultural picture service,” and motion pictures. At one or two sessions the speakers discussed training for agricultural college editors and teaching agricultural journalism. The program committees relied heavily on AAACE members for speakers. Only two or three speakers were from sources other than AAACE or the agricultural colleges.

Radio began to play a larger role at AAACE conference during the 1930s. At the Cornell conference in 1935, an entire morning was devoted to “The Function of the Radio in Colleges and Universities.” In the early days of AAACE, women editors dealt almost exclusively with home economics journalism and other subjects related to the home. At the Cornell conference, a morning session was devoted to “Women’s Place in the News.”

<table>
<thead>
<tr>
<th>Table 2 Comprehensibility of the Visuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visuals</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Colored photograph</td>
</tr>
<tr>
<td>Black-and-white photograph</td>
</tr>
<tr>
<td>Colored illustration</td>
</tr>
<tr>
<td>Black-and-white illustration</td>
</tr>
<tr>
<td>Realistic illustration and Cartoonized drawing</td>
</tr>
<tr>
<td>Line drawing</td>
</tr>
<tr>
<td>Reverse reproduction</td>
</tr>
<tr>
<td>Photograph with a check</td>
</tr>
<tr>
<td>Illustration with a check</td>
</tr>
<tr>
<td>Photograph with “X”</td>
</tr>
<tr>
<td>Illustration with “X”</td>
</tr>
<tr>
<td>Photograph with an arrow</td>
</tr>
<tr>
<td>Illustration with an arrow</td>
</tr>
<tr>
<td>Visuals connected by numbers</td>
</tr>
<tr>
<td>Visuals connected by arrows</td>
</tr>
<tr>
<td>Visuals arranged horizontally</td>
</tr>
<tr>
<td>Visuals arranged vertically</td>
</tr>
</tbody>
</table>

*significant at .05 level of significance

Both the photograph and illustration with arrow indicating where to plant hedgerows were totally incomprehensible. Not one of the respondents was able to interpret correctly the message of both visuals.

For the sequential visuals dealing with steps on A-frame construction, the sequence connected by numbers was more understandable than the sequence connected by arrows. Moreover, both of the sequences of illustration on the effects of farm stubbles with “X” was more comprehensible than the illustration portraying the same message.

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the 1930s was rural verse. Only the first three places were announced with ribbons going to the top exhibits.

During World War I, the editors focused on their part in the war effort with an emphasis on food production. A speaker from the U.S. Food Administration at the sixth conference at Knoxville, Tennessee, talked about the opportunities for agricultural editors to get much needed information to the people.

**The Annual Conference**

Copies of nearly every annual conference program, going back to 1914, are in the archives. Early printed programs do not exist. However, in 1916 AAACE published *Proceedings of the Third Annual Conference of the American Association of Agricultural College Editors*. This 62-page publication also includes the proceedings for the first conference at Illinois and the second conference at Kentucky. There are two copies in the archives.

The following year, AAACE published *Proceedings of the Fourth, Fifth, and Sixth Annual Conferences of the American Association of Agricultural College Editors*. These proceedings include detailed programs for those years, including many of the papers presented. These proceedings also include the secretary’s minutes, the presidents addresses, the names of those attending the conferences, and photographs of groups attending each conference. The photograph of the delegates at the sixth conference included for the first time, two women—Marion Butterworth from Delaware and Nellie Tracy from Indiana. There are eight copies of this 84-page publication in the archives.

Programs for 1913, 1919, 1920, 1929, 1933, 1934 and 1958 are missing. However, there are references to them in the newsletters, and in many instances, the newsletters include the full program.

The focus of AAACE/ACE meetings has changed dramatically since 1913. The first meeting, a one-day affair, consisted of a round table discussion. Papers presented in the early days of AAACE focused mostly on agricultural bulletins and to a lesser extent on newspapers and news writing. Two papers presented at the Kentucky meeting were “Cooperation Among Agricultural Editors in the Use of Publicity Material,” and

**Association of Variables**

This study also determined if a relationship exists between farmers’ characteristics and their visual comprehension. Two statistical tools were used for this purpose. For the variables measured categorically (i.e., gender, tenure status, organizational affiliation and literacy), the contingency coefficient C was used. The results indicated that the above variables are not related to visual comprehension.

