Gauging Research Magazine Readership: Mississippi Agricultural and Forestry Experiment Station Research Highlights

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

Mississippi State University's 9,000 circulation quarterly research magazine MAFES Research Highlights has evolved from a tabloid newspaper to a four-color publication within the past three years. During the past seven years, the publication has moved from a monthly distribution to bimonthly to its current quarterly schedule. Administrators, editors, and designers were interested in audience perceptions of the change, and in reader interests for future editions.

Method

A magazine insert survey in the Fall æ97 issue drew 810 responses. Due to space limitations and in the interest of taking a minimum of readers' time, the questionnaire was designed to fit a postage-paid card. The instrument with instructions was wrapped around the publication so that readers saw it before perusing the magazine.
Seven questions were included along with space for name and address, and mailing list change options. Questions were as follows:

********** *****
*Which term best describes you: Farmer Agribusinessman Educator Elected official Researcher Extension agent Other government employee Other _____

*Articles are . . . too technical . . . just right . . . not technical enough

*I prefer articles about _____

*I prefer Highlights as a 4-color magazine . . . yes no
(The format changed from a ta! ! bloid newspaper to four-color magazine in 1996.)

*I prefer to receive Highlights . . . monthly . . . bimonthly . . . quarterly

*I receive this type of publication from other states . . . yes no
... If yes, how does Highlights compare?
better about the same not as good
****
Open-ended questions were coded after survey returns were complete. Judgment was used to combine like

responses when they were limited. About a quarter of the respondents took time to write comments. Time and budget limitations negated any follow-up to improve response rate. This is viewed as a formative market study. Future surveys can be refined, building on these findings.

Results

Demographics

More than one-third of the respondents were agricultural producers (figure 1). Agribusinesses formed the second most numerous group. Educators and researchers each accounted for about ten percent of respondents. Extension agents, government employees and media representatives comprised another tenth of the group. Retirees were the fifth largest set of respondents, reflecting their probable ability to devote attention to both the magazine and the survey.

Mississippians accounted for 58 percent of questionnaires returned (figure 2). The response pattern radiated from the state with the four contiguous states having the next highest numbers of respondents (Alabama, 5.4 percent; Louisiana, 4.6 percent; Arkansas, 3.4 percent; Tennessee, 2.4 percent). Other southern states, Florida, Georgia, North Carolina, Texas, and Missouri, combined to provide 8.4 percent of responses. The remaining 18 percent of respondents came from 19 states, the District of Co! ! lumbia, and 3 other countries.

Findings

Analysis was based on two demographic factors: 1)Mississippi (non)residence; and, 2)profession. Four opinion measures were cross-tabulated with the demographics: 1)assessment of the technical level of articles; 2)publication format preferences; 3)the Mississippi magazine compared to others received by respondents; and, 4)desired frequency of publication. Since this was a self-selected, non-random survey, non-parametric statistics were employed.

Articles' technical levels. There was no significant difference (chi sq =2.636, $p<.05$) in assessment of the level of technical complexity between Mississippi readers and those from beyond the state (table 1). Response was overwhelmingly in favor of "just right" (575 versus 9 saying "too technical" and 16 saying "not technical enough"). By profession, there was a significant difference (chi sq =16.232, $p<.05$) among respondents (tabl! ! e 2). Agribusinesses, educators and researchers tended towards assessing the magazine as not being technical enough. The remainder of the respondents maintained an evenly balanced opinion of "just right" technical complexity.

Table 1. Opinion about technical level by place of residence

Residence	Too technical	Just right	Not tech enough	Total
Non-Mississippians	1	177	6	184
Mississippians	8	398	10	416
Total	9	575	16	600

Table 2. Opinion about technical level by profession

Profession	Too technical	Just right	Not tech enough	Total
Farmer	7	223	9	239
Agribusiness	0	87	7	94
Educator	0	83	3	86
Researcher	1	75	3	79

Extension Agent ! ! 1 32 1 34
Other Govt. 0 39 0 39
Media 0 12 0 12
Retired 1 50 0 51
Other 0 52 2 54
Total 10 653 25 688

Format preferences. No significant difference (chi sq =.662, p<.05) was found in format preferences between non-Mississippians and in-state readers (table 3). Although all professional classes of respondents favored the four-color magazine format over a tabloid newspaper (non-significant difference, chi sq =8.475, p<.05) farmers, agribusinesses, educators and extension agents expressed a less strong preference (table 4). An interesting note, reinforcing oft-heard comments, is that researchers tend to more strongly favor the four-color presentation of research re! ! sults.

Table 3. Magazine format preferred by place of residence
No Yes Total
Non-Mississippians 32 167 199
Mississippians 61 386 447
Total 93 553 646

Table 4. Magazine format preferred by profession
Profession No Yes Total
Farmer 42 218 260
Agribusiness 15 88 103
Educator 14 77 91
Researcher 8 76 84
Extension Agent 6 27 33
Other Govt. 4 39 43
Media 1 12 13
Retired 4 48 52
Other 4 54 58
Total 98 639 737

Highlights compared with like publications. Only 200 respondents were able to make comparisons of the Mississippi publication with other states' research periodicals. Two-thirds of those making assessments were non-Mississippians (table 5). Such a result makes intuitive sense since out-of-state readers likely have their own state's publications as their primary source of research! ! information. There was the barest significance of difference (chi sq =6.037, p<.05) between respondent groups' judgment of Highlights versus other publications. Mississippians tended to be more critical, but both groups nearly split 50-50 in labeling the magazine "better than" or "about the same as" comparable documents. There was no significant difference (chi sq =15.865, p<.05) among opinions of different professional categories (table 6). Researchers held the strongest opinions that the magazine rated "about the same." Farmers tended to see it as better than publications from other states.

Table 5. MAFES Research Highlights compared with like publications by place of residence

Residence Better Same Not as good Total
Non-Mississippians 69 69 1 139
Mississippians 30 27 4 61
Total 99 96 5 200

Table 6. MAFES Research Highlights compared with like ! ! publications by profession
Profession Better Same Not as good Total
Farmer 21 13 1 35
Agribusiness 15 12 2 29
Educator 22 23 1 46
Researcher 19 40 1 60
Extension Agent 11 7 0 18
Other Govt. 3 3 0 6
Media 2 3 0 5
Retired 7 6 0 13
Other 10 7 0 17
Total 110 114 5 229

Publication frequency. Opinion about publication frequency was bimodally distributed between "monthly" (36.7 percent) and "quarterly" (42.6 percent). Differences in opinion between Mississippians and out-of-state readers were significant (chi sq =14.279, p<.05) (table 7). In-state readers preferred more frequent publication than is currently scheduled. Others were satisfied with the quarterly schedule. Among the differe! ! nt professional groups the difference of opinions was barely significant (chi sq =26.618, p<.05) (table 8). Farmers and media preferred more frequent publication. Agribusinesses, extension agents and other government employees were almost evenly divided in opinion. Educators, researchers and retirees were more satisfied with the current schedule.

Table 7. Issue frequency preferences by place of residence
Residence Monthly Bimonthly Quarterly Total
Non-Mississippians 49 31 96 176
Mississippians 163 82 150 395
Total 212 113 246 571

Table 8. Issue frequency preferences by profession
Profession Monthly Bimonthly Quarterly Total
Farmer 106 44 83 233
Agribusiness 33 19 39 91
Educator 24 17 41 82
Researcher 16 26 36 ! ! 78
Extension Agent 10 15 11 26
Other Govt. 15 7 18 50
Media 6 1 3 10
Retired 15 10 25 50
Other 18 8 23 49

Total 243 137 279 659

Conclusions

Though it may seem a trite clich , a major result of this exercise is the need for further study. A self-selected, one-shot response card approach to data gathering does not provide valid information for strong administrative decisions. Our next study should be a random sample of subscribers with properly prescribed follow-up to ensure reliable response.

Despite the methodological drawbacks, some conclusions can be reached. The demographics of profession and place of residence of respondents intuits well to the expected characteristics of the magazine's intended audience. A more focused study can provide better audience data. Also, the strength of opinion of in-state readers as to the need for greater frequency of information indicates the need for a supplementary Mississippi-directed update publication.

Building a News Site from the Ground Up: Assembling a team to create content, build a database and establish a look for a land-grant college news effort.

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

Staff and budget shortages combine with an increase in the number and complexity of assignments to make reporting and distributing news from a land-grant college more difficult than ever. Add to that the ever-increasing rate at which new technologies and media are developing and it's no wonder that we're all in a state of technical shock.

Martha L. Stone noted that experts predict staffing, in both for-profit and not-for-profit enterprises, will remain static. "But what 1999 will bring is more efficient models of joint newsrooms in media companies with more than one media outlet, particularly video and newspapers." (1)

But even the most tightly knit production team can't succeed without providing Web users with the information they want, how they want it. Namely, users want interactivity. But Steve Outing said, "in my view, for a site to be truly interactive, it also must facilitate communication (i.e. inter! ! activity) between human beings." (2)

A recent survey reports that almost 74 percent of Web users read news online. The same survey tells us that overall, our Web audience is very evenly divided among men and women (49 and 51 percent respectively) and their age averages at 35.9 years. But their connections to the Web are generally not the speediest available. Nearly 59 percent of users surf mainly from home, where slow dial-up connections are the rule. (3)

A CAES news site currently under construction will combine the best aspects of print, video and audio news reporting with the audience preferences for readability and interactivity. This new site will change not only how our users get and use news from the College of Agricultural and Environmental Sciences, but also how the editors will produce that news content.

Weekly deadlines drive our current news production with a total of ten stories produced each work we! ! ek for print, television and radio. The three to five print stories are also converted into a weekly Web site. Each editor researches and writes a story then submits it for editing and further production. After editing, the stories are electronically delivered to a single editor (Cannon) for Web publishing. The process of creating the news web and individual text and graphic documents requires approximately six dedicated hours.

The news site receives approximately 175 hits from unique IP addresses each week. A feedback

mechanism allows users to share their thoughts on the site with us. Each comment is weighed and implemented if possible. Through these comments, CAES news on the Web has changed from a single document with hypertext imbedded to a site structure with interlinked pages that also contain hypertext links to not only sources and home institutions, but also electronically published information from our Extension Service tha! ! t relates to the article's topic.

We, the editors and unit administration, realize this process is too dependent upon weekly deadlines and just a few people. Changing will require the advancement of skills for all the editors involved in current news production.

_____

1 Editor & Publisher; Jan. 2, 1999 State of the Newspaper Industry "Expect shakeups for new media in the new year"

2 Editor and Publisher Dec. 26, 1998, Stop the Presses Commentary "What exactly is interactivity?

3 Yahoo! Internet Life, Sept. 1998 "The Big Picture" by Ron Bel Bruno

Method

The shift into a database-created news site will make several changes in how our Web news product is created. Each editor will submit his or her stories when they are written and edited, rather than on a weekly basis. Submissions will be through a password protected form page created by a member of our Office of Information Technology, who is also building the database. The database will build the site "on the fly" so a single editor will not be required to dedicate time to create it. This also allows less complicated remote submissions to the news product.

To begin this shift, the programmer needed to know how the news product would work. A lengthy discussion of how the stories need to be submitted and how they will appear on the Web was undertaken. In the end, we created a sample Web site providing a guide for the components, the structure and the navigation of the new site. <http://www.ces.uga.edu/news/database/>.(illustration 1)

Within this site, we had to carefully describe how a 'normal' story would move through the system. Each story, before submission to the server, must be coded for its priority, destination section and tagged with descriptor words. After submission, the server places the story short title, teaser, full title and lead on the front page of the site.

The full story is placed in the appropriate section and the lead from the front page is linked to it.

The front page will hold six story leads, so as editors submit their stories, older ones will bump down the page and fall off. The sections will hold stories for a coded number of days before they fall into a searchable archive.

Priority stories are coded for the number of days they will remain on the front page without additional stories bumping them off. After that set time, they will move down and off the page.

Also on this page will be an ! ! infographic called AGlimpse. This product will illustrate facts and figures about Georgia agriculture in an easy-to-grasp graphic. It is set to change daily and will require close cooperation with a member of the ECT Graphics team. Each graphic will be date coded (i.e. ag020199.XXX) so the server can replace them automatically.

We have plans in place to add video and audio clips to the site.

With this plan in place, we needed a standard web document creation software. With this, the programmer could be reasonably certain of how it would write code and make provisions for that in the database code. We selected Front Page '98 (a Microsoft product) as our "standard" software to create the pages for submission into the database system.

A training curriculum will be developed to meet the needs of the Public Affairs group members, as well as members of other teams interested in this software. In working with the dat! ! abase programmer, we have determined how much basic html coding is necessary for use with the system. Each editor will import their text into Front Page, then use that software to build code within the document for links within the story, insert bulleted lists, place pictures, graphics, cutlines, tables, rules and lists of additional information.

This coded text can then be pasted into the submission form.

The database construction is planned to be flexible enough to allow changes in look, structure or navigation over time. It also allows independent links within the page for inclusion of special sections for regular features such as spring and fall garden packets, disaster-related information or special "weeks" (i.e. 4-H Week, Soil and Water Stewardship, Agriculture, etc.)

These special sections, though linked from the news database, will not be part of it. These will be created and updated manually, much! ! like our current news system.

As the system matures, we can also add interactive features. Already planned in are links to the writers, sources, additional information and a feedback mechanism. An interactive feature planned to premiere later in 1999 is a Q&A section allowing users to ask scientists questions related to the article for which the scientist was used as a source.

Results

The CAES News Site was originally set to premiere Feb. 1, 1999, but the programmer, Sonjay Kothrai, was also involved in other projects which took priority over this one. The site, as of Jan. 27, is still under construction and questions are still posed nearly every day about story movement and site navigation.

The artistic design of the site is also underway. The site design will coordinate with the design for the unit and college sites and use many of the same graphics, but will not be identical.

The current site uses a free Web-based counter that records total hits, hits from unique IP addresses, the days the hits are made, their script-handling capability, the OS the computer operates on, the browser used and the monitor resolution and color depth settings. This data has been a factor in many decisions needed for this site.

"Beta testing" and pilot groups will guide the initial revisions to the site. Aft! ! er the site premieres, we will continue the feedback and e-mail subscription form currently in use. These comments will guide further developments of the news site. User data will be available after the site opens.

Internal surveys and feedback from submitting editors will mold the submission process. As editor needs and uses change, so shall the process.

Conclusions

This site, though still undergoing development, should be a breakthrough for us in editorial process and usability. We, like so many other news production staffs, feel we could always create our products more efficiently. This process should move us toward that.

We hope the increase in interactivity and usability for users will boost our audience numbers. As a land-grant college news effort, we also aim for commercial site editors and web managers. The addition of interactivity will increase our attractiveness for their inclusion of our site, or links to our site, from their sites.

In all, by employing this database system, we expect our audience to grow as the individual contribution to create the site and its content is spread among the editors, making each of us more effective in our news responsibilities.

Outsourcing Graphic Design Services: A Study of Costs and Quality

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

Background, Scope, and Objectives

A. Background
Many public institutions are conducting or contemplating studies to determine whether privatization, or outsourcing-obtaining from external sources some of the services traditionally provided by internal staff-can save money. Among those services of interest to communicators are printing, design, and photography. This study pertains to graphic design services, which, in institutions with large communications departments, are often provided by maintaining a staff of graphic artists.

B. Scope and Focus
Graphic Design is interpreted here to mean the process of preparing text and illustrations for printing. This area includes conceptual design, comprehensive design (layout), illustration, typography, and related services provided in developing materials to be printed. It excludes art services directed toward products other than printed materials - for example, design of exhibits, World Wide Web pages! ! , and presentation graphics (slides and overheads). In most institutions, these tasks are carried out in a myriad of ways by personnel in many different job classifications in a multitude of departments.
The study was focused on units that provide graphic design services on an institutionwide basis, that employ one or more artists to render service to other units in their institution, and that in many cases charge a fee to partially or fully recover their costs. In this study, three such units in a major southern region university were examined.

C. Objectives
The purposes of the study were to:

1. Determine the actual direct and indirect costs of providing graphic design services through existing service units.

2. Compare those costs to the estimated cost of obtaining comparable services on a fee basis from sources outside the institution, including both the fees charged by the external service providers and the costs of having the institut! ! ion's personnel develop project specifications and requirements, identify suitable vendors, obtain cost quotations, establish contracts, monitor progress and quality, and make payment.

3. Examine important nonfiscal characteristics of internally provided graphic design services, such as quality, timeliness, accessibility, relevance of design solutions, and availability of consultation on design issues, and compare those characteristics to the services provided by external designers.

4. On the basis of data obtained, draw conclusions about the desirability of (1) continuing to provide graphic design services through internal staff or (2) eliminating internal graphic design services and contracting for those services with external providers.

Method

The graphic design services required in preparing materials for the press range from simple standardized layouts of type and illustrations to complex projects involving development of alternative design concepts for client approval, followed by execution of the option chosen. The skills required range from basic typography and keylining or desktop publishing to complex concept development and coordination of multiple design elements including photography, illustration, and typography. Technical aspects include electronic manipulation of images, extensive knowledge of page layout software, and preparation of complex computer files for output to imagesetters or other high-resolution devices. Developing a valid cost comparison between internal and externally provided services in this area is therefore not as simple as in the case of purchasing services such as printing and binding, which can be more precisely specified in terms with commonly accepted meanings.

To comp! ! are costs of the graphic design services provided by three units within the institution with similar services provided by external vendors, the following strategies were used:

1. Compare the true cost per billable hour for internal graphic designers with the fees charged by designers in the external marketplace. The cost for internal services included all salaries and the cost of resources devoted to the enterprise, such as equipment purchases, maintenance, and depreciation; the space occupied; physical plant (facility maintenance) services; and general administrative services. (The cost of obtaining external services such as the cost for identifying service providers, evaluating their bids, establishing a contract, monitoring progress, and making payment were not quantified.)

2. Compare actual costs for five representative graphic design projects carried out by two internal units with the costs paid for those services when the same or nearly identical proj! ! ects were completed by external vendor.

3. Compare the nonquantifiable, nonfiscal aspects of services provided internally with those provided by external sources, including quality, reliability, timeliness, accessibility, appropriateness of design solutions, and other relevant factors.

Results

Analysis of Graphic Design Services

A. Comparison of Costs for Internal versus External Services
Relative cost is a factor to be considered along with other factors such as availability, quality, turnaround time, and access costs in determining whether it is more advantageous for the institution to provide a service internally or to obtain it from an external vendor. In this section, the true total cost of providing graphic design services by maintaining an internal staff of graphic designers is compared to the cost of obtaining those services externally.

For the purpose of this discussion, the basic unit of measure for service delivered is the billable hour, the unit usually used by external vendors providers in charging for graphic design services. It represents the amount of time that an artist spends doing productive work on a specific project and is thus a useful measure of the deliverable received in return for the resources expended.

In t! ! he case of both external providers and internal graphic arts personnel, billable hours represent only a portion of the total time worked. In each case, a graphic artist must spend some time on tasks that do not directly add value to the product. Examples include time spent attending staff meetings, developing cost estimates and budgets, maintaining and organizing files, learning new tasks, and carrying out other necessary operations. The cost of the time spent on those tasks is a part of the total cost of providing the service. External vendors take these costs into account when determining the hourly rate to be charged the customer. For internal artists, the salaries, benefits, and costs for space, equipment, supplies, and utilities represent the total cost of producing the "billable hours," or project-specific productive hours, and must be included when calculating cost per billable hour.

In the units covered by this study, clients were charged different! ! rates for services provided, resulting from differing policies regarding subsidization of these services in their administrative units. These charges help to support the unit and discourage wasteful use of the services. Because of these differences, in this study the rate charged is not used as an indicator of true total cost.

1. Rates Charged by External Providers
Typical rates charged by external providers of graphic design services are readily determined from the leading published source of data within the industry, namely, the Graphic Arts Guild Handbook: Pricing and Ethical Guidelines, 9th edition, 1997.

According to this reference, the following hourly rates are representative for professionals at several levels within graphic arts firms (p. 165):

Senior art director $80 - 150
Art director $70 - 130
Junior art director $50 - 100
Senior graphic designer $60 - 130
Graphic designer $50 - 100
Junior graphic de! ! signer $30 - 60

Thus the fees for the services of a graphic designer range from $30 per hour for an entry-level position to a

high of $130 per hour for a highly experienced senior designer. The range, of course, accounts for the variation in productivity and quality of product with experience and talent. The median salary for a private-sector graphic designer, $75 per hour, was used as a point of comparison in this study. These figures were consistent with the rates being charged by external vendors in the area where the institution was located.

It should be noted that these basic hourly rates do not include the cost for the institution's personnel to procure the services and to monitor the projects and validate billings. The estimated time required for a person familiar with design and printing to oversee a large project ranges from 40 to 100 hours, 10 to 20 hours of which are allotted to obtaining the services of an external designer.

Dat! ! a of significance on annual salaries from this standard industry reference are the following:

Annual salary for print designers working on products such as annual reports and other corporate literature: $50,000 - 65,000

Annual salary for intermediate graphic designer in design firms and marketing/consulting firms: $28,000 - 45,000

Annual salary for intermediate designer in book publishing art department: $30,000 - 40,000

Annual salary for intermediate-level designer/graphic artist in government agencies: $25,000 - 32,000

These data clearly show that the median salary for graphic artists at the intermediate level in public-sector organizations is substantially lower than that of their counterparts in the private sector. For comparison, the salary range for an intermediate-level graphic designer in the institution used for this study was from $22,248 to $35,899, which aligns quite closely with the industry figure for intermed! ! iate-level designers in government agencies, thus supporting the validity of the salary data provided by the Graphic Arts Guild handbook.

2. Costs and Productivity of Internal Graphic Design Services
The cost per billable hour for artists working within the institution was determined by adding the annual salary and benefits for a typical graphic artist position to the other annual costs involved in supporting the position (equipment, space, etc.) and dividing by the average number of hours of billable service that such an artist delivers in a typical year.

Salaries and Benefits. The average salary for the five mid-range graphic artist positions in the three units considered in this study was $26,257. Benefits based on 24.2 percent of that average salary amounted to $6,354, for a total labor cost of $32,611.

Space. The amount of actual office space allocated to individual artists varied among the units, but the standard 120-square-foot office u! ! sed in the institution's space planning process is adequate to house an artist and all necessary equipment except a copier and fax machine, which are typically located in a space shared with other professionals and office support personnel. The value of the space varies with the construction cost and age of the building and is computed according to the usage charge formula specified in the institution's cost accounting standards for grants and contracts. In a typical building of the institution studied, the annual value of 120 square feet of space was $442. Physical plant charges for maintenance of that amount of space totaled $1,105 per year

Equipment. In addition to a desk, chair, and other inexpensive pieces of office furniture, a graphic designer in today's workplace requires a high-end computer with a large, high-resolution monitor plus a collection of graphic arts software packages. The artist also requires access to a shared copier and fax machine. Costs ! ! provided in the table below are based on the needs of an artist in one of the three units examined in this study and are representative of the other two.

In summary, the annual costs for supporting a graphic designer position are as follows:

Salary $26,257
Benefits 6,354
Space (building use and maintenance charges) 1,547
Equipment
Depreciation 3,221
Maintenance contracts and repairs 400
Supplies (general items not billable to clients) 400
Telecommunications (estimated at $60/month) 720
Travel and training 1,000
Total $39,899

Data from the three units have shown that, on average, a mid-level graphic designer is able to deliver approximately 60 percent of his or her time on the job as billable hours (i.e., hours of work attributable to specific projects). There are 2,080 work hours in a year (52 weeks times 40 hours per week). Subtracting an average of 160 h! ! ours for annual leave (vacation), 96 hours for paid holidays, and 96 hours (on average) for sick leave, the artist has approximately 1,728 hours in the office to work on projects. Given that 60 percent of those hours can be documented as deliverable to client projects, the artist can deliver 1,037 billable hours per year.

Thus, the cost per billable hour is equal to the total cost of retaining, housing, and equipping the artist, or $39,899, divided by 1,037 hours of delivered service, for a total cost of $38.48 per billable hour, a figure that is only slightly over half (51 percent) of the median value of $75 cited earlier in this report for graphic designers in external practice.

B. Cost Comparison for Projects Conducted Internally and Externally
To further validate the differences in costs for internally provided versus externally procured graphic design services, a comparison was conducted of five of the institution's graphic design projects that ha! ! d been completed by both internal and external designers.

Comparison of Three College of Engineering Projects

In the first group of three design projects, the project size, scope, and complexity were nearly identical. Two of the projects were completed by external vendors and one by an in-house graphic designer. Results of the cost comparison are shown in the table that follows these project discussions. Comparisons of writing, photography, and other project components have been included for perspective, but the focus in this report is on the graphic design costs, which were roughly an order of magnitude less when the internal designer was used.

Case 1: College Fund-Raising Campaign Brochure

In Case 1, a full-color fund-raising campaign brochure, an established and well-respected external designer was selected to design the publication. An initial meeting was held in February 1994, and one week later the designer provided an estimate t! ! otaling $22,500 for the concept development, design, and production, including graphic design fees at $8,000; copywriting at $3,000; and photography from $4,000 to $6,000.

The project got off to a poor start. Five months passed between the first and second meetings while the designer prepared a production schedule. The schedule, set by the external designer, showed the project starting July 18, 1994, and ending October 22, 1994. In reality, the designer had too many projects in his shop and did not start work on the project until November; the printed brochure was not delivered until August 1995-a full 18 months after the initial meeting and 10 months after the revised promise date for delivery of the printed piece.

Seemingly unimportant aspects of the project in reality wasted a lot of time and money. Logistics and lack of proximity turned out to be major hindrances to the project (such as making the appointments and arrangements for off-campus meeting! ! s, carpooling to meetings, parking at the designer's site, and arranging for courier services). The institution's team spent much time waiting for the designer to arrive at meetings. He was his own boss and made his own schedules; he was routinely 45 minutes late and often showed up at the wrong office, appearing at the institution's offices while the clients were waiting for him in his downtown office.

Another negative element was the variance between estimated and actual charges. The designer's final bill of $32,649 far surpassed the original estimate of $16,000 to $22,500. (Writing fell within budget at $2,460, but photography mushroomed to $7,162, which was $1,000 to $5,000 more than the estimate, even though no changes had been made from the original plan. The final graphic design fee of $9,073 was more than $1,000 higher than the estimate.) All of these charges were in addition to the cost of the institution's representatives serving as liaisons with the ! ! vendor, overseeing the project and resolving problems as they arose. Those costs amounted to $3,200, bringing the whole project to a cost of $35,849.

Because the institution had no real control over the actions of the outside graphic design vendor, problems arose regarding adherence to deadlines, budgets, and specifications.

Case 2: College Research Brochure

Case 2 demonstrates one of the biggest problems with using outside vendors-the lack of loyalty to or sense of ownership in the project or the budget. In-house employees are more concerned with the funds that come from their own office, they have a history with and sense of loyalty to that office, they know that they will have to live with any problems that arise, and they have an understanding of the source of funding, which is often tight enough that all expenditures must be justified.

In this case, another well known outside vendor was hired to design a college research brochure be! ! cause the in-house graphic designer was tied up with a number of other projects. The outside vendor, however, caused a series of problems that ultimately had to be resolved by the in-house graphic designer. In the final analysis, the institution's personnel learned too late that the in-house graphic designer could have completed the job by the same date as the outside vendor, even though he would have had to start the project a few weeks later. Furthermore, the end product would have been of the same high quality but cost much less.

One of the main problems caused by the outside vendor was her continual attempts to add charges that were not part of the original estimate-without consulting the institution. Untangling these problems took a great

deal of time and effort.

The project started out smoothly enough with an estimate from the external designer for a total design cost of $14,086. It is instructive to compare this estimate with the final invoice, in ! ! which $1,000 for photography was added to the charges, along with $350 for "printing supervision" that never took place and another $600 for "web preparation" that never occurred. The institution challenged the designer on these entries and requested a revised invoice. The difference amounted to $1,950.

Further demonstrating the external designer's lack of concern with the client's budget, she also approved printing alterations without the client's authority, adding $400 to the total cost. The institution's personnel determined that some of these changes were unnecessary and declined to pay them.

To complete this project successfully, it was necessary for one of the institution's graphic designers to serve as liaison, because only a person with special knowledge of prepress and printing processes could be aware of which functions should have been performed by the external design vendor as part of the contract-rather than the printer-or ! ! which items were unnecessary alterations. A college administrator or office worker, assigned to oversee such a job in the absence of an in-house graphic designer, would be very unlikely to know enough about printing processes to challenge the vendors.

Also, the vendor in this case attempted to incur other extra expenses, ordering an extra set of blueline proofs and an additional set of color proofs for her own use so she would not have to share these proofs with her client. (It cost only $8.50 for a courier service that made it possible to share the documents, but the additional bluelines and the color proofs for 24 color photographs would have cost $200 extra.)

All told, there would have been more than $2,000 in additional charges for this project if the outside vendor had not been closely monitored. Instead, an in-house graphic designer, one with enough experience to recognize unnecessary expenditures and with loyalty to the office that was paying for! ! the publication, caught these problems.

For all of these reasons, the institution's personnel decided it just was not worth it to outsource such projects and that they would have such projects completed in-house in the future.

Case 3: College Recruitment Brochure

In Case 3, the in-house graphic designer was called upon to produce a college recruitment brochure equal in size, scope, and complexity to the publications described in Case 1 and Case 2. The other facets of the job were also handled in-house.

The writer was an in-house, experienced employee who understood the recruitment goals of the institution and how to convey these to the target audience. Working under the same roof with the graphic designer made the job run efficiently and quickly, as they could share ideas and approve drafts with immediate turnaround. Working on the campus alongside the faculty members and students who were participating in the interviews and photography ! ! sessions made communications highly efficient.

The graphic designer was on location, providing rapid access to the internal client for approvals and changes to layouts. The graphic designer was experienced in ways of producing a high-quality piece while keeping an eye on the budget, and because the designer's supervisor was the head of the office paying for the publication, the designer felt a sense of ownership to the account and to the project. Communications flowed smoothly,

and the printing vendors were kept in close check to ensure that the project came in on time, within specifications, and within budget.

The following table shows a cost comparison for these three projects.

Comparison of Charges for Nearly Identical Publication Projects Outsourced
Versus Completed by In-house Graphic Designers

	Case 1	Case 2 ! !	Case 3
Designer	External	External	Internal
Graphic Design Charges	$ 9,073	$13,557	$1,600
Writing	2,640	4,700	1,000
Overseeing by Institution*	3,200	5,140	1,300
Photography	7,162	8,000	2,200
Extras	500	133	0
Total	$22,575	$31,530	$6,100

* "Overseeing by Institutions" is the amount of time it took for one of the institution's staff members to monitor the project, serving as liaison to the outside vendor. For Case 1 and Case 2, it took approximately 20 hours just to obtain the service-identifying appropriate vendors; reviewing their portfolios; meeting with venders to determine pur! ! pose, audience, and scope of the job; reviewing estimates; writing proposals to the funding office; and processing purchase requisitions.

Extras include such charges as couriers and Federal Express charges in working with outside vendors.

Comparison of Two College of Veterinary Medicine Projects

In two instances the College of Veterinary Medicine had an opportunity to compare the charges of external graphic designers with the cost for providing the same services internally. The college has an internal communications service unit that provides graphic design services at a rate of $15 per hour. However, this rate does not recover the full cost of those services. In essence, the college subsidizes the services by paying the artist's salary. In the following comparisons, the rate used for billable hours is that calculated in Section 2 of this study, which reflects the true total cost to the institution of providing those services.

Case 4: Quar! ! terly Magazine

The graphic design work for the April 1996 issue of the College of Veterinary Medicine's quarterly magazine was completed by an internal designer. The April 1997 issue was completed by an external graphic design vendor. The design costs were as follows:
April 1997 issue (external designer) $3,200.00
April 1996 issue (internal designer) 1,558.44
Savings realized by use of internal designer $1,641.56

These findings are consistent with the nearly two-to-one ratio of rates charged by external designers versus the cost per billable hour of providing the services internally. As a further basis of comparison, the Graphic Artists' Guild Handbook of Pricing and Ethical Guidelines (9th edition) indicates that the average design fees for an in-house, 20-page, one-color magazine range from $2,500 to $7,800. Note that the magazine was a two-color product and therefore presumably would cost more to design.

Case 5: Short Course Brochu! ! re

The internal design staff creates two-color brochures for the institution's continuing education unit. In one instance, the faculty client approached the communications unit with a request to design a brochure for an upcoming program on two-day turnaround. Although the unit tries to respond to requests for rush projects, in this instance a staff shortage made it impossible to rearrange other scheduled projects to accommodate the request. To assist the client, unit personnel contacted an external graphic design vendor and requested a bid on the project. When the bid was received, the client found the external charges so high that he decided to wait the two weeks required for the internal unit to complete the project.

In the following comparison, printing costs are included because the external graphic designer included printing in his bid and did not break out the design charges separately. However, printing costs were essentially the same for both options,! ! and thus the difference in total cost represents the difference in design charges.
Design and printing bid by external vendor $2,900.00
Design by internal artist plus printing costs 1,074.30
Savings realized by use of internal designer $1,825.07

C. Qualitative Factors

Sections A and B demonstrate a definite economic advantage to providing graphic design services internally. However, to gain a complete picture of the relative advantages and disadvantages of providing these services internally, it is also necessary to examine a number of qualitative factors that can be as important as economic concerns in determining the best way for the institution to obtain the needed services. These factors include:

Appropriateness of the design solution to the institution's objectives
Dependability, reliability, and quality
Control over schedule and priorities
Cost and complexity of procuring external design services
Loyalt! ! y to the institution and its programs.

Appropriateness of Design Solutions

The purchase of equipment or certain external services such as printing or mailing is relatively straightforward because expectations can be set forth in a detailed set of specifications couched in terms that have generally accepted meanings to all parties. The same is not true of graphic design services. Conveying an understanding about the desired appearance and functionality of a printed piece involves the use of abstract and imprecise terms. Considerable discussion is required to reach a mutual understanding with an external designer about the basics of a project, and bringing the desired focus to a project usually requires several attempts by the designer to develop rough concepts and to obtain client feedback before a final design can be executed.
On the other hand, designers who have worked for an institution for a period of time and who have constant interaction with t! ! heir internal "customers" develop an innate understanding of the needs and expectations of those customers. They can often accomplish in a single pass what an external designer - billing at nearly twice the cost - may require several attempts to accomplish.

Dependability, Reliability, and Quality

Many publications produced by an institution are designed for specific events and must therefore be produced on a rigid timeline. When projects are contracted to external graphic designers, the controls available to the institution are very limited. The designer has a stake only in that single project. The institution cannot dictate the level of priority that an external designer will give a project in relation to other work. Withholding payment is the only recourse in the event of missed milestones and deadlines. Internal graphic designers, on the other hand, have their long-term careers at stake and thus are more committed to the goals, needs, and timel! ! ines of the organization. They have a commitment to the organization and its goals, and thus they have greater appreciation of and respect for deadlines. Furthermore, their schedules can be rearranged by their unit manager as needed to accommodate unexpected developments, and their manager can take corrective action immediately if problems arise. For the same reason, control over quality of the product is greater when the work is done internally. Particularly where the quality of the finished product requires close interaction with the client and with other project participants (such as writers and editors), internal graphic designers provide services that cannot be matched by external providers.