For the variables measured intervally (i.e., age, educational attainment, income, and farming experience), the Pearson-product moment correlation coefficient was used. Results show that among these variables, age (r² = -.311), educational attainment (r² = .309), visual exposure (r² = .334), and knowledge of environmental protection (r² = .266) were significantly correlated with visual comprehension at .05 level of significance. However, based on the characterization of the strength of correlation (e.g., Fink, 1995; Best, 1981), the correlations are weak. Worth noting is that age had negative correlation, while educational attainment, visual exposure and knowledge on environmental protection, positive. Table 3 presents the simple correlation of these variables.

Table 4 shows the multiple regression analysis of the selected socio-demographic variables, visual exposure, and visual comprehension scores. The analysis revealed that only 26% of the variability in the visual comprehension scores could be explained by the variables included in the analysis. From the t-values obtained, only knowledge of environmental protection was significantly related to visual literacy. The multiple correlation of .509 gives the extent of correlation between the variables.

**Discussion**

Only the visuals on contoured farm were comprehensible. This occurrence could be due to the fact that the respondents, being beneficiaries of the RRDP program, were so familiar with contour farming. In fact, during the data-gathering, it was observed that farmers were already practicing contour farming. Likewise, based on discussion with the project staff, it was
As Powell served as chairman of the Illinois meeting, perhaps we should give him the credit of being the first chief executive of our organization. [Powell did not become the first chief executive, but was elected executive secretary.]

It has always seemed to me, Hopkins wrote, that we all owe a very deep debt of gratitude to Powell. He had the vision to see what might be done through cooperative efforts. He had the initiative and enterprise to call us together and the courage to suggest a program of action for the editors of the colleges of agriculture, the experiment stations and the United State Department of Agriculture.

Following the second annual conference at the University of Kentucky, AAACE has met every year since, except 1932 during the Great Depression, and in 1942, 1943, and 1945 during World War II.

At the 1914 Kentucky meeting, a Committee on Permanent Organization, Constitution and Resolutions was appointed. This group also served as a nominating committee. Their first agenda item was the establishment of a permanent organization that was to meet annually. The second agenda item was the development of a provisional constitution with a permanent one to be adopted at the third annual conference.

The third annual conference, held June 24 and 25, 1915, at the University of Wisconsin, drew representatives from 19 states and several from USDA. It was on June 25 that the first permanent constitution was adopted and the organization was officially named, “The American Association of Agricultural College Editors.”

What eventually became the Critique and Awards Program, began at the Wisconsin meeting with “an exhibit of bulletins, circulars, agricultural pages, placards and similar publications from many of the agricultural colleges and stations ...” At some of the early meetings, an entire day was devoted to the “exhibits program.” In the mid-1920s there were 12 classes, many of which continue today. One that fell by the wayside in

### Table 3
Simple Correlation Between Visual Comprehension and Selected Socio-demographic Variables, Knowledge of Environmental Protection and Visual Exposure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation Coefficient</th>
<th>Computed t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.311*</td>
<td>-2.492</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>.309*</td>
<td>2.473</td>
</tr>
<tr>
<td>Income</td>
<td>-.078</td>
<td>-.595</td>
</tr>
<tr>
<td>Farming experience</td>
<td>-.193</td>
<td>-1.487</td>
</tr>
<tr>
<td>Visual exposure</td>
<td>.334*</td>
<td>2.753</td>
</tr>
<tr>
<td>Knowledge on environmental protection</td>
<td>.266*</td>
<td>2.105</td>
</tr>
</tbody>
</table>

*significant at .05 level of significance

revealed that farmers were shown illustrations on contour farming during the on-farm classes.

Results showed that the colored and black-and-white visuals were not significantly different in terms of comprehensibility. This clearly shows that color does not necessarily improve the

### Table 4
Multiple Regression Analysis of Selected Socio-Demographic Variables, Visual Exposure, and Visual Comprehension Scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression Coefficient</th>
<th>Standard Error (DF=53)</th>
<th>T</th>
<th>Prob. Partial</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.369</td>
<td>0.036</td>
<td>-1.039</td>
<td>0.304</td>
<td>0.020</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>0.217</td>
<td>0.161</td>
<td>1.351</td>
<td>0.182</td>
<td>0.033</td>
</tr>
<tr>
<td>Farming experience</td>
<td>-0.000</td>
<td>0.000</td>
<td>-1.178</td>
<td>0.244</td>
<td>0.025</td>
</tr>
<tr>
<td>Knowledge on environmental protection</td>
<td>0.335</td>
<td>0.139</td>
<td>2.403</td>
<td>0.020</td>
<td>0.982</td>
</tr>
<tr>
<td>Visual exposure</td>
<td>0.126</td>
<td>0.115</td>
<td>2.097</td>
<td>0.278</td>
<td>0.098</td>
</tr>
<tr>
<td>Constant</td>
<td>3.739</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard estimate of error = 2.8778
R² = 0.26
Multiple R = 0.51
Linear regression model: LS = f (age, educ, farmex, income, know, visexpo)

*significant at 0.05 level of significance
At that first meeting, Powell was elected executive secretary “with power to act in deciding upon the time and place for the next meeting, and to look after the matter of arranging a program.”

Powell selected the University of Kentucky for the second annual AAACE meeting in 1914. It was a two-day meeting, June 25 and 26, at Lexington. A program committee was appointed and met at Madison, Wisconsin, November 28, 1913, to plan the Kentucky meeting. Today, these planning committee meetings often take place by teleconference with E-mail playing a significant role.

Committee members included Hopkins of Wisconsin, Powell of Illinois, and Beckman of Iowa as chairman, all destined to become AAACE presidents. This second meeting set the pattern for many AAACE meetings to come. It included a welcoming address from a college official, in this case, the director of the experiment station, and presentation of several papers followed by discussions. On the afternoon of the second day, the 17 men attending the meeting, had “a visit to Elmendorf farm and to the Kentucky Agricultural Experiment Station by special interurban car.”

In 1943, on the 30th anniversary of AAACE, Andrew Hopkins wrote in a 1943 ACE newsletter.

.... As I recall, it (the meeting) was called by B.E. Powell, who was in charge of public relations work at the University of Illinois. Although agricultural editing was somewhat of a sideline with Powell, he was so impressed with the opportunity for service that he wrote those of us who were engaged in the work inviting us to Urbana.

On a pleasant day in July 1913, six of us attended. With Powell calling the plays, we conferred in a rather informal manner speculating as to the possibilities in the field and planning how we might be mutually helpful. The day was so profitably spent that before we broke up someone suggested we repeat next year.

In this study, the arrow as a visual cue was totally incomprehensible. In fact, not even one respondent recognized that it was meant to direct the viewer toward where to plant hedgerows. Thus, care should be taken when using this visual cue. Likewise, the sequential visuals were less comprehensible. This is perhaps due to their complexity. Cook (1981) said that the content of a visual affects its comprehensibility.

Instructional value of a visual material. In fact, in a review of various studies, Koroluk (1988) reported that color seemed to be a distractor in the comprehension of visual materials. Thus, he suggests the use of color to highlight and direct attention, to facilitate viewers in comparing, associating, and organizing items. He added that color can be used also to suggest or provoke a particular feeling or mood to be connected with the message in the visual material.

In this study, the arrow as a visual cue was totally incomprehensible. In fact, not even one respondent recognized that it was meant to direct the viewer toward where to plant hedgerows. Thus, care should be taken when using this visual cue. Likewise, the sequential visuals were less comprehensible. This is perhaps due to their complexity. Cook (1981) said that the content of a visual affects its comprehensibility.