Cost and Complexity of Procuring External Design Services

Very few institutional administrators and staff personnel have the experience with and knowledge of graphic design processes and vocabulary to communicate effectively with graphic designers. Thus they are ill! ! -equipped to obtain the services they need in the external marketplace. They are limited in their ability to identify and assess the capabilities of potential vendors. They frequently find it difficult to convey clearly their needs and the design standards of the institution. Often, they are unfamiliar with the purchasing procedures that must be followed in obtaining contract services.
Once a vendor has been identified, personnel in the institution's purchasing division must spend a considerable amount of time to establish a contract, issue a purchase order, process a receiving report, and issue payment. Consequently, there are substantial hidden costs in working with external designers that are not encountered with internal designers.

Loyalty to the Organization and Commitment to the Budget

The publishing objective of the client within the institution is to produce attractive, serviceable materials that meet the institution's design standards on a fixed! ! , often limited budget. The primary objectives of external graphic designers, on the other hand, are to maximize profit from each project and to develop pieces that will be positive additions to their portfolios. Thus the client and vendor's objectives are often in conflict. The external designer does not have a commitment to the institution's budget, and, in fact, has incentives to exceed it. This disparity frequently results in cost overruns for external projects, as documented in the case studies presented earlier.

In summary, the use of internal graphic designers enables an institution to save time and expense in procurement of services, gain greater control over schedules and adjust priorities as needed, simplify the communication of job expectations, work with individuals who have long-term commitment to the organization, and be assured that all means possible will be used to help them achieve their communication objectives.

Conclusions

The information developed in this study shows that it is normally more efficient and cost-effective for an

educational institution to provide graphic design services internally than to obtain those services from external vendors, provided that the institution needs enough design work to keep one or more graphic artists fully employed-that is, the institution needs at least 1,037 hours of billable design services per year. In 1998, the cost of graphic design services per billable hour (per hour of design work attributable to particular projects) when all costs were taken into account was found to be $38.48 when internal graphic designers were used. The median rate for external graphic designers of comparable skills was $75 per hour, nearly twice as much.

The advantages to the institution come not only from the substantial monetary savings but also from less readily quantifiable benefits--time saved in the procurement of services and the monitoring of the designer's wor! ! k, greater control over schedules and priorities, simplification of communication about projects, and employment of individuals who understand the goals of each project and have commitment to the project, the budget, the deadline, and the institution.

Streaming Media as an Instructional Delivery Strategy

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Background

Many events have recently been broadcast on the Internet though what has come to be called Webcasting. There have been interesting events from the field of medicine, including the birth of a baby (http://www.abcnews.com/sections/living/DailyNews/netmom980610.html), and open-heart surgery (http://207.87.15.72/liveevents/openheart/ f_main.htm). NASA generated quite a crowd with the Mars Pathfinder Mission (http://mpfwww.jpl.nasa.gov/) and John Glenns return to space (http://www.foxnews.com /scitech/space_mission/video). Rock concerts, auto races, and various marketing events, like the launch of Windows 98 have drawn a lot of viewers. Several celebrities, including the actor best known as Captain Kirk, have recently discovered the Internet as yet another outlet for their marketing and personal promotion efforts. More and more, the web is being seen as an additional channel for the broadcast of events captured in digital audio and video.

According to Multimedia Research Group, Inc. (1998) of Sunnyvale, CA, and Fuji Keizai USA, approximately 4,000 Web sites offered video clips in 1996. That number tripled to 12,000 in 1997 and is expected to triple each year for at least the next three years. While this rate of growth is impressive, those 12,000 sites represent less than 1% of the sites on the Web.

Universities and corporations all over the world are considering Web-based solutions for delivering training and information. This delivery would be facilitated through the inclusion of audio, video, and graphic media. Internet-based training has many of the same positive features as computer aided instruction (CAI). Users can progress at their chosen schedule and pace, have the opportunity to review content at any time, and need travel no further than their desktop computer. Users often retain more when presented with an interactive, multimedia experience. While computer aided instruction (CAI) has long benefited from this principle (Paden and Barr, 1980), the Web was unable to support the bit rates necessary to enable these kinds of media. Video, and to a lesser extent, audio files were simply too large to transmit via the Web.

Web-based training offers inexpensive content creation and management, as well as distribution thats as easy

as placing the content on the network and having users open their Web browser to connect to the material. The content remains live on the Web site and is accessible at any time to learners. The interactivity or the Internet can be used to contribute to instruction and allows for user input to help determine the effectiveness of the content.

Describing NetShow Streaming Media:

Windows NT Server NetShow Services is designed to serve content created using a digital file format called Active Streaming Format (ASF). ASF is storage-and-transmission file format that encapsulates multimedia data types. The data types supported continue to expand. Currently, digital images, audio, video, and embedded text can be included. This embedded text can include menu items, scripts, or even URLs to call additional resources. ASF allows the synchronization of these objects within a stream. When you create content for NetShow Services, you create ASF files, or streams.
ASF allows content to be delivered to the client as a continuous flow of data with little wait time before playback begins. For example, a user can spend more than 40 minutes to download an uncompressed digital video (AVI) file thats 40 seconds long over a 28.8 Kbps modem. It would be virtually impossible to deliver standard lecture presentations, which typically run 30-50 minutes per segment. When that AVI file is compressed and converted to ASF, it begins playing after only a few seconds. The file can be of virtually unlimited length, and can run over Internet bandwidths.
Bandwidth remains a limited commodity, and there is good cause to be wary when you begin to work with audio and video - even when you plan to stream your content. However, if you plan your content wisely, you can deliver a really rich user experience, even over Internet bandwidths.

Method

This project was an attempt to chronicle the development and use of a streaming media lesson from the perspectives of the producer, the instructor, and the students. Once the lesson was converted, two graduate students, who had previously experienced the same lesson in a videoconference class, were asked to evaluate the effectiveness of this media. Reflections from each perspective were shared and a qualitative summary provides insights on the appropriateness of streaming media as an instructional strategy.

Results

The Producer

Selecting a Media Type:

Lets examine the types of streaming media one can create using NetShow Services. While others use more and different classifications, I contend that there are only three basic types of files you can produce using any of these products; Video, Audio, and Synchronized Audio. Video and audio files may be streamed either live, as the event occurs, or from an archived file saved to the NetShow server. The process of creating synchronized audio files makes them suitable only for archived streaming.
Video files are the newest, and get all the attention. From a basic perspective, video files include both an

audio signal and a series of images played back as rapidly as possible. While new compression and decompression (codec) techniques included with streaming technologies make these files much better than was possible even a year ago, with greatly enhanced audio and much better video quality, the resulting video experience is still no where near VHS tape. The typical streaming video is small (160X120), and the frame rate is typically between 8-15 frames per second (fps). While video compression techniques have improved, and we can now make tradeoffs between the clarity of the images displayed and the frame rate, it is the audio quality of these video files that has experienced the most dramatic improvement. Software developers have come to realize what many of us already knew. In the complete multimedia experience, audio is often more important than video.

Audio files have been available longer. They are inherently smaller in size, and compression techniques for audio have been found that work very effectively for each of the different types of audio. A symphony orchestra has more variability and requires a much greater dynamic range than does a single person speaking. Codecs have been developed to address these differences.

Synchronized Audio files are not really new in concept. I suspect that most of us have experienced an annotated slide show using a 35mm slide projector and a cassette tape. With the advent of client-side processing in web browsers using scripting languages like JAVA or VBScript, these types of media presentations became possible on the web. In effect, an audio file is streamed to a client and embedded in that audio file are commands that cause other types of media to be downloaded and displayed on the client machine. These images or text messages can be embedded in the stream and rendered in the MediaPlayer or they can be URL flips, or commands that cause an image or html coded page to load to a target frame in the client browser.

While perhaps not perceived as state of the art, Synchronized Audio files have several attractive characteristics for distance education and training environments. In terms of the necessary bandwidth, illustrated audio presentations are a step up from streaming audio and at least one step below streaming video. If you anticipate that your target audience will have lower bandwidth capabilities and your content will benefit from illustration, then synchronized audio may be a viable solution. Even when you can determine that your learners have access to higher levels of bandwidth, you may choose to use higher-quality, less frequent, still images rather than poorer-quality video. If you remember that a second of broadcast quality video is really a collection of 30 images shown in a rapid sequence, then the question becomes, do you really need all those pictures?

This is not a rhetorical question. One of the fundamental principles of instructional media design may be obvious, but I think it bears repeating. Each aspect of instructional media (graphics, sound, video) can aid learning, it can be neutral, or it can detract from learning. Although it is very easy to become enamoured with the gee-whiz aspects of motion video at 30 fps, the focus must be its effect on learning. In my experience, and in most of the settings in which its employed and evaluated, visual motion by itself has little effect on learning (Reiber, 1994). In some specific cases, such as when the underlying instructional objective includes motion (e.g. Newtons Laws of Motion), or when used to direct the attention of the learner, putting visuals in motion does contribute to learning and retention. I suggest that you use motion only when you believe it will contribute to your learning objectives, and not just because its technologically possible.

Once youve selected an appropriate delivery media for the transmission of your instructional material, its time to get the hardware and software configured to create your streaming file.

Setting up NetShow:

There are two primary components of NetShow Media Services. NetShow Tools includes the software necessary to create and edit ASF files, and NetShow Server adds a service to Windows NT Server 4.0 that serves, or streams, these ASF files.

Setting up NetShow Tools: 1. I chose a Windows95 machine to accomplish the encoding function. This

happened to be my laptop machine, a Gateway Solo 9100 (PII 266/128MB of RAM). The recommended minimum hardware configuration for Win95 is a P133/32MB RAM. I also installed the software on a Dell Optiplex GX1 (PII 400/192MB of RAM) desktop computer running Windows NT. When not encoding ASF files, these machines do all the others things theyve normally done.
2. The laptop shipped with a videocapture card (one of the reasons I chose it). I installed the Microsoft recommended Winnov VO Video Capture Card in the desktop machine. This card is getting very popular in live streaming environments and is giving the other recommended cards (Intel Smart Video Recorder III, Osprey-100) some serious competition at a lower price.
3. I installed the NetShow Tools software, downloaded from the Microsoft Web site, on both machines. Following this installation, I connected my camcorder to each machine, then ran the encoder from the Start/Programs/NetShow Services/NetShow Encoder menu. In both cases, the Encoder found the video source without incident.
Configuring the NetShow Server: 1. Select an NT Server 4.0 machine as the NetShow Services box. Win95 does not support the NetShow Server Services. The NT 4.0 server in my office (PII400/128MB of RAM) also had IIS 4 installed and had been running as a Web server. Microsoft recommends running separate machines for these two services (IIS and NetShow), but supports running both on the same machine, and Ive not experienced any difficulties thus far. I recommend locating the NetShow server and the Encoder machines on the same LAN when possible.
2. Install the NetShow Services software by executing the NSSEVER.EXE installer, downloaded from the Microsoft Web site. Following the installation, select Start/Programs/NetShow Services/NetShow Administrator.
3a. If you want to serve archived ASF files, youre practically finished. Place the encoded ASF files in the proper root directory (default is C:\asfroot) and theyre ready.
3b. If you want to serve or broadcast live ASF streams, there is another step. Create a Broadcast Unicast Publishing Point (easy to do via a NetShow Administrator wizard) linked to your NetShow Encoder machine. This publishing point remains active after you close the NetShow Administrator. The wizard also creates HTML code for use on your Web server. Performing these three basic steps engages the NetShow Services machine in the archived or live Webcasting operation.

Using NetShow Tools:

The NetShow Tools are installed on the machine that takes the audio and video signals, digitizes and compresses them, and provides them to the NetShow Server for distribution. Using these tools, either alone or in combinations, you create and or convert streaming content (NetShow Services, 1998).
The Encoder is the primary workhorse of the NetShow tools package for creating live ASF streams. Compressing live audio and video in real time is an extraordinarily processor-intensive task. The Encoder should be on your best machine, and should be solely dedicated to this task. No unnecessary services or programs should be running while the Encoder is operating. Its counter-intuitive to me, but the higher the target data rate, the higher the processor requirements. For example, if youre encoding live video targeted for 56-Kbps consumption or higher, Microsofts recommended machine is a Dual Pentium II 233 MHz or DEC Alpha 533 MHz. The same video source targeted to a 28.8 Kbps stream, the recommended machine is a Pentium 200 MHz. The Encoder always creates an archived file of the live stream, so it can be used to create archived ASF files, but other tools may be more appropriate. When creating archived content, hardware requirements are greatly reduced because the operation no longer need occur in real time.
The rest of the tools provided are used to create and edit archived files from various sources. The primary workhorse of this team of software products is the T.A.G. Author. To create archived ASF files using the T.A.G. Author you begin by selecting or creating still images and audio files. You then insert these into the

T.A.G. Author. You can then sequence the audio and video files, add text and menu itemscalled markers, and insert URL calls to other html pages that will render to a target frame on the same web page as the embedded Media Player.

The PowerPoint Publish to ASF wizard is the simplest path to creating streaming Synchronized Audio files for those already familiar with PowerPoint. If PowerPoint 97 is already installed on the machine to which you choose to install NetShow Tools, the Publish to ASF command line is added under the Tools menu of the PowerPoint program. You can use the Record Narration command under the Slide Show menu of the PowerPoint program to record audio that will be associated with each slide as you advance through a slide show. After saving this file as a PowerPoint Presentation, you simply select Publish to ASF from the Tools menu and the presentation is encoded to your chosen target bandwidth (e.g. 28.8 modem). Your PowerPoint slides, whether primarily text or graphics, will be synchronized with your audio annotation and ready for streaming to your learners Media Player.

NetShow Indexer allows you to edit, in a very limited way, existing ASF files. You can shorten or cut an ASF file and insert or edit markers or script commands. For the most part, you will not want to consider ASF as a format suitable for editing. To accomplish edits of any real substance, the original, or source materials will need to be saved and recreated using another tool like the T.A.G. Author.

The VidToAsf and WavToAsf programs are useful for those who already have powerful programs for editing and compressing, respectively, video and audio files. Neither of these programs is intended for the inexperienced multimedia content creator. Properly prepared video and audio files, created in another software program (e.g. Adobe Premiere, SoundForge) can be converted to ASF format using these utilities. While basic, these utilities are powerful. For instance, markers and URL flips can be inserted in the stream, and an external audio file can be used to replace the audio file associated with the .avi video file.

There are also some third-party tools available that can help speed the processes or provide enhanced functionality. One of the most complete third-party solutions is VivoActive Producer 2.0 for NetShow (Vivo.com, 1998). This $695 product provides a more user-friendly interface to creating NetShow ASF files. The company states that Producer 2.0 for NetShow is your one-stop, total solutions package, and the first and only single application that allows you to generate both live and on-demand streaming media in Microsofts ASF file format.

Before I spent the $695, Id want to try out the, now available and free, Windows Media On-Demand Producer, co-developed by Microsoft and Sonic Foundry. Microsoft advertises that this product simplifies the creation of streaming media content for both experienced and novice streaming media authors (Windows Media, 1998).

Before creating your ASF files, youll want to consider how you want them used and displayed by your users. There are several ways to extend the capabilities of ASF files, and more narrowly define the experience of your learners. These features involve advanced HTML coding, and a basic understanding of scripting languages, but their use can greatly enhance the look and function of your multimedia instructional materials. For the purposes of this project, the development team chose to create a synchronized audio file from an existing PowerPoint presentation used in an on-campus lecture.

Producing the Annotated Audio Presentation:

The most important part of any multimedia development project is the development of a script. The foundation of a good script is a sound instructional design, and the girders of instructional design are clearly described instructional objectives.

Working from a script, media were collected. While I prefer to collect the audio files first, there is no correct order. The creation of media is becoming easier every day. Scanners and digital cameras are becoming very popular, and high quality audio capture equipment is available for less than $100.

Once collected and digitized as necessary, the graphics will need to be manipulated and resized. T.A.G.

Author will utilize .JPG files of any size up to 320X240 pixels. I learned to archive a copy of all visual media in its most original (digital) size and file format. The media may be appropriate for later projects, and will be most useful in its original format and size. I use a recordable CD for this purpose at a cost of about $4.00 per gigabyte.

Audio on the other hand is very sensitive to digital manipulation. Unless handled by an expert, audio quality can be degraded drastically by recompression. For this reason, I suggest collecting, or digitizing, audio files in a file format and at a data rate that is nearly equal to your final target data rate. In my experience, voice is perfectly clear at 11K/ 8bit/ mono. This approximates the final compression rate used by T.A.G. Author when creating a 56K annotated audio streaming presentation.

Once the media have been created, digitized, and manipulated they should be organized. A logical file-naming scheme is helpful. Give files descriptive names, or number them in the order in which they will appear in the final project.

Assembling the final project in T.A.G. Author is a straightforward drag-and-drop operation. Audio is converted or recompressed automatically as it is inserted in the project.

The final step in the creative process is to insert Markers so that the learners can easily skip ahead -- or return to -- the portion of the program in which they are most interested. Previewing the converted media creates an .asf file. Choosing the Publish command creates default .html pages and an .asf file suitable for placing on your WWW server.