Like previous studies (Peterson, 1982; Mangan, 1983), this study highlights the role of culture in visual comprehension. This role could be gleaned from the respondents’ literal interpretations which reflect their tendency to associate the activity portrayed in the picture or illustration to their cultural and farm practices. A case in point are visuals of a farmer burning farm stubbles with an ‘X’ mark meant to suggest not to burn them. Many respondents said that the farmer is "burying the dead" and "applying lime." This observation suggests that farmers have a pictorial vocabulary composed of images of their day-to-day activities. Thus, in producing visual materials for farmers such as these respondents, this unique pictorial vocabulary should be considered.

Moreover, this study found a significant relationship between age and visual comprehension. The same result was obtained in earlier studies by Frio (1976) and Heinich, Molenda, and Russel (1982). Here, however, the relationship was negative which is consistent with Munoz’ findings in his study of Mexican farmers. This finding suggests that as the farmer grows older, his ability to interpret visual materials diminishes. Possible reasons for this are: (a) poor and/or impaired vision which occurs as the person matures, and (b) his low visual exposure. As this study shows, exposure to visual materials cultivates one’s visual cognitive ability.

On the other hand, educational attainment, visual exposure and knowledge of environmental protection were found to be
positively related to visual comprehension, indicating that these factors enhance visual comprehension. This direct relationship between visual exposure and comprehension confirms the results of Spain (1986) and McBean (1984) which showed that respondents who have higher pictorial experience (i.e., having seen photographs, drawings, etc.) had high ability to understand visuals, while McBean’s research found that people with low exposure to visual messages had low visual literacy level.

The weak relationship between total visual comprehension scores and such variables as age, educational attainment, income, farming experience, visual exposure, and knowledge on environmental protection indicates that regardless of attributes, upland farmers may still be able to decode a visual message as long as this is designed properly (i.e., it should be culturally relevant to the intended audience and not too simple nor complicated). A complicated visual like the sequential visuals tested in this study may go beyond the ability of the intended audience, while the simple one might offend them.

Implications and Suggestions for Further Study

The results of the study provide a number of implications to communicators and visual artists in the design and production of visual materials beamed for farmers. Among others, findings suggest that persons in the visuals who are performing farm practices should be portrayed similar to how farmers appear in their day-to-day and farm activities—e.g., plowing and cutting grasses. Even their attire should be consistent with the general attire of farmers in the locality. Likewise, persons should be portrayed as happy in order for the respondents to get the idea that the recommendation is rewarding, thus encouraging them to follow it.

Results also suggest that visual designers and producers should use realistic representations and as much as possible, avoid complex materials such as the sequential visuals included in this study.

To improve comprehensibility of such visual symbols and cues as “X”, check mark, and arrow, designers should accompany them with words. For example, “X” should be accompanied with “don’t do this”, while the check mark, with “do this”. Judging from the results of the literacy tests, farmers could actually read and understand written messages. However,

The Beginnings of ACE

In June 1913, Dr. Burt E. Powell, agricultural editor at the University of Illinois, sent a call to “editors of publications or those in charge of publications” at all the land grant colleges and universities. From this call, publications editors from six colleges of agriculture responded. They met at the University of Illinois on July 10, 1913, to organize what was to become The American Association of Agricultural College Editors (AAACE). Attending this historic meeting were T.R. Bryant, Head of the Department of Agricultural Extension, University of Kentucky; A. B. Graham, Head of the Department of Agricultural Extension, Ohio State University; Frederick W. Beckman, editor, Iowa State College; G. M. Frier, Department of Agricultural Extension, Purdue University; Andrew W. Hopkins, editor of bulletins, at the University of Wisconsin; and Powell.

First AAACE Conference

The first AAACE conference was very informal. It was a one-day meeting focusing on six topics:

1. How important is it for our agricultural colleges to reach the people through the newspapers—that is, by specially prepared matter supplementing the regular bulletins and circulars?
2. Will it be best in the long run for the colleges to deal directly with the papers of the state?
3. Are the newspaper syndicates rendering satisfactory services?
4. Ought an effort be made to furnish special material for the farm papers?
5. Is it desirable that the agricultural colleges cooperate in furnishing material for any of the above purposes? If so, how may it be done?”
6. Is the custom of furnishing a page to only one paper in a town desirable and necessary?

The editors attending this first meeting did not record their answers to these questions but concluded the conference was so successful that they voted unanimously to meet annually.
The first AAACE archivist was Clara Bailey Ackerman, in Extension Information in USDA’s (United States Department of Agriculture) Federal Extension Service. She was named archivist at the 1939 AAACE meeting and served through July 1954. The next archivist was Ralph Fulghum, Assistant Director of Extension Information. Other archivists to serve AAACE/ACE include James H. McCormack (1975-1980) and William E. Carnahan (1981-present).

Results also suggest that visuals intended for farmers should contain the elements necessary for correct interpretation. Obviously, when a visual lacks an element, perceivers are led to misinterpretations, just like in the illustration of a farmer plowing an upland farm. During the focus group discussion, since the upper portion of the upland farm was not portrayed as “plowed,” participants did not think that the check mark was meant as “do this” or “correct way of plowing.” This need for a detailed pictorial representation can be explained by the fact that visuals, as communication media, are supposed to provide what Gibson (1979) calls affordances. Conversely, if the visual lacks the elements necessary for correct codification, the visual would in turn cease to provide these affordances, thus leading perceivers to incorrect interpretation.

Overall results of the study underscore the need for pretesting prior to mass production of communication materials. As demonstrated by this research, through pretesting, communicators would be able to gauge the likelihood of the material to be understood, accepted, attractive and believed by the audience.

The above findings, however, may have limitations. For one, the study had a relatively limited number of respondents. Thus, a replication of this study covering a larger sample size is needed.

As indicated earlier, respondents of this study were farmers who had high knowledge of the topic the visuals were intended to communicate. A study comparing visual literacy of farmers with high and low knowledge level of the subject matter is in order.

Research on the comprehensibility of pictorial representations of farm machines is likewise needed. With the desire to improve production in developing countries, communication campaigns have included teaching farmers how to use machines. However, no study has been conducted to find out if these pictures and illustrators of these machines are understood and in what way could they be conveyed better.

Another facet to be explored is the aspect on methodology. A look at various studies so far conducted would reveal that words accompanying visual symbols should be big enough for ease in reading.
these studies vary in terms of procedures and approaches used, especially the questions asked. This variation poses a problem as it would render difficulties if one were to conduct a meta-analysis. It would, therefore, be interesting to examine these methodologies and find out which of these was able to bring about the information needed. Information on this aspect is urgently needed in the light of efforts to fully understand the phenomenon of visual literacy/illiteracy.

Key Words

Visual literacy, visual perception, environmental communication, environmental protection, upland farmers

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A Brief History of ACE

William E. Carnahan

Abstract

The American Association of Agricultural College Editors (AAACE) was created on July 10, 1913, when six land grant college agricultural editors met at the University of Illinois.

The Illinois gathering was so successful that the founders decided the conference should be an annual affair. The second meeting was a two-day conference, June 25 and 26, 1914, at the University of Kentucky, with seventeen attending. At the Wisconsin meeting in 1915, the AAACE constitution was adopted and the name “American Association of Agricultural College Editors” was established. AAACE was renamed Agricultural Communicators in Education (ACE) in 1978. Since its beginning, ACE has met in 41 states, Washington, DC, and Canada.

Some of the more important documents in the archives include: copies of every issue of the newsletter, beginning with Vol. 1, No. 1, November 1919, except three—one each in 1924, 1947 and 1958; copies of every issue of the ACE Quarterly; nearly every annual meeting program since 1914; “The Presidents of ACE,” book; board minutes, directories, regional reports, an AAACE Style Book, and other materials. The materials are a part of the Special Collections of the National Agricultural Library at Beltsville, Maryland. [continued]