Having worked with several multimedia development platforms, I found this one to be very easy to learn. The ability (unused in this project) to embed URL flips and control the users web browser without learning a scripting language (like JAVA) will lend itself to the development of more robust and interactive learning materials by non-programmers.

Both the instructor and I were impressed with the ease with which we were able to create the digital images and audio files, the simplicity of the combination of these files into a multimedia format that can be delivered at WWW bandwidths, and the quality of the final product.

The Instructor

Streaming Media Reflections:

In sharing the faculty perspective, I have chosen to journal my reflections on the use of streaming media.

Monday, December 7, 12:12 p.m.

I just received an e-mail from Tim Murphy with an abstract for the Southern Association of Agricultural Scientists meeting in Memphis, Tennessee. At this point, I had never used Microsoft streaming media and had never taught a lesson in this type of format. Tim came in earlier this morning and discussed the idea and asked for me to think about a potential lesson I could convert. Within a matter of minutes, I thought about a lesson on copyright and fair use guidelines for multimedia development. I use this lesson in both my undergraduate communications course and in a graduate course in advanced methods in distance education. This lesson always spurs discussion and debate, especially at the graduate level. It seemed to be a perfect match for the streaming media delivery mode.

Tim told me we would use still graphics with audio streaming and to make sure I had some snazzy graphics. I typically use PowerPoint graphics, so I had a place to start. He also mentioned the need to script or storyboard what I say in class as I deliver the lesson.

I added his suggestions to my list of things to do and continued with my hectic schedule.

Thursday, January 7, 5:15 p.m.

After finals, graduation, and the Christmas Holidays, I ventured back into my office and began course preparation for spring. That pesky things to do list reminded me that I needed to work on the streaming media project! I printed out the PowerPoint slides Id used in the past, grabbed a couple of resource books, and headed out the door. I normally use scenarios to introduce the topic, so I thought that approach might work just as well in this format. With all my trusted materials at hand, I sat at my desk in my home study and started writing. By this time, it was 9:15 or so, and by 10:00 p.m., I had a script. I simply used a piece of paper and pencil, with a column for the graphic on the left, and what I planned to say on the right. I really enjoyed working on the project and shared my ideas with my husband (while he was trying to watch the news). He commented that this was an exciting approach and he wished he had media specialists/instructional designers to help him with projects like this.

Friday, January 8, 8:20 a.m.

As soon as I got into the office I began looking for Tim so we could work on the lesson. I opened the PowerPoint and made some minor modifications. Once Tim arrived, he said it would only take a couple of minutes to set up the recording studio, and he asked where I wanted to teach the lesson. We decided our offices were too crazy and used a colleagues office that was out of town. Tim set up a laptop computer, with a microphone head set plugged in, and demonstrated how the software worked. By this point, it was 9:15. I started recording, playing back each section and re-recorded if I didnt like how it turned out. This process lasted until 11:00 am. As I was recording, I thought about how convenient it was to be able to re-do things that dont sound okay. Its too bad we dont have that luxury in the traditional classroom!
After the recording session, we coerced students and faculty around us to pose for the scenario photos that I had sketched the night before. We used a digital camera and Tim imported the photographs into the presentation. I put the text-based PowerPoint slides on the share drive and left the rest up to him. By Monday, Tim handed me a diskette of the lesson.

Summary:

A couple of thoughts on the process: I truly enjoyed trying a new way to teach (and a new way to learn). I was surprised at the simplicity and relatively short amount of time it took to create this lesson. Obviously, I had an advantage because I had taught the lesson before and had materials already prepared for synchronous delivery. I also enjoyed planning the script/storyboard to include visual and auditory cues. This approach may prove novel, thus stimulating student interest because of the delivery system. Although I have taught videoconference courses, I am a beginner in the area of web delivery. I see great potential for streaming media, coupled with asynchronous communications (such as threaded discussion groups) to greatly enhance instructional materials delivered at a distance.

The Students

Evaluating the Lesson: Leah Wickersham

As a graduate student, time is the one thing that I never have enough of, and when there is an opportunity to condense the time required to complete an activity, such as a class assignment, thus allowing me time to concentrate on other responsibilities, then I gladly welcome that opportunity. I have had the copyright lesson in both the traditional lecture-based format and via the streamed media. Both methods have their advantages as well as their disadvantages.

During the lecture-based format, the copyright lesson took more time to review-- an hour as opposed to the ten-minute review of the streamed media lesson--with the same material being covered. However, the lecture-based format allowed for discussion among students and the instructor, which hopefully facilitated some critical thinking instead of simply passive learning of the lesson. The interaction with the class and the teacher was something I missed during the streamed media lesson. Yet, I found that the advantage of not attending the lecture-based format lay in my ability to move forward in the lesson as I became uninterested in some portion of the lecture or if I already understood the subject matter being discussed.
Another advantage to the streamed media lesson was that it allowed me to view the material at anytime. If I misunderstood a point made during the presentation, or a concept was not quite clear, then I was able to rewind or pause the media player at any point during the lesson. I found all of the PowerPointðâ slides and still photographs to be relevant to the material being presented, thus creating very little distraction. As I viewed this lesson, I realized that I am not an auditory learner; so there were times I found myself swimming in the material being presented. However, when the screen changed to demonstrate a new situation, or a PointPointðâ slide popped up with new material for me to read, I was back on track with the lesson. I thought that the presentation moved fast enough to hold my attention, but not too fast to where I was lost. I also liked the idea of using the menu to choose particular topics in the lesson to go directly to a spot in the presentation. This ability saves time of having to randomly fast-forward or rewind to find a scene in order to review a lesson.
I do not believe that all lessons should be formatted in the streamed media method, nor do I believe that the creators of the copyright lesson had such an intention in mind. I do feel that some materials lend themselves to be taught through this type of media, and the copyright lesson is one of them. I look forward to seeing more of the streamed media teaching/learning method incorporated in future lessons.

Evaluating the Lesson: Jennifer Parlin

As a graduate student, the material presented on streaming media for class instruction appeared to be beneficial. The eight-minute presentation on copyright material and the hour-long lecture had a few similarities, but the differences are definitely worth consideration.
I tend to prefer the use of the traditional classroom setting for instruction, as opposed to the use of streaming media. This is due, at least in part, to my previous educational experiences and my familiarity with traditional teaching methods. The traditional classroom has, and always will, provide the best form of interaction between a professor and his/her students. Although, this proved to be the only disadvantage of using streamed media, it does seriously impact how a student may or may not benefit from the class. Most students like to feel a sort of closeness with the professor. For example, being able to ask questions at any time and getting feedback is an integral component of the one-on-one method of learning.
Despite the interaction problem, I believe both the professor and student will adopt streaming media in place of classroom instruction for presenting many types of material. Streamed media is easy to access, whether the professor provides it on a disk or posts it to the course webpage, students will be able to start and stop the lesson at any time. The use of streamed media allows the student to pause within a lesson and continue at their own leisure. As I was watching the Copyright material demonstration I received a phone call. I was able to pause the demonstration and start it again later. Some courses, such as web-based courses, are searching for more ways to incorporate interaction. I also believe that the use of streaming media would greatly assist this need and provide a great supplemental tool for any class.
When reviewing the demonstration, I noticed there were a couple of points that both the traditional classroom and streaming media had in common. The information presented was the same and the documentation provided at the end of each was very useful. Streaming media can be a great tool for instructional delivery strategies. The interaction issue is not a barrier to this system, but it is something the professor needs to consider when developing streaming media for instructional use.

Conclusions

In reviewing the perspectives of the producer, instructor, and students, several conclusions emerge. In the area of media development, two components are essential: 1) deciding appropriate content for this type of delivery and 2) planning the script and appropriate visuals. This type of media is easy to create and provides an alternative delivery for lecture materials to be delivered to dispersed audiences. But how do learners respond?

Two graduate students who had received the same lesson (Fall, 1998) in a videoconference delivered course make some excellent comparisons. They liked the ability to save time (and have flexibility with their time) by being in control of the content (able to fast forward, pause and rewind). Accessibility and ease of use of streaming media contributed to satisfaction. Yet, they missed the discussion/interaction typically present in the classroom. Because of learning style preference and familiarity with face-to-face interaction, this media may not be preferred. Both the instructor and producer recognize the importance of interaction in distance education and would encourage a combination of streaming media with electronic mail, threaded discussion groups, desk-top videoconferencing or other communication technologies.

Hopefully you have concluded that successful preparation of streaming multimedia is rooted in precise planning, preparation, systems testing and verification, and an overall understanding of the many variables involved. Few undertakings could be described as more interdisciplinary than the Webcasting of multimedia instructional materials. Of course, the same can be said of many pursuits in Web content development. In addition to content experts and instructional designers, expertise in broadcast production and engineering, telephony, computer systems, and network administration is required. Few individuals hold levels of expertise across such a diverse range of disciplines, so Webcasting is inherently a team effort. Input and expertise will be required from a number of people working together as an instructional development team. We believe that these techniques can create more robust communications channels for the delivery of instructional media, creating a more effective learning environment for a more diverse group of learners. Should you choose to adopt these methods as a delivery strategy, you will not be alone. Listed below are a few examples of instructional programs being facilitated and or delivered using these technologies.

Examples of Streaming Content:

Cornell University, Dr. Michael Ushay
Medical School Grand Rounds, delivering physicians' lectures to audiences at 20 hospitals.
http://www.microsoft.com/windows/windowsmedia/techshowcase/cornell/default.htm

Stanford Online Course, Doug Brutlag
MIS231 Computational Molecular Biology
http://arum.stanford.edu/courses/mis231/oct12/embed.asp

Stanford Online Course, Kevin Rudd
EE182 Computer Organization and Design
http://arum.stanford.edu/courses/ee182/oct29/embed.asp

North Carolina State University, Rick Klevans

CSC311: Introduction
http://renoir.csc.ncsu.edu/RTCPP/WLS/CLASSES/CSC311/HTML/lect1/start1.ram

Michigan State, Charles Severance
EGR 124: History of the Internet
http://www.vu.msu.edu/preview/egr124/lectures/hist/af001.htm

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NetShow Services. (1998). NetShow Homepage. <http://www.microsoft.com/netshow> [Accessed 9/15/1998].
Paden, D. & Barr, M. (1980). Computer assisted instruction in an elementary college economics course. Computers and Education. 4, pp. 259-267.
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Developing and Communicating Effective Program Success Stories For Enhanced Accountability

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

Developing and Communicating Effective Program Success Stories For Enhanced Accountability

Introduction

The dictionary defines success as "... favorable termination of a venture...the degree or measure of attaining a desired end...an undertaking that succeeds or confers success...succeeding fully or in accordance with one's desires"(Babcock, 1993). Interviews with numerous Extension professionals indicates that success is seen in many forms. However, for a success story to convey significant success, actions by clients or impacts on clients should be indicated (Boyle, 1997). These actions may indicate practice adoption or changed behaviors. Often, success stories in Cooperative Extension accountability nomenclature may be called impact statements as well. Such impacts may be indicated as financial gains; taxpayer savings; efficiencies gained; environmental enhancements or protec! ! tion; individual life enhancements; resources preserved; or societal improvements (Bennett, 1996). One county Extension director stated that program success is "choosing to do the right things well, and achieving measurable results from doing our programs that meet the needs of people"(Baker, et.al., 1995).

Success Stories for Accountability

Cooperative Extension has a large number of audiences that expect, and some require, accountability information (NCCESTMTF, 1998). Based on evidence gained from many of those audiences, concise success stories have generally been found to be highly popular for communicating program impacts to lay audiences. Considerable anecdotal input and feedback from State Legislators, Congressional staff and others, has made it obvious that brief, concise statements focussed directly to the core of a program and its results are highly preferred over more lengthy, explanatory documents! ! . Therefore, based on this evidence, success stories that are used by the North Carolina Cooperative

Extension System (NCCES) for productive program accountability purposes are written to communicate program impacts to lay audiences who may not be readily familiar with Cooperative Extension programs. In understanding this key factor, program acronyms are avoided or at least explained. Internal jargon that others outside of Extension do not understand should be avoided in success stories for externally focused audiences. The key seems to be brevity and conciseness that gets to the heart of the program outcome and impact.

Here are some comments made by internal and external audiences regarding uses of success stories as well as message brevity.

"My professional style is to get to the point as succinctly as possible, because staffers are busy. Congressional committees usually limit testimony (either or both in! ! pages and time) to encourage brevity. Formatting also helps, so that your main points stand out. (Legislative Affairs Expert, National Association of Counties)

"We want brief, concise reports of accomplishments that cover the main points of:Who's involved; Problem; What you did; Difference it made; any collaborators;
Contact person; and on one page (Congressional Aide for Congresswoman Eva Clayton)

"We want brief reports of Extension accomplishments that get to the heart of thesubject and are no more than one page (N. C. Representative Howard Hunter s aide)

"My Extension Advisory Council members expressed a preference for brief successstories by indicating their pleasure with a marketing piece that we used for program
reporting that included success stories only. They specifically requested that I provide this type of document to them periodically (J. S., NCCES County Extension Director)

&qu! ! ot;I want information that is really concise, tells me what is happening without wasting words, and that I can read very quickly (Member of N. C. House of Representatives)

"My county advisory council, county commissioners, and county manager really like this kind of concise information from Extension (H. S., NCCES County ExtensionDirector) The success stories and narratives are easily accessible and can be incorporated intotalks to emphasize local programs and impacts. Local audiences want to know and
hear about how CES makes a difference to their communities and for their neighbors. Impacts even a county away is no longer adequate to build or maintain local support. (Director, County Operations, NCCES)

"Our success stories go to approximately 2,000 people which include county commissioners, legislators, mayors, city council members, key government staff members, advisory leadership system, all people on our mailing ! ! list, and media. We also use them when introducing Extension to new potential audiences. In addition, we use them for manager reports that we do twice per month to county management. (M. B., NCCES County Extension Director)

"Some of my uses for our success stories include our marketing brochure for allpublic; our twice yearly "Report to the People"; a "Good News" bulletin board for

public viewing; Staff Celebrations; County Commissioner s Budget Sessions; Advisory Council updates; speeches to stakeholder groups; and for staff training. (G. R.,NCCES County Extension Director)

Method

Developing Success Stories

Considering the uses described for concise stories that are, brief, descriptive and explanatory, in presenting positive program impacts for accountability purposes, there are some general guidelines for developing such stories that should be kept in mind. When developing a success story, conciseness, brevity, informative, focused, and impact-oriented should be the guiding principles. A success story should include a very brief description of the problem; the educational program response; the participants; other partners (if applicable); and program impact or participant response; plus a conclusion. Thus, the structure consists of Problem, Program, People, Partners, Impact, and Conclusion and can be stated as the four P s, I and C or PPPPIC. If available, the participant response may be stated as a testimonial if available.

While brevity is a commonly used word to describe a success story, this! ! is a relative term. However, several of the persons offering their thoughts for this paper emphasized the length should be one page or less. Therefore, for purposes of communicating successes of an organization (in one page or less), hard decisions have to be made as to whether to only convey one story, or several stories.

With knowledge of program results the ultimate goal of most accountability efforts, NCCES has focused on providing as many success stories as possible in such confined parameters. Therefore, while a single page may allow 400 words or more, if several stories are preferred, then 150 words per story allows for about four success stories on a single page. With this in mind, during the conceptual stages and design of NCCES s Web based Extension Reporting System (ERS) during 1995 and 1996, a decision was made to allow only 100 words per success story. Anything over 100 words would automatically be tru! ! ncated by the computer. However, even in the testing stage prior to release of ERS, it was recognized that in order to effectively include the desired PPPPIC parameters, every bit of available space was utilized, and many stories had a few words or sentences truncated.

With this 100 word limit problem clearly identified, it was decided to allow up to 150 words before truncation occurred. This additional space has been sufficient to allow all of the key parameters to be covered in success stories produced by field faculty and specialists. While the World Wide Web was only beginning to be used extensively during 1995 when the development of ERS occurred, the release of ERS coinciding with the establishment of a statewide Graphic User Interface (GUI) computer network resulted in the word truncated being observed for the first time by many. However, humorous feedback quickly occurred regarding the effectiveness of the trunca! ! tion feature on the success story menu of ERS. Usually, such humor was made in statements by field faculty who said... I had never heard of truncated until now, but after seeing that

computer clip off part of my nice success story, I learned very quickly that when it said it would be truncated at 150 words, it meant it! Thus, the computer system (ERS) in which NCCES success stories are entered effectively assures brevity.

Value of Training

While conceptual designs and computer systems can readily be developed, the actual writing of quality success stories is in the hands of field and campus faculty who actually conduct the programs they are reporting about. Even though specific parameters can be developed such as the PPPPIC and the wording limits, what really constitutes a quality success story and how to present it in a positive mode becomes most important. Since the primary purpose for such stories is to convey real world s! ! uccesses and effectiveness of the organization s educational programs, it is important to think about the message that is really being conveyed by the success story. Only training and coaching has been found to be effective in helping most faculty to gain the knowledge and skills needed for writing quality success stories.

Both number and quality of success stories entered in ERS have continuously improved over the past three years. At the present time, about 1,500 success stories are entered into ERS each year, and easily 75% do a good job in stating successes in the prescribed format. However, some are still entered that only describe how hard the agent is working, and some are simply so poorly written that no use can be made of them for any purpose, except to use as examples of what does not constitute a quality success story. Fortunately, such comparisons of excellence versus mediocrity have been most effective in hel! ! ping faculty to understand the difference.

It has also been discovered that inadequate or inappropriate statement of the problem can give the reader mistaken impressions as to why the program was undertaken or what prompted the initiative to begin with.

In stating a problem, it is very easy to convey the impression that we were sitting idly by at the Extension office waiting for a problem to arise rather than conveying the image that we were educating to prevent problems and to produce positive program results. Conveyance of the message that Cooperative Extension is making a difference in people's lives in a positive manner with demonstrated impacts should be the intended purpose of writing a success story. In North Carolina, we have found that training and more training coupled with practice and feedback are most helpful in agent s understanding and practice of the right way to write success stories and to convey thecorrect message in the process. A before and after example of the value of agent training in a direct workshop setting analyzing their own stories is shown in the following two success stories that have been reported by the same agent in North Carolina s Extension Reporting System during the past year.

BEFORE PARTICIPATING IN TRAINING

Date: Tue Oct 21 12:53:30 EDT 1997
SMP #: 4
Local System: county g
Person Reporting: livestock agent x
A cattle producer who had done a good job breeding for replacement heifers and

selecting brood cows for genetic merit, was not pleased with the price his feeder calves were bringing. He purchased a bull he believed would improve his sale calves. Needing assistance evaluating whether the bull would be suitable for breeding his heifers and mature cows or just mature cows, he sought the opinion of his county agent. Upon studying the genetic makeup of the bull and the producers' e! ! xisting cow herd, purchase of a new bull was recommended. Conformation, Expected Progeny Differences and breed of the bull as well as current feeder steer market conditions made this bull unsuitable for producing optimum quality and type calves for NC markets. Analyzing market history, the calves from this new bull will net the producer $1875 per year more than the calves from the old bull.

AFTER PARTICIPATING IN TRAINING
Date: Tue Jun 30 15:49:03 EDT 1998
SMP #: 4
Local System: county g
Person Reporting: livestock agent x

A small beef producer marketing his calves as 300-400 pound feeders was not getting the full potential from his herd of good quality brood cows. Through Extension educational efforts, this producer was convinced of the benefits of cross-breeding and using performance-tested bulls that would produce heavier, high market-value calves. He sold his old bull and bought a new bull from a state! ! performance-testing station. Calculating genetic improvement and the value of heterosis, calves resulting from this careful crossbreeding program will weigh 15-20 percent more than previous years calves and show an increase of $.15/pound in market value. Knowledge gained and practices adopted through Extension educational efforts will increase this farmer's proceeds from the sale of calves by $1150 in one year's time.

Difference

The second story that was reported several months following training indicates that the agent gained a clear understanding of writing success stories, both from communicating the program impact point of view, and also in knowing how to place Extension in a positive, proactive role as well. Therefore, as a result of such training and communication from NCCES administration as to how the information is being actually used for accountability efforts, the quality and quantity of reports entered i! ! n the ERS has continued to improve very rapidly.

Key Components of a Success Story

The six key components of a success story have been described earlier In this paper as the Problem, Program, People, Partners, Impact, and a Conclusion, or the PPPPI&C. Obviously, in successes where no partners exist, this component can be readily skipped. Such logic can also apply regarding a concluding statement when insufficient space isavailable, or the statement of program and Impact clearly communicate the story without further elaboration. An actual success story reported in the NCCES ERS reporting system has been analyzed to identify the six key components.

Heart Healthy Program Successful

Heart disease is the number 1 killer in Robeson County [Problem]. CooperativeExtension in cooperation with local h! ! ospital and Healthy Dept. [Partners] sponsorsquarterly "heart healthy" cooking workshops for the general public. Emphasis is on
health recipes and cooking techniques participants can use in their daily lives [Program].49 consumers participated in the three workshops [People]. Participants were surveyedseveral weeks following classes, and 73% indicated they had used class recipes or
modified their own recipes to reduce fat, sodium, or sugar. According the JADA (1996),
nutrition intervention saves on average $8000 per patient. Thus, for the small group
surveyed there was a savings of $64000 [Impact]. Due to interest of participants,workshops will continue quarterly [Conclusion].

Impact Focused
While the partners and concluding statement may be omitted when appropriate, our experience in using success stories for accountability purposes has shown that It is imperative, though, to always include a statement of the problem, the Coope! ! rative Extension program, the people it serves and its actual impact. Program success should generally focus on the entire educational program that includes multiple program delivery strategies rather than on a single program delivery activity. Success should be demonstrated by actual outcomes, meaning actions taken, rather than intended outcomes or in educational gains of clients. That the information was actually used to make a positive difference should be indicated. From the North Carolina Cooperative Extension s point of view, happiness about an activity or statements of intentions to change are not sufficient to indicate a program success story.

Results

Success Story Examples

The following examples are actual success stories from recent accomplishment reports (NCCES, 1998), that have been written to include information that clearly communicates positive program results.

Reduced Cotton Tillage Program Produces Savings

Problems with wind and sand injury on cotton in the spring has resulted in Cooperative Extension focusing educational programs on reduced tillage farming methods. Acres of reduced tillage in Bertie County has increased from 500 to 20,000 in 1997. Most farmers are strip tilling, using hooded sprayers and never cultivating the cotton. Educationalprograms and farm visits have assisted farmers in equipment selection adjustments,
along with herbicide selection and rates. Results have been the use of less herbicides,
reduced tillage trips, savings on land preparation time in the spring, reduced cultivations,
better weed control, increase in organic matter an! ! d better stands with no wind damage.
All these have resulted in a $487,500 savings to the County's farmers.

4-H Career Program Makes a Difference

Many high school students do not have the opportunity to see first hand what is involved in a career of their choice. Wayne County 4-H collaborated with a civic club to conduct a shadowing program in which high school students experienced a day with an adult in a career of their choice. The day ended with a luncheon to honor the students and recognized the adult volunteers. Each student had to write an essay about their experience and included remarks such as: "This day has helped me decide what I want to go to college for". Another student commented, "Through the 4-H career program I learned that what I thought I wanted as a career was not really for me. This program helped me see this before I invested my time in college preparing for a career."

P! ! lastic Waste Collection Program a Success

Each year thousands of ornamental plants are planted into Guilford county landscapes. The result is a stock pile of plastic nursery pots. Unfortunately these pots are not included in the current city recycling program. They are frequently disposed of through the county landfill. To prevent this a Recycling program was established by Cooperative Extension, with the cooperation of Plastics Revolutions, a recycling company which handles this type plastic. Television spots were conducted as well as newspaper articles published to alert people to handle these pots in a more environmentally friendly manner by means of a one day collection program. There were 5,500 lbs.of plastic collected which will be used to make new nursery pots and parking car stops. There were also 300 lbs collected which will be reused by backyard propagators for producing landscape plants.

Pesticide Container! ! Recycling Program Saves Landfill Space

Used pesticide containers can be a major environmental hazard. In order to assure that farmers and others properly dispose of such containers, the Caldwell County Extension Center is in its second year of conducting a pesticide container recycling program. This year, two educational programs were held to educate producers on the proper methods of recycling containers. Of the 128 that attended, 120 stated they will or are taking part in the program. So far this year, the program has resulted in the recycling of 700 two and one-half gallon containers, 100 five gallon containers and 6 fifty-five gallon drums. This has saved the county approximately 1150 square feet of landfill space. At $17.50/sq foot, the resulting savings is more than $20,000.00 for landfill space alone.

Family Budgeting Program Stimulates Action

Moving families off of welfare to work is a goal of Forsyth Count! ! y. The Cooperative Extension Service partnered with DSS, Goodwill Industries, and the JobLink Center to educate young mothers so they can improve their financial status. Classes were held at Goodwill Industries focusing on basic budgeting for parents who will be entering the work force. Two hundred participants increased knowledge of the family budgeting process as a means for developing a budget to fit their family's needs. At the end of the series, 150 limited resource participants stated they were now making a budget which

is helping them to prioritize their bills and start paying bills on time, which will improve their credit record as well.

Sawmill Efficiency Program Increases Income

There is a great need to increase the competitiveness and profitability of North Carolina's forest products industry. Extension programs focused on educational and technical assistance to North Carolina forest products manufacture! ! rs resulted in one sawmill operation making modifications to their dispatch system. The results reported by this one mill indicated a production gain of 10,000 board feet of lumber per day or increased income of $300,000 per year. While the entire wood products industry is served by Wood Products Extension, this one example is indicative of the many impacts accruing as a result of useful educational opportunities being provided in a timely and inclusive manner.

Conclusions

Conclusion

Often called silver bullets within the Cooperative Extension System, success stories have considerable utility in meeting accountability demands from multiple internal and external entities. Usually, those demands are for highly specific and concise information on program impacts and accomplishments. The concise and brief success story format provides much of the production framework to meet these accountability demands. Such diversity is shown by NCCES identification of 24 separate primary audiences for receiving accountability information. Sixteen additional audiences were identified as secondary for receiving accountability. Since even the secondary audiences are critical to the support of NCCES, altogether, these audiences account for forty separate entities who require accountability information in some format (NCCESTMTF, 1998). Use of the brief, concise and impact laden success stories have been ! ! shown to have great utility in meeting many of those audience s accountability needs/requirements.

In this time of performance based budgeting, budget defense at every turn, questions about program duplication or relevance, and yes, even questions that request information for supporting greater budgets and program expansion, multiple accountability needs exist. The Federal Office of Management and Budget requires only numbers of teaching contacts by Extension. Recently, the University of North Carolina System imposed a requirement for reports on the number of all non-degree credit activities Extension conducts, and what type delivery method was involved. Grant reports are strictly dictated by the granting entity, and may require program outcomes or may simply require an accounting of how the money was spent. Such examples clearly indicate thatsuccess stories are not the answer to all accountability needs of an organization. Yet! ! ,
based on the experience of NCCES during the past three years in which a proactive effort has been made to collect, store and creatively use program success stories, this means of accountability is highly adaptable and usable for a wide array of the many audiences who use or require accountability information from Extension.

Indeed, having a defined database to turn to in an instant not only provides accountability information users the information they require, but can also be highly impressive as well, due to the speed of the response to the request. Such speed and dependability for quality program impact information can produce highly positive responses from those who need such information. Thus, while staff continues to need to be trained in both development and use of program success stories, this commitment is well worth the time and efforts involved to accomplish the task. Program information available on demand o! ! r usable as deemed desirable for the agency is being shown to be a strong and highly valuable component of NCCES accountability system. Such program impact from a local or state system should be equally as valuable to other state systems as well. Perhaps the most important key is to have a vast supply of readily available program impact information available on demand as well as for organization use as planned or desired.

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Ask and You Might Receive: Collecting and Making the Most of Impact Statements

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

Impact and Accountability: Why Now?

The U.S. Department of Agriculture Cooperative State Research, Education and Extension Service (CSREES) began requesting impact statements from its cooperating state land-grant partners in the early 1990s. We recognized the value of the project being initiated, the annual creation of Agricultural Science & Education Impact reports for members of Congress. But we also quickly knew we needed a better system to respond to these requests for impact statements. In the early years, we submitted 15 or 20 impact statements, based on news releases generated throughout the year. The University of Georgia Extension Service was already requiring its agents to write impact statements. But they used them only as a reporting tool for district heads. They were not viewed as a real source for accountability.

In 1997, the communications units of the UGA College of Agricultural and Environmental Sciences were merged into a single Education, C! ! ommunication and Technology unit. As we began to serve the entire college, we had a new incentive to gather impact statements from the extension, research and teaching faculty. Dean Gale Buchanan, who had played a role in getting the national impact reporting project under way, enthusiastically supported our plan.

The dean had ample reason to be supportive. The college is under increasing pressure to respond quickly with specific examples of the college's impact on the people of Georgia. Accountability -- showing the clear impact of the college -- had become undeniably important to maintaining and improving our state funding. Requests (often demands) for information come to college administrators from USDA, state legislators, grantors, donors, the university administration and the Board of Regents.

Method

Getting from Here to There: the Georgia Impact System

Beginning in mid-1997, the ECT unit began devising the current system, which starts with e-mail instructions that go out in September to everyone in the college and include a form, samples, how the impact statements will be used and the deadline. Faculty and staff in all departments and counties are given the USDA categories and asked to submit their impact statements in one of those categories. At the same time, the dean

sends out a letter of support, which is extremely important, so people do not perceive this as just our project.

We set up a special e-mail address to which the college faculty and staff are asked to submit their impact statements. Someone checks the e-mail at that address regularly and saves the impact statements in WordPerfect files, sorted by category, as they arrive.

Within a month of the deadline, five or six writers take the impact statements and prepare impact reports. In ! ! 1997, we prepared fact sheets similar to the federal Agricultural Science & Education Impact reports. With the 1998 impact statements, though, we altered our approach. This time, the writers prepared briefs from the best submissions, sometimes grouping similar statements.

We then inserted the database of briefs, combined with the department or county name, congressional or legislative district for county impact statements, program area (extension, research or teaching) and key words, into a Web-based system so that anyone can search the database for quick information about what the college is doing. The searchable database is in the final stages of testing and should be on-line within a month. We will encourage everyone in the college to use it as a source for information for newsletters, speeches, reports, media requests, etc. It will simplify generating information for all of our impact-reporting efforts.

To improve the quality of the impact statements we g! ! et, we offer training sessions based on the training developed by the national impact writing team. It is required training for new county agents and is offered as an elective for agents at the annual Winter School. It is also offered to departments. Several of the departments have requested and have gone through the training, and their impact statements reflect a dramatic improvement.

The briefs are used in a variety of ways. A series of one-page fact sheets called "Your Money's Worth," patterned after the CSREES Science & Education Impact reports, are developed on a number of topics for statewide audiences or tailored for any congressional or legislative district. A standard series, based on topics, is available to the dean and others for handouts about the college's work. Others can be quickly developed and printed on request. The ECT artists designed the format, which was printed and is kept on hand like letterhead.

Our media team also uses the ! ! briefs as story ideas for print and broadcast features. The briefs are sources for ideas for the college's video newsletter, Ag Explorer. They provide a wealth of ready information for speeches, reports, newsletters, media fact sheets and other uses. And finally, (going back to the original need), we have a balanced, rich source of information for the annual USDA requests for impact statements.

Results

How's It Going? Results of the Georgia System

In 1997, the college submitted 435 impact statements. In 1998, we got a little over 500 -- so far. They're still coming in. Overall, the county statements are very strong, partly because they've been writing these statements for years, and partly because it's often easier to show direct impact from their work than from the work of researchers or state specialists. This year we have developed a "Hit the Issues" system with which county-based faculty can tailor their impact reports to specific state legislators and other critical local audiences.

In 1998, we submitted 125 impact statements, based on the statements we had received in the fall of 1997, to the national database for the CSREES impact reporting efforts. In 1999, that number jumped to 240 strong, well-written impact statements, based on the briefs we developed from last fall's impact statements. These briefs were also used for the Southern Regio! ! n (SERA-IEG-28) impact writing activity. The number of impact statements we submitted is noteworthy, considering the average number of about 20 submitted annually in 1993-97.

Perhaps a better measure of the success of these changes is the number of Georgia impact statements included in the national impact reports. The 1996 Agricultural Science & Education Impact reports included 12 impacts of the University of Georgia. The 1997 reports included 14 Georgia impacts. But in 1998, the first year our new system was in place, the number of UGA impacts in the national reports jumped to 29. Making those numbers even more significant is the fact that the national Impact Writing Team included a UGA writer in 1996 and 1997, but not in 1998, when the number of Georgia reports used more than doubled.

Conclusions

What Next? Refining the Georgia System

In the second year of defining the impact reporting process throughout the college and continually refining our system, it is abundantly clear to us that we need to continue defining and refining.

The need for training in impact reporting continues to be strong, and we need to keep on promoting it. There is still resistance, primarily from scientists, on writing impact statements and on having briefs written from these statements. Many believe it distracts them from their work and should be someone else's job. This view seems to be in the minority, but it's a vocal minority. The dean's continued support is crucial. Without his endorsement (and support from department heads and district heads) many faculty will simply ignore the annual request. Administrative support of both the impact reporting process and the associated training is vital to changing attitudes and developing the best impact reporting.

The need f! ! or impact reporting is too comprehensive to be done without the active participation of the whole college. We cannot check back hundreds of briefs, for instance, to eliminate errors. The briefs we feed into the system are only as strong, clear and accurate as the impact statements on which they are based. The on-line database should help us eliminate errors if the whole college stays active in the process. Continuing to update the submission form, too, will help cut down errors and will make the raw reports more easily adaptable. Continually communicating the needs of the system among ourselves and throughout the college, and continually improving the uses of the impact information and communicating the success of these uses throughout the college, will make the system stronger as time goes by.

Finally, we need to continually refine our marketing of this rich source of information about the college. We need to keep looking for ways to use this information as well as w! ! e can. We need to evaluate the usage and value of the products we already produce and continually consider other possibilities.

While we began developing this system as an answer to a national need for impact reporting, we have become increasingly committed to the concept that the best impact reported is tailored to specific local audiences. It is undeniable, for instance, that while the national impact reports were helpful last year, Georgia congressmen were able to see much more clearly the impact of the college on their constituents when they were hand-delivered impact reports compiled specifically for their congressional districts. This year, thanks

to the new on-line database, the 180 state representatives and 56 state senators will be able to benefit from the same kind of tailored impact reporting. Through this system, the many advisory groups, commodity groups, donors and countless others vital to our mission will be able to see clearly the impact of the colleg! ! e on the lives of Georgia citizens and the value of their commitment to the college's future.

Effects of "Biotech Foods: The First Harvest" on Knowledge, Attitudes, and Perceptions of Journalists for Newspapers in Metropolitan Markets in the United States Regarding Food Biotechnology

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

In Megatrends 2000, Naisbitt (1990) asserted that those who develop "high tech" must maintain "high touch" with the end users of the technology. Agriculture is perceived as slow paced and sustaining. What the public may not know is the rapid rate of change that biotechnology, specifically food biotechnology, has brought to agriculture. In 1996, the first year that transgenic row crops were grown in the United States, farmers planted 5 million acres with genetically modified seed. Farmers planted 30 million acres in 1997 (Re, 1997), and the National Agricultural Biotechnology Council (1998) estimates 65 million acres of transgenic seed were planted in 1998. This rapid rate of diffusion of innovations of agricultural technology may some day be documented as "unprecedented" in diffusion of agricultural innovations. Of much concern, as explained by Naisbitt (1990), is meaningful dialog with the end users of agricultural biotechnology. Most agricultural innovations are diffused among the users of the technology, the farmers; thus, there is little effort to influence consumer acceptance. Food biotechnology differs though, quite possibly because these agricultural technologies are perceived to have a direct effect on the food we eat. This "direct effect" launches food biotechnology into a public discourse, a discourse which, for the most part, is played out in print and broadcast media. The International Food Information Council (1997) reminds us that mass media play an important and significant role and serve as gatekeepers of food and health information. The Council says that these gatekeepers in cooperation with health professionals and educators control the written and verbal messages by which consumers base their perceptions, attitudes, and finally, behavior.

Science for many, journalists included, is a complex discipline. Wood (1994) suggested that rational responses are often abs! ! ent when the science is about one's food, health, or environment. So, he recommended that agriculturists go beyond the physical sciences and delve into social and behavioral sciences to address issues that influence affective behavior (values, morals, beliefs) and emotional response in addition to cognitive behavior (rational), that which can be reduced to empirical factual knowledge. Mazur's (1981) study of biotechnology found that, although few consumers voice disapproval of biotechnology research, media coverage that gave the appearance of a dispute benefited the opponents of the technology. He insisted that the public take any suggestion that a technology is risky seriously.

To learn how journalists and scientists felt about one another, Chappell and Hart (1998) sampled 2000

journalists and 2000 scientists. They found that neither group believed it was doing a good job of explaining science to the public. They concluded that those communicating scientific informa! ! tion to the public should engage in a systematic, continuing education activity exposing them to scientists and research processes.

Hallman (1995) examined the public's perception of biotechnology by asking consumers to respond to the term "genetic engineering." More than 20 percent of the consumers responded with negative impressions such as "frightened," "escaping virus," "Nazi/Hitler," "mutants" and "mad scientist." Only four percent of consumers mentioned "medical advances," better food" or "progress" while one-fourth responded with neutral thoughts such as DNA, plants, or people. Fifty-two percent of respondents in a national survey by the Office of Technology Assessment (OTA, 1987) replied that genetically engineered products were likely or very likely to present a serious danger. Still, two-thirds of these respondents believed genetic engineering would make life better. ! !

The most important factor in consumer awareness and understanding about science and technology is mass media (Rogers, 1983; Terry, 1994). But, we do not know journalists' knowledge about biotechnology nor their attitudes toward or perception of biotechnology. Rogers (1983) reiterated that mass media are the primary source to increase people's awareness about agriculture. He continued that mass media have great influence upon public perception, influence that he calls the Hypodermic Needle Model which causes "direct, immediate and powerful effects" (p. 272) by figuratively injecting information into society. Thus, the researchers wanted to know: What knowledge about, attitudes toward, and perception of food biotechnology do metropolitan journalists hold? and; Can these traits be influenced by a publication designed to inform journalists about scientific, environmental, and health issues regarding food biotechnology?

The research objective! ! s of this study were to:

1. Investigate and determine the knowledge, attitudes, and perceptions held by metropolitan journalists regarding food biotechnology.
2. Investigate the relationship among knowledge, attitudes/perception regarding food biotechnology, and selected personal and situational characteristics of journalists.
3. Compare the knowledge, attitudes, and perceptions of journalists who were exposed to a treatment publication, to those of journalists in a control group.

Method

The target population for this study was journalists practicing at the nation's largest newspaper organizations. Ninety-six news organizations were identified for inclusion in the study. These organizations had an accumulated daily circulation of almost 30 million. Their circulations ranged from 105,624 to 1.76 million and the mean circulation was 308,272 (Levins, 1997). From these news organizations a sample of 376 journalists representing the "beats" of business, environment, agribusiness, features, food, health/medical, and science/ technology was identified. These beats were chosen based on research by Duhe' (1994) and Peterson (1996), who suggested that benefits and risks associated with biotechnology cross a variety of disciplines; therefore, public discourse in the news may be framed in many contexts.

To institute the experiment in the study, a posttest-only control group design was used to identify approximately equal representation! ! of journalists in the treatment and control groups. The treatment group was made up of a total of 191 journalists while the control group had 185 journalists.

This study involves descriptive research with correlation elements. The researcher developed a sixty-three item measurement instrument based on related research by Duhe' (1994), Barton (1992), and North Carolina Nationwide Survey on Biotechnology (as cited in Duhe', 1994). The instrument was designed to measure knowledge, attitudes, and perceptions. These three constructs were quantified in nine specific scales to determine 1) journalists' knowledge, 2) journalists' acceptance of genetically modified organisms, 3) journalists' acceptance of specific food biotech practices, 4) journalists' attitudes toward effects of biotechnology, 5) the level of importance journalists place on food biotechnology research, 6) journalists' faith in sources of food biotechnology information, 7) the level of importance jour! ! nalists' place on investigative reporting style when the subject is about food biotechnology, 8) journalists' attitudes toward potential obstacles to acceptance of food biotechnology, and 9) journalists' perceptions regarding adoption/acceptance rate of food biotechnology as a farm practice.

Knowledge was measured using multiple choice items. Attitudes and perceptions were measured from responses on Likert-type scales. Content validity was determined by a panel of twelve experts consisting of scientists from journalism, agricultural education, crop science, entomology, medicine, and biochemistry at the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, Texas A&M University, and Texas Tech University. A pilot study of journalists in smaller Texas newspapers (20,000-75,000 circulation) established instrument face validity and internal consistency of the scales.

Data collection involved seven contacts with journalists in the s! ! ample during a twelve week period beginning February 5, 1998: 1) an introductory letter was forwarded to the entire sample including a treatment publication enclosed with the treatment group's letters, 2) the original questionnaire and cover letter, 3) a postcard reminder following the original questionnaire, 4) a series of follow-up telephone calls made randomly to one-third of the non-respondents (n=115), 5) a second questionnaire and cover letter, 6) a postcard reminder following the second questionnaire, and 7) a second series of telephone calls made randomly to 50% of the non-respondents (n=169).

Usable questionnaires (88 of 376) received during a 3-month data collection period ending April 30, 1998, served as the data source for this study. Because date of response was not correlated with the attitude/perception scales and because date of response and knowledge yielded a statistically significant but "low" (Davis, 1971) correlation (r=.21, p=.046),! ! the researchers made inferences to the target population based on data from the responding sample. Data were analyzed with SPSSX (SPSS, Inc., 1998).

Results

One hundred-four (28%) journalists representing 62 news organizations returned research instruments. Sixteen journalists returned incomplete instruments, replying: "Our policy does not allow us to participate in surveys." "I admire your persistenceàbut personal views are inappropriate for a journalist to discuss." "I do not do surveys." "I don't know enough about the subject." "I'd rather remain objective regarding topics I may write about." "We do not cover this subject." and "I do not wish to participate." Eighty-eight (23%) journalists representing 54 of 96 news organizations in the sample returned usable questionnaires.

Almost fifty-seven percent (n=50) of the responses were from female journalists; forty-three percent (n=38) were male. Ninety-five percent (n=83) of the respondents had attained Bachelor's degrees, 15.9% (n=14) held Master's degrees, and 2.3% (n=2) had doctorates. ! ! Forty-two of the responding

journalists had practiced professional journalism for more than 20 years. Another 34 had practiced professional journalism from eleven to twenty years. The median number of years of professional experience 19.7 years. Half of the journalists identified their primary responsibility as "Editor" and half considered their primary responsibility as "Writer." The median number of years of professional experience of the editors and writers was 19.5 and 20 years, respectively.
In addition to professional experience, journalists are influenced by their backgrounds. Eighteen of the respondents indicated that their families owned agricultural property while 20 indicated that they had lived on a farm or ranch. Eighty-three percent (n=72) of the respondents indicated they had read or studied about biotechnology in the previous six weeks. Ninety-two percent (n=81) of the journalists indicated they were "aware" or "! ! somewhat aware" of how biotechnology will affect their food, health, and environment. Thirty-nine percent of the journalists had contributed to articles on biotechnology. Eight (9%) respondents were agribusiness (i.e., farm, agriculture) journalists while 80 (91%) of the respondents covered other beats.

Results Related to Research Objective One
Nine items measured journalists' knowledge about food biotechnology. The reliability of the knowledge scale was .67. Four multiple-choice answers were available on each knowledge question thus one might expect 25% correct answers by random selection or guessing. Scores revealed a lack of knowledge about food biotechnology; the mean for the sample was 30.2% correct answers. On the other hand, 92% of the journalists indicated they were "aware" or "somewhat aware" of how biotechnology will affect their food, health, and environment and almost 72% of the respondents indicated that their le! ! vel of scientific knowledge was "average," "somewhat high," or "high." Actual measurement of their knowledge (30.2% correct) of biotechnology reveals much lower levels of knowledge than what journalists perceive of themselves.
The instrument contained 40 items designed to assess journalists' attitudes or perceptions regarding food biotechnology. Reliability of the eight attitudinal/perception scales ranged from .72 to .92. The first attitude or perception involved journalists' acceptance of genetic modification of organisms (GMOs). Journalists believed genetic modification of humans to be the least acceptable use of biotechnology (Table 1). Genetic modification of animals followed with nearly 41% (33) selecting "highly unacceptable" or "somewhat unacceptable." Journalists generally accepted genetic modification of forest/landscape plants, food crops, and microorganisms.

Table 1. Descriptive Sta! ! tistics Concerning Journalists' Acceptance of
Genetically Modified Organisms

What is your current level of acceptance of genetic modifications of the following organisms?		
1=Highly unacceptable, 2 = Somewhat unacceptable, 3 = Somewhat acceptable, 4 = Highly acceptable	Responses	Mean
	1 2 3 4	

a....Microorganisms.....5.....12.....41.....21.....2. 99
b....Forest/landscape plants.....4.....9.....38.....30.....3.16
c....Food Crops.....4.....9.....42.....26.....3.11
d....Animals..... .....15.....18! ! .....39.....9.....2.52
e....Humans.....30.....36.....21.. .....5.....2.01

Cronbach's coefficient alpha = .87.....Scale mean =2.77

Next, journalists indicated their levels of acceptance of four food biotechnology practices. A large majority (81%-91%) of the journalists considered biotechniques to create insect resistant corn and cotton, slow vine-ripened tomatoes, and herbicide resistant soybeans as "highly" or "somewhat acceptable." The scale mean was 3.61.

A third scale measured their beliefs regarding effects of biotechnology on world hunger, healthful foods, family farms, and fish and wildlife. Generally, journalists were ambivalent about the effects of food biotechnology on healthful foods, fish and wildlife, and family farms. However, they believed that there would be a positive effec! ! t of biotechnology on world hunger.

Journalists were then asked their opinions of the importance of biotechnology research leading to seven possible outcomes. All seven were rated as important. Most highly rated were research to reduce pesticides, to benefit the environment, and to develop safer foods. Less important was research on adding nutritional value to foods.

A fifth area of inquiry involved journalists' expressed faith in seven selected sources of information on food biotechnology. Journalists' revealed most faith in statements about food biotechnology from university scientists (mean=3.76 on a 5-point scale). Journalists also had high faith in health professionals (mean=3.71). Journalists' faith in statements made by government agencies (mean=3.09) and by farm groups (mean=2.85) was moderate. They held less faith in statements made by biotech companies and food companies. Journalists indicated least faith in statements made by celebrities.

Jour! ! nalists responded next to questions about specific journalistic styles (Bare, 1995). They viewed as most important that journalists investigate claims and statements made by biotech companies, by food companies, or by activist groups, and (to a lesser extent) by university scientists. Too, they believed that journalists should analyze and interpret both undesirable and desirable consequences of food biotechnology. Least important was for journalists to mirror events and avoid interpretation.

Journalists were asked to express the degree to which they believe selected obstacles were to their acceptance of biotechnology in food production. Religious/ethical concerns about "tampering with nature" was rated low as an obstacle to their acceptance (Table 2). On the other hand, fears of genes moving unchecked to other life forms, of food safety consequences, and of environmental harm were moderately high.

Table 2. Descriptive Statistics Concerning Potenti! ! al Obstacles to Acceptance of Using Food Biotechnology

To what degree do you consider each of the following to be obstacles to your acceptance for using biotechnologyin food production?
1 = Very low, 2 = Low, 3 = Neutral,
4 = High, 5 = Very high

Frequencies.....Mean

	1	2	3	4	5	
a.....Religio us/ethical concerns about "tampering with nature." (this item omitted from scale)	25	18	24	12	6	2.48
b.....Fear of genes moving unchecked to other plants,insects or microorganisms.	5	9	16	36	19! !	3.65
c.....Fear of food safety consequences	7	9	21	31	17	3.49
d.....Fear of environmental harm	2	12	17	33	20	3.68

Cronbach's coefficient alpha = .86.....Scale mean = 3.61

Finally, journalists indicated their beliefs concerning rate of acceptance of food biotechnology as a farm practice. On average, journalists perceived that farmers would accept food biotechnology as a farm practice within 3.1 years while consumer acceptance will take 7.7 years.

Results Related to Research Objective Two

Knowledge was related to journalists' reported awareness of biotechnology's effect on food, heath, and the environment. A correlation coefficient of .22 ($p<.05$) indicated that as journalists' awareness of biotech's effects increased,! ! assessed knowledge also increased. Too, as their knowledge increased, journalists believed that it was less important that they use an investigative reporting style ($r=-.27$, $p<.05$). None of the personal/background characteristics of journalists were related to knowledge. Journalists' acceptance of genetically modified organisms was related to their primary responsibility at the news organization ($rpbis=.40$, $p<.01$), to whether or not they had contributed to an article on biotechnology ($rpbis=.29$, $p<.05$), to their perceived level of scientific knowledge ($r=.33$, $p<.05$), and to their perception of the rate of acceptance of food biotechnology as a farm practice ($r=-42$, $p<.01$). No relationships were found between journalists' level of acceptance of biotech practices and personal or situational variables or other attitudes or perceptions. There were two statistically significant relationships between journalists' beliefs concerning the effects of bi! ! otechnology and other variables: Journalists whose families owned agricultural property tended to believe biotechnology would have more positive than negative effects on fish and wildlife, world hunger, family farms, and healthful foods ($rpbis=.24$, $p<.05$). Also, as journalists' perceived level of scientific knowledge increased, they were more likely to consider biotechnology to have a positive effect ($r=.25$, $p<.05$). There were no relationships discovered between journalists' ratings of the importance of food biotechnology and any other variables. However, there were two statistically significant relationships between journalists' expressed faith in sources of food biotechnology information and background variables: Their level of faith was related to their primary responsibility at the news organization ($rpbis=.27$, $p<.05$) and to whether or not they had lived on a farm or ranch ($rpbis=.23$, $p<.05$). Next, journalists' rating of the importance of an investi! ! gative journalistic style was related to whether or not they were raised on a farm or ranch ($rpbis=.26$, $p<.05$), to their expressed awareness of biotechnology's effects on food, health, and the environment ($r= -.24$, $p<.05$), and to their recency of

study/reading about biotechnology (r=-.25, p<.05). Finally, the degree to which journalists perceived various obstacles to acceptance of biotechnology was related to their level of awareness of biotechnology's effects (r=-.19, p<.05) and their primary responsibility in the news organization (rpbis=.32, p<.01).

Results Related to Research Objective Three
The researchers used t-tests to compare the knowledge, attitudes, and perceptions between the treatment and control groups. There was no evidence to support that the knowledge, attitudes, or perceptions were different.

Conclusions

Conclusions Related to Objective One
Journalists' knowledge was low and similar to knowledge levels of consumers (Bruhn,1997). As knowledge of journalists increased, they increasingly considered the effects of biotechnology to be positive. Too, journalists had fears related to human and environmental health that they considered to be obstacles to their acceptance of food biotechnology. If their knowledge of the actual technology was so low, then what are their perceptions based on? They are not based on a thorough knowledge of the technology: thus, they may be based on other experiences with science and technology: "Alar scare," "killer bees," BST in milk, the clone "Dolly".
Real or not, the perceptions consumers hold about the safety of biotech foods are likely to sway regulatory decisions, affect research and develop, and ultimately delay the diffusion of innovations even if they are scientifically proven to be safe! ! (Armstrong, 1991). Journalists confessed that they do not have or desire to have "walking around knowledge" about biotechnology. Thus, they request easy and rapid access to information. Because journalists play a significant role in public education, influence state and national legislative policy, but do not have experiences by which to reference happenings in agriculture and food production, biotechnology education targeting journalists is important.
Genetic modification of microorganisms and plants was considered acceptable while biotechniques in animals and humans were considered unacceptable, supporting the findings of Hoban (1990). Biotechniques that create insect resistant corn and cotton, slow vine ripened tomatoes, and herbicide resistant soybeans were acceptable.
Journalists believed that biotechnology would have a positive effect on world hunger, supporting Benedict's (1998) assertion that biotech crops may increase yield per acre. ! ! Journalists considered food biotechnology research that benefits the environment and reduces the use of pesticides as most important. Hoban (1996) found higher levels of consumer acceptance for agricultural biotechnology that offers relative advantage (e.g., human and environmental health, food quality).
The attitudes of journalists were more positive toward plant biotechnology than animal biotechnology; so, these practices should be dichotomized and identified as individual and different practices, rather than identified by generic nomenclature as simply "biotechnology." Because journalists show support for plant biotechnology innovations and believe that the benefits outweigh the risks related to health, food quality, and the environment, the agricultural and food industry may

need to focus on research and commercialization of products that meet these criteria.
Journalists had greatest faith in statements made by university scientists an! ! d health professionals, supporting research by Hoban and Kendall (1993). Journalists, in general, had moderate levels of faith in spokespersons from government agencies and low levels of faith in farm groups, biotech companies, and food companies. Journalists had least faith in celebrity sources. Journalists believed it was most important that they investigate claims and statements made by biotech companies, food companies, or activist groups, and (to a lesser extent) by university scientists. They believed that journalists should analyze and interpret both undesirable and desirable consequences of food biotechnology. Journalists did not believe they should simply mirror events and avoid interpretation. Because journalists have greatest faith in university scientists and health professionals and less faith in biotech companies, private biotechnology companies may seek new and stronger partnerships with universities and health organizations.
Journalists consider! ! ed fears related to genes moving unchecked to other organisms, food safety consequences, and environmental harm, as obstacles to their acceptance of using biotechnology in food production. There is skepticism because industry and government have endorsed technologies without comprehensive analysis and open public dialog regarding the research (Lewis, 1990).
Journalists believed that farmers would accept food biotechnology as a farm practice within three years while consumer acceptance would take almost eight years. This finding supports earlier research that found that about 50% of the consumers in a national survey thought that genetically engineered foods purchased at supermarkets were already providing benefits to them while three-fourths anticipated benefits from biotech foods within the next five years (IFIC, 1997).

Conclusions Related to Objective Two
Correlations indicated that as journalists' awareness of biotechnology's effects on f! ! ood, health, and the environment increased, assessed knowledge also increased. Too, as their knowledge increased, journalists believed that it was less important that they use an investigative reporting style. Journalists' knowledge about biotechnology was relatively low; therefore, although investigative/interpretive reporting may be the most labor-intensive style of reporting (Denton, 1996), most journalists will employ this style. There were no relationships discovered between journalists' level of assessed knowledge about biotechnology and personal or situational variables or other attitudes or perceptions.
Data strongly supported that editors were less accepting of genetically modified organisms than were writers. The level of acceptance of genetically modified organisms increased among journalists with greater perceived levels of scientific knowledge and who had contributed to an article about biotechnology. Also, those journalists who perceived a more ra! ! pid rate of acceptance of food biotechnology as a farm practice had a higher level of acceptance for genetically modified organisms. There were no relationships discovered between journalists' level of acceptance of specific biotechnology practices and personal or situational variables or other attitudes or perceptions.
Journalists whose families owned agricultural property tended to believe biotechnology would have positive effects on fish and wildlife, world hunger, family farms, and healthful foods. Too, as journalists' perceived level of scientific knowledge increased, they were more likely to consider biotechnology to have a positive effect. Fowler, Hodge, Drees, and Trew (1979) support this conclusion with a finding that most journalists do not have experience by which to reference happenings in agriculture.
Journalists' faith in sources was higher among writers than among editors. Schudson (1995) who discovered that the social interaction bet! ! ween reporter (writer) and sources builds confidence in the

exchange supports this outcome. Also, journalists' level of faith in sources was greater if they had lived on a farm or ranch. This finding is supported by marketing research of Schoell and Guiltinan (1995) who found that consumer wants, motives, perceptions, attitudes, knowledge, personality, and lifestyle are influenced by family, friends, class, and the culture in which they live.

Journalists with greater awareness of biotechnology's effect on food, health, and the environment and those who had lived on a farm or ranch considered it less important to do further investigation or interpretation of statements made by sources. Also, writers considered specific obstacles to acceptance of biotechnology in food production to a lesser degree than did editors. Often researchers mistakenly consider the relationship between reporter and source as the most important link (Tuchman, 1980). However, Solomon (198! ! 5) believed that the most powerful influence may be relationships between reporters and editors. Too, the greater the journalists' awareness about food biotechnology's effect on food, health, and the environment, the lower the strength of specific obstacles to acceptance of food biotechnology. Bruhn (1997) who concluded that lack of awareness of agricultural practices and little knowledge about biotechnology drove people to oppose products of biotechnology supports this conclusion.

Because almost 5% of the journalists responded that farmers or consumers would never accept food biotechnology as a farm practice, one might expect some continued opposition to biotechnology. This opposition, although small in size, will continue to have a vocal presence in the media due to the marketability (e.g., controversial nature, sensational nature) of the opposing side in the biotechnology debate. Writers perceived that farmers and consumers would accept food biotechnology as! ! a farm practice more rapidly than did editors. This finding was similar to those of Breed (1955) who found that journalists' in editorial and managerial positions, in general, held more conservative views than did writers.

Journalists will continue to employ an "investigative/interpretive" style of reporting. Journalists' knowledge and the complexities of innovations in biotechnology will influence the extent to which journalists employ "investigative/interpretative" style reporting. Because "news" must be marketable and articles about biotechnology must compete with other stories for "play" in the newspaper, editors may be predisposed to choose news with sensational content. Negative consequences of innovations may be featured more often than the benefits or scientific progress resulting from an innovation. Journalists attached a high level of importance to human health, food quality, and environmental enhancements brought by biotechnology. These elements should be the focus of extensive research! ! and of educational messages. Because the acceptance of food biotechnology was greater among writers than among editors and because news editors may control the news by omitting or burying a story, an awareness campaign for editors may be warranted.

We Grow Ideas: A Theme and Marketing Plan for the University of Kentucky College of Agriculture

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

The difficulty of developing a common unifying image for Colleges of Agriculture or Colleges of Agriculture and Life Sciences is readily apparent. Most Colleges of Agriculture are not nice, neat packages of common subject matter. Just look at what our subject specialists do: animal scientists test bulls, plant scientists study the interactions of soil, plants, and the environment, family and consumer scientists analyze food labels and insurance needs, 4-H programs are geared for campers, classroom groups, and clubs. Further complicating the issue, most colleges of agriculture are located in land-grant universities and have three primary missions: outreach, research, and teaching, with quaintly historic but possibly unfamiliar names such as Cooperative Extension Service, Agricultural Experiment Station, and Resident Instruction. (OH, BOY)

We, at University of Kentucky College of Agriculture, are no different. What unifies us? And how can we identify and describe that uni! ! fying theme in just a few words? That's the task we set for ourselves. We felt that the College didn't present a strong profile for people to respond to. Rather, we surmise, most Kentuckians would respond to the image of Extension, for example, without realizing its relationship with the College. Our goal was to establish the interconnections among the three programs within the College of Agriculture. In fact, our foremost goal was to unify the tripartite division into an image of one seamless College. The dean supported this vision, but we had to convince administrators and other key players that buying into this concept would not undercut their individual fiefdoms.

We wanted a theme that would unify the diverse subject matter and at the same time, within a few words, create a favorable image for the UK College of Agriculture. We also believed that if we devised such a theme, it would give us an anchor for a variety of media messages and marketing pieces badly needed by ! ! the college.

Method

As members of the Public Relations & Marketing section of Agricultural Communications, we approached the problem of a unifying theme by the best method we knew û brainstorming. During our session we realized what a seasoned group we were; indeed, we averaged more than 20 years of

experience apiece, and we knew the College of Agriculture. But we needed the right combination of words to help everyone else know us.

We also wanted more than those few words. We wanted a concept that would launch a marketing campaign for the UK College of Agriculture, "the best kept secret in the state," according to our dean. To achieve this we had to change the way we worked.

In the past we had done piecemeal work, as if we were a factory production line. Publications were produced individually to meet client demands. This time, we wanted to be in the driver's seat, and we wanted a coordinated cluster of pieces that fit together, so that the whole was greater than the sum of! ! its parts. And we wanted to be able to build on these first pieces so that we didn't have to start from scratch each time. We knew that the Extension marketing committee was gearing up to ask for some fresh materials from our section; we knew that the administration needed to promote research and graduate studies within the College to get its share of state funds earmarked for that area; and we knew that the College's undergraduate recruitment materials were already several years old and would soon need to be updated. If ever we were to implement a theme that could cut across all of the areas of the College making demands on us, if ever we were to unify the College's image and our efforts, this was it. The time was right, ripe.

We also had the impetus to think fast: the ag alumni director, always on the lookout for novelty items, had approached us about doing a bumper sticker. Her arsenal included lapel stickers, balloons, shirts, mugs, key rings, window clings, and m! ! agnets, but she needed something new for the ag alumni summer chapter meetings and big fall alumni event. She was fresh out of ideas after 10 years on the job and suggested "borrowing" a slogan and concept from another ag college. She showed us the sample. We hesitated. Although borrowing is a tried and true Extension method, we weren't sure that the borrowed slogan sent the right message or met our needs. We already had the idea of coining a new, unified message. We certainly didn't want two messages out there at the same time, competing or perhaps conflicting with one another, certainly confusing our audiences. So we agreed to work on the bumper sticker as it was handed to us; at the same time, we knew that now was the time to come up with our own message.

So we set to work. Diligently. Methodically. Two hours and three dozen donuts later, we had two bumper stickers, ours and hers. Are you ready? Here it is: We Grow Ideas. It fit our goal, to create a slogan t! ! hat was short yet described what we did in the College.

We really liked it, but the alumni director wasn't so sure. She left hers and ours on the dean's desk to get his feedback. We held our breath, crossed our fingers, wore our lucky socks to work, and lobbied hard. Finally the word came back: ours. (P.S. The alumni director came on board once she realized the bumper stickers would be paid for from the dean's budget, not hers.)

Results

DISCUSSION

So now we had not only a bumper sticker, but also a theme and concept to market the college. In addition, we had a deadline. It was now late spring, and our first big rollout would be at our State Fair in August. (Our State Fair is a big deal. Some 750,000 people attend it in Louisville; the catalogue is 1 " thick with tiny type; and there's even a state law that school children are exempt from classes to attend.) We would have to compete for fair goers' attention against cotton candy, the midway rides, and the Wild Girl of Borneo as well as commercial exhibits that range from glass carving knives to aluminum window replacements to baby chicks hatching to cars and glossy farm equipment.

Against this cacophony of sight and sound, we had to make the College of Agriculture come alive visually and aurally. Each year we faced this challenge; each year we tried hard but had never truly succeeded before. We were determined that this year would be different.! !

Given our short time horizon we enlisted the support of our entire team: exhibit designer, graphic designer, videographer, photographers, writer, editor, carpenter. Everyone contributed ideas, energy, time and more ideas and time to produce the overall exhibit. We crossed function lines (the editor wrote copy, the photographers suggested design elements, the writer became the team cheerleader) in an all-out effort to succeed.

We decided the exhibit would feature a video as its centerpiece. That video had to be visually stimulating so fair goers would stop. We didn't want a standard university, institutional approach (preppy students, administration buildings with Ionic columns), but despite a generous budget we couldn't afford the high-tech techniques of an MTV video. Nonetheless, our exhibit had to grab the fair goers by the throat and pull them in. (Remember, we are competing with the likes of the Wild Girl of Borneo.) And ours still had to communicate the tri! ! partite mission of the UK College of Agriculture. Finally, we need these pieces to work after the fair for other venues.

The exhibit we created in our minds would satisfy all of these demands. It would fill a space 20 feet by 40 feet, would include a few large, dramatic, backlit photographic transparencies on the outside grid, and a video with sound to keep people's interest. We reviewed our 1997 State Fair exhibit (which also included a video) and found the whole to be very busy, so we opted for simple and sophisticated. But we knew the power of freebies, so we decided to give away bumper stickers.

Sustaining fair goers' interest for very long would be difficult, if not impossible. After all, the nearby baby chicks are adorably cute, the irresistible aroma of popping corn is wafting through the air, and the midway rides and blue ribbon quilts are calling. We assumed that our audience was in tune with commercial television and might be "hardwired" for t! ! he 30 to 60 second commercial. With that in mind we set up the following conceptual model for the video: Four segments, each about 60 seconds long, with a beginning, middle, and close. The four segments would be an overview of the College, outreach, teaching and research. The beginning would be the theme, "We Grow Ideas: UK College of Agriculture," and the end, if possible, would repeat the theme. The segments would be butted against each other, so that even if a viewer saw only one "commercial" he or she would have a sense of the image of the College and would have heard our message.

Once this video was produced, we could take the overview segment and match it up with any other segment for a particular audience. We could also produce additional detailed segments in support of the particular area, such as teaching, to create a tiered piece: overview, general land-grant mission area, particular program successes and highlights. In this way, we could ha! ! ve a concatenation, a series of interconnected videos that contained a common theme and message.

We took our exhibit team through its paces, designing and building the actual display, selecting images, crafting text and captions, expanding our bumper sticker phrase into key components that would work as the shooting script for the video, the content for the exhibit, and the foundation for our future marketing efforts.

We met our deadline: the exhibit, with its video centerpiece, was installed by opening day of the fair. Before we explain what happened next, we'll let you see the video.

What happened next? The president of the university received an e-mail message from a university employee in another sector complimenting us on the exhibit and video, and in particular singling out a line of copy û "we grow ideas in the fertile minds of our students" û as capturing the university's mission. The Dean quoted from the text for an entire week in September a! ! t events leading up to our

big fall alumni Roundup. He repeated his theme to a variety of audiences "under the tents," including Farm Bureau, Rotary, the mayor, prospective students, alumni and faculty, and a group of outstanding ag College staff members. (In fact, he seemed so fond of our phrases that Dr. Witham jokingly asked him for royalty payments instead of a pay increase this year.) Several months later, in November, the associate dean for instruction was still quoting from our words during his opening remarks at the College's Scholarship Banquet (850 in attendance, including students, parents, faculty, and donors). And the College's fleet of motor pool cars now sport our bumper stickers; at the statewide Extension conference in January 1999 the parking lot was filled with university and private cars carrying our message.

Also at that same Kentucky Extension conference several marketing pieces for Extension were rolled out based on "We Grow Ideas:&qu! ! ot; a video (with a coordinating jacket), a 4-color brochure as well as a black and white version in PDF on the web for counties to print out as needed, and 14 copies of the same tabletop display available for use statewide. And just this past week we learned of a presentation based on our theme that counties will be able to individualize with their own accomplishments when they talk with their Extension advisory councils or other local groups.

In the works are car window clings (the geriatric alumni set isn't as fond of bumper stickers as the alumni director had predicted), a brochure to attract students to our summer positions as Extension interns in the county offices using the bumper sticker as the front panel, and our own public relations and marketing section web page. So we feel good about our accomplishments in the past nine months.

Conclusions

In a more perfect world, we would have used surveys and/or focus groups to determine the current image of the College of Agriculture before we actually produced any materials. And we would have set in motion the machinery to track and evaluate the impact of our campaign before the first bumper sticker was handed out. However, exigencies of the situation precluded those. First, we were under time pressure. We had to act fast with the best knowledge we had on hand. Second, because the tradition of marketing the College of Agriculture had been scattershot and often focused on only one of the three major mission areas, rather than the College per se, we were entering new territory for us, without a roadmap. We successfully navigated the terrain, but we don't recommend the experience. In the best of all possible worlds, there would always be time for research and planning. We intend to start in on these areas before we add more pieces to our campaign to grow ideas.

An Exercise in the Extreme: The Challenges of Creating a Multimedia Museum In-House

A Paper Presented to the Southern Association of Agricultural Scientists
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Background

On September 18, 1998, University of Georgia President Michael Adams cut the ribbon to the new College of Agricultural and Environmental Sciences Activity Center, an alumni and recruiting facility. The following are the perspectives of Shannon O. Wilder, one of the lead designers of the project, and Faith Peppers, coordinator of the projectÆs writing team. Contributions were also made by Carol Ness, the other lead designer. Together, the aim of these perspectives is to analyze the challenges, drawbacks, and benefits of taking on a large multimedia project in-house for the first time.

Shannon O. Wilder:

The Genesis of An Idea

From the outside of the historic Four Towers Building on the east campus of the University of Georgia, Carol Ness and I could tell that it was an agricultural building. As soon as we stepped through the door, the hundreds of chickens who called the building home just reinforced that idea. Our blueprints showed that the row! ! s of birds were occupying the exact location where the UGA College of Agricultural and Environmental Sciences planned to put a new multimedia exhibit hall to showcase the past, present, and future of the college.

"Well, I guess that settles it," I shouted over the noise of the chicken house; "we are going to need some really loud speakers for these interactives."

As graphic designers employed by the UGA College of Agricultural and Environmental Science's Education, Communication, and Technology Unit, Carol and I were in the unique position of heading up a major design project for the Department of Development and Alumni Relations, led by Louise Hill. The Activity Center was the dream of countless alumni of the college to build a facility that would serve not only as a meeting place for alumni events but also as a place for recruiting new students. Within this facility, we were asked to design an interactive exhibit hall that would ap! ! peal

to the varied generations that visited the Activity Center.

The project was significant for us in several ways. First, it was a project that we had courted and won from an Atlanta exhibit company. It also allowed us to stretch our creative muscles and bring to the ECT unit a high-profile project that would, by the time the year-long production ended, use and expand the talents of almost every member of the unitÆs creative staff.

In-House vs. Out-Source

The decision to produce such a high-profile project in-house was not an easy one. From a design standpoint, the exhibit hall was a monumental task because of the amount of information and people that had to be coordinated in order to produce the exhibits. The drain on employee resources, the long production schedule that precluded any new work, as well as the unexpected aftermath of the project were just a few of the problems the ECT unit faced throughout the year.

The Activity C! ! enter is an exhibit space containing three interactive kiosks about undergraduate academic majors, the College's history, Hall of Fame members, the Ag Alumni Association, as well as current scientific agricultural research. All of it was designed and produced by members of the ECT staff, the Agricultural Engineering staff, and a representative from University Computing and Networking Services (UCNS), who provided technical support for the development of the interactive programs.

The exhibit company originally contracted to design the exhibit hall already had experience working on a similar project at the University of Georgia. The other end of the Four Towers Building currently houses the UGA Visitor Center which features many static exhibits, as well as an interactive touch-screen program about the university. As with the Visitor Center, the Atlanta exhibit company did not bid to produce the interactive programs for the CAES Activity Center. They would build cas! ! ings for them but were not at that time in the multimedia business. The Visitor Center programs were instead produced on campus by University Communications.

Louise Hill, the director of development and alumni relations, started work with the company as soon as the blueprints for the CAES Activity Center were close to being finalized. However, after seeing an exhibit that Carol and I had designed for an interactive children's museum in Augusta, Georgia, the year before, she invited us to come to a meeting and evaluate the exhibit company's preliminary designs. Initially, evaluation was all she expected from us, but everyone was surprised at how the meeting turned out.

The Atlanta company's concepts were mediocre at best. The designs were solid and reasoned, but the concepts behind them were weak. It was obvious that the brochures and literature that Louise had given the company for reference had been largely ignoredùexcept for the one on horticulture.! ! The exhibit designer seemed interested only in an urban audience's perceptions of agriculture. Reasoning that most people who walked into the exhibit hall would have the same urban perceptions of agriculture rather than knowledge of the wide range of disciplines in the college, the company had designed a trellis wall that would occupy the middle of the room and serve as a frame for the static exhibits. Louise, Carol, and I all balked at the idea that the symbol of a trellis would represent the

entire college. It was obvious that the company did not understand the diversity of the College of Agricultural and Environmental Sciences just from reading a few brochures.

The original idea behind the decision to produce this project in-house came out of that one meeting. In ECT, we called it the X-factor. Essentially, it is the one thing that sets apart an internal communications shop from the one on the outside. That one element is that we were a part of what we we! ! re trying to communicate. The exhibit hall in the Activity Center called for an intimate knowledge of the college and its people, what Carol and I referred to over the next year as knowledge of the "spirit of the college." The idea of the "spirit of the college" was basically the heritage, traditions, and present culture of the college and how these elements combine to give the organization an identity. As in-house employees, we on the ECT staff were by default part of that spirit and strove to maintain a vision during the production process that reflected that intangible element in everything from the texture, to the color, to the symbolism used in the exhibit hall.

Method

Maintaining Tunnel Vision

As the planning for the exhibit hall progressed for the design team, which now was made up of a large number of ECT and other university staff, it became clear that workloads were going to be a major problem in the next year. Carol and I were the lead designers and project managers, while writer Faith Peppers coordinated the other writers on the ECT Public Affairs team for script production. ECT videographers Bob Molleur and John Packwood shot and edited film for Quicktime movies produced for the multimedia programs. Andrew Liles, a member of University Computing and Networking Services, provided invaluable support for the multimedia programs, technology acquisition, and digital sound and Quicktime video compression. All the while, Pat Harrell headed a team in Ag Engineering for kiosk construction.

As work on the exhibit hall overwhelmed all other efforts in the unit, it was also apparent that not everyone in the college apprec! ! iated the importance of the project and the drain on ECT staff time. To other ECT clients, it was as if the unit had lost half its staff. The graphics team in ECT particularly suffered with two out of the three designers in Athens assigned to full-time work on the Activity Center. It was very difficult to explain to clients that projects that used to be routine were impossible to get finished because suddenly the unit did not have the staff to produce them.

All the other team members, as well, were theoretically full-time on the Activity Center, but everyone was still taking on new jobs out of obligation or some feelings of responsibility. Plates were full, but all of the team members were still looking for ways to cram more onto them. This phenomenon was amazing, especially considering that the team was made up of experienced professionals, supposedly aware of what kind of workloads they could handle. However, suddenly, with the advent of a long-term project! ! and the accompanying deadlines spaced out over a year's time, schedules were difficult to manage. About six months into the production schedule, it became clear that everyone was juggling overloaded schedules. ECT unit members who normally had no trouble meeting deadlines were falling short and feeling a sting to their professional pride.

It was not just a problem for clients and for those staff members involved in the project either. The

closer the team got to the September 18, 1998, opening, the more grumbling was heard from other ECT staff members not involved with the project. They were suffering as well with overloaded schedules as projects were shifted to their desks, but they were reaping none of the rewards of a high profile project.

Our unit leader, Barry Jones, was supportive of the Activity Center project from the beginning but also recognized that closing the doors to other clients was not possible and very dangerous to the unitÆs future.! ! Once the year ended, the ECT staff could not afford to repair relationships with our other clients who had been neglected in the past year. It was truly a problem, and with six months left to go, it was not getting any better.

Communicating with the Client

In addition, Carol and I were struggling with bigger problems than the workload. As experienced designers in the college, we were familiar with working with clients and communicating with them about projects. This project, however, took on an entirely new dynamic and one that was entirely the result of producing a large multimedia project in-house.

The problem was largely a matter of protocol. If the project had been out-sourced, such as with the original Atlanta company, there would have been a strict schedule of contact between the client and the company that was dictated by the original contractual obligations. However, when all the project members work inside of the organization, l! ! egal contracts do not exist between clients and professionals, although the ECT staff learned that maybe they should.

As the team worked toward critical mass, the amount of contact with Louise Hill's office became a problem for the designers and writers. With so many meetings and issues that Louise understandably wanted to sign off on, Carol and I were having trouble getting any design work done, and Faith Peppers was having trouble keeping the other writers on schedule. Louise needed drawings to take to potential donors, and we tried to be accommodating despite the extra time commitment. On the other side, the Alumni and Development office was increasingly frustrated with the pace of the production. The distinction between project manager and client was becoming blurred as the client wanted to have more control over the creative process. As time went on, the relationship between the two offices was becoming strained.

In hindsight, Carol and I feel t! ! hat the accessibility of the ECT staff members was the main problem. There were no boundaries to the clientÆs relationship with the ECT staff. The Alumni and Development Office did not know what sorts of issues they should or should not have input on because we on the production team failed to set sufficient boundaries from the beginning.

Eventually, though, after much negotiation, the team came to an understanding with Louise HillÆs office regarding communication. It turned out that LouiseÆs unease stemmed from information overload. She wanted to know the essentials but not all the conceptual details. We were giving her too much information that was out of her realm of experience as a director of development and alumni relations, and she and her staff simply did not know how to process it.

Starting the last five months of the project, we met with Louise every two weeks and discussed a set agenda that usually dealt with budget or content accuracy iss! ! ues. This new tactic gave the team much more autonomy to complete the project and allowed Louise to follow the project while narrowing her own responsibilities.

Faith Peppers:

Writing for a New Medium

When the task of writing scripts for the interactive modules was turned over to the writing team, we were charged with giving the exhibits a distinctive voice. We met almost weekly with the designers, Shannon Wilder and Carol Ness, in order to get a feel for the exhibits. Understanding the mood they were trying to create helped us find the right voice for the exhibits. By learning the themes and motifs that they were incorporating visually, we were able to develop themes in the scripts that would be woven throughout the text of the exhibits.

Writing for this multimedia project, however, proved to be a much greater challenge than any of us had envisioned. The initial attitude was we were professional writers, for heavenÆs sake. Of course,! ! we could do this. On the writing staff, we had one research publications editor, one news editor, and one information specialist. Not one of us, though, had ever written for a project of this type and scope, and we did not foresee the challenges that lay before us.

Based on what we learned about the design of the project from Shannon and Carol, we outlined the segments of the text and scripts and divided the work evenly. The primary writing assignments included the screen introductions for each module and narrative scripts to accompany video and text screens.

I was selected as the coordinator for the written parts of the project. It was my responsibility to write one-third of the scripts, collect the contributions of each of the other writers, edit the text, and forward the completed work to Shannon and Carol, the lead designers. Shannon and Carol would then give the scripts to a freelance editor for final editing.

The writers, as a team,! ! faced several challenges. Mid-project, one of the writers assigned to the project left the university for another position. Another writer had to take his place. While I first feared that this change would slow our momentum, I discovered that it actually brought new energy to the project at a critical time.

However, these were among the least of our challenges in comparison to working in such a different medium and for such different goals from those to which we were accustomed. As I began to work on my assignments, I quickly discovered that writing for a multimedia project is different from any other type of writing that I had done. Therefore, I knew I needed to learn more about this particular mode of writing. In my research, I found Timothy GarrandÆs Writing for Multimedia to be an invaluable resource.* It helped walk me through the process of organizing the information so that it flowed effectively for this medium. The greatest challenge for me was remem! ! bering that each screen had to be a separate segment, independent of all other segments. I had to remember that viewers may not

take the time to view each screen; therefore, I could not refer to information found on other screens. Other writers on the project reported also having difficulty explaining complicated scientific facts, discoveries, and processes in the matter of two short paragraphs or thirty seconds of script time. As all good reporters do, we were all used to giving background, explanation, and future implications.

One vital error in our planning proved to be not allowing time for all the scripts to be read and re-edited. Many last-minute changes were required just before the professional voice talent were to record the scripts. It was just another function of a multimedia project that we, a group of basically print writers, had not considered.

Another challenge was finding time to fit a project of this magnitude into our routine work sch! ! edules. Even without such a project, most of us keep full plates, and this giant addition forced some very difficult juggling of our time and responsibilities. The opening of the Activity Center came just days after a major college showcase that had also required major time commitments from our writing team. Outsourcing the final editing work was crucial. Fortunately, we knew the freelance editor we hired, and he was already more or less familiar with much of the project, though he had not worked on it. He was able to view the project with a fresh eye and give it a very dynamic twist, also providing consistency of style and voice to the writing of these different writers. He was also instrumental in helping make last-minute scripting changes.

After years in the College of Agricultural and Environmental Sciences, I found this project to be one of the most important projects I have ever worked on. It provided the opportunity for our entire staff to be involved! ! in a very high-profile project, to be introduced to a challenging new medium, and to develop an altogether new writing style.

The project also came at a crucial time for our unit and paid many unforeseen dividends. After the recent merger of two communications units within the college, this project gave the writing team a rallying point, a focus on which we could come together and work, and it helped us to develop a sense of camaraderie and teamwork that was needed at this critical time in the unitÆs development.

While the project demanded considerable amounts of my production time for more than eight months, the benefits of the project in my professional development are still surfacing. What I learned in my research for the project and practiced in writing these scripts is helping me in other writing assignments, especially writing projects for our newly-formed Web team.

Perhaps the writing would have been done more efficiently and with fewer ! ! challenges by outside sources; however, the added value this project brought to our writing team in terms of experience, new equipment, and professional development made the challenges and the temporary sacrifice of production on other projects worthwhileùand even invaluable. By helping this exhibit find its voice, we developed much-needed skills and a broader knowledge of our craft.

Results

Shannon O. Wilder

The Nuts and Bolts

One of the greatest benefits of this project was that ECT's position as the in-house shop allowed us almost total control over the design of the exhibit hall. From the moment the unit got the project, Carol Ness and I had a very clear idea of what kind of exhibit area we wanted to create. We and the writers felt that every detail needed to be rooted in some kind of collective perception of not only the college but also agriculture and the environment. We started by doing extensive research into color theory, as well as agricultural history.

CarolÆs and my general practice when starting a new design project has always begun with a trip to do research at the library and to re-visit some favorite pieces of artwork. Another helpful design practice we employ is word association. For this activity, we made a list of words that expressed some essential concepts. In this case, it was words like heritage, earth,! ! roots, harvest, technology, and resources. Then we matched these words with a visual image, whether it was a texture, an object, or a symbol.

While doing these exercises, Carol and I stumbled onto a book about totem poles of the Pacific Northwest. After looking at the totem pole images, our ideas started gelling, and we began generating and refining designs for the kiosks very quickly. The totem pole concept served as a point from which to evolve because of the symbolic nature of totem pole imagery. Every image carved into the wood has some sort of correlation with Native American family history. However, the images have also permeated into the unconscious of most people in the United States. There is an associated meaning or link to an idea or a feeling for most people when they see a carving of an eagle or wolf or any other common Native American symbol. The theory Carol and I were working with was that, despite our digital age, agricultural implements, tex! ! tures, and colors associated with the environment are still viable symbols that generate some kind of innate reaction from a viewer. We were willing to bet that, with the right kind of presentation, the reaction would be a positive one.

For a peaceful, ethereal, as well as industrial look, we used colors like blues, purples, light greens, and textures like aluminum on the two kiosks which explore the present and the future of the college. The kiosk that celebrates the history of the college is housed in aged and tarnished copper. The copper was treated with a chemical called liver of sulphur and has greens, reds, and purple accents in its finish. The hand carved side panels with organic imagery and abstract symbols are juxtaposed against the metal skins of the kiosks and the modern touch-screen and sound systems.

While not in use, the kiosks play music quietly, and many visitors have commented that the hall is like walking through a door to a church o! ! r a peaceful garden that envelops visitors. Walking down the stairs, one immediately sees these colorful and symbolic "totems" and hears the faint sounds of music.

Based on the advice of our technical consultant, Andrew Liles, from University Computing and Networking Services, the team used Apple Media Tool as the authoring software for the multimedia portion of the project. Along with Apple Media Tool for authoring, we wanted computer systems to run the software that were easy, fast, and reliable. We decided on the Apple G3/266 machines, which proved to be a perfect fit. We purchased 17-inch ViewSonic monitors with built-to-order touch-screens using SAW technology installed by a company called National Integration Services. These touch-screens using SAW technology rely on sound waves to determine the point of contact on the

screen.

To present the audio, we wanted more than computer speakers that have a tendency to "bleed" audio fr! ! om one kiosk to another. After a visit to the National Science CenterÆs Fort Discovery in Augusta, Georgia, where sound domes called The Localizer are used extensively, we purchased sound domes for each kiosk. The Localizer is produced by Brown Innovations, and each is custom built based on the specs for each kiosk. Carol and I designed the kiosks from the beginning, knowing that these domes were going to be an additional design element. As a way of maintaining the programs, all of the computers are networked by Ethernet into the campus system so that Carol and I, from our offices, can add or subtract elements from the programs.

As for content, the information in the multimedia programs in the kiosks educates viewers about modern agricultural careers. There are Quicktime movies that highlight individuals working in agriculture who help improve our quality of life as well as the quality of the environment. A module called The Scrapbook of Memories recounts and c! ! elebrates the long history of UGAÆs College of Agricultural and Environmental Sciences, and a module called The Science Zone highlights the progressive scientific research of the College. An interactive piece called The College Tour uses road map imagery that shows teaching, research, Extension, academic majors, and selected agricultural careers. Finally, a module called Weaving the Legacy, one of the major themes of the hall, highlights significant individuals in the Hall of Fame and the Eterna Club who have professionally and financially supported the college. We hired professional narrators, despite their cost, to read the audio portions of the interactives and recorded the audio at a sound studio in Atlanta.

Another popular element of the room is a wall that I designed that displays portraits of the College Hall of Fame members. These are people who have made significant professional contributions to Georgia agriculture. This wall was designed to scale in th! ! e program Freehand and then painted by a professional mural painter, an Athens local named Gwen Edwards. All of the lettering is done by hand and painted directly on the wall. The portraits were scanned from photographs and then printed onto canvas using a Hewlett-Packard large format printer that was specifically purchased for the development of this project. All of the other static panels were also printed on the large format printer.

Conclusions

The Aftermath

September 18, 1998, came and the opening of the exhibit hall was a very successful day for the ECT unit and the Alumni and Development Office. However, the professionals on the Activity Center team who emerged from the challenge of the project were different from what they were when they started. After the initial tiredness wore off, we all went back to our offices and tried to pick up where we had left off, but for Carol and me especially, the transition has been a hard one.

A group of people who work together is a dynamic thing that shifts and changes depending on the people involved. Involvement in the Activity Center made everyone work a different way; we all had to serve the nature of multimedia. The writers had to adapt to a totally new style of writing.

Predominantly news writers, they were forced to make a major shift in the way they thought about their craft. The scripts for the multimedia programs had to be informative, interes! ! ting, very clear when directions were involved, and short enough for someone to take them in quickly.

The constraints of the medium caused problems for our video production team as well. The videographers involved were adept at producing documentary length educational productions. However, Quicktime video is not meant to be a long video format because of file size constraints, as well as the attention spans of viewers standing at a kiosk. It was a point of contention throughout the entire production process, and we never did achieve exactly what we wanted out of the Quicktime videos. Most of them still need to be edited further because of their length.

Carol and I, as graphic designers, also had to educate ourselves to issues like user interface design, as well as the structure of interactive modules. We had to learn an authoring system during the year, as we went, in order to produce the interactives.

It is important when an in-house project! ! of this scale ends to re-evaluate the professional skills of a staff. For Carol Ness and me, going back to short-term work has been difficult. We miss the stimulation of the demands this project made on us. I saw on ESPN recently a group of young athletes participating in what they call "extreme sports." The participants take more risks with each performance as they try to get an adrenaline rush that surpasses the last. Some of the athletes claim that this adrenaline rush has become an addiction. Because of the technical and intellectual demands, Carol and I found that working on a large multimedia project can be easily compared to that feeling of adrenaline as we were confronted by new challenges, discovered ways to meet the challenges, and watched our project move closer and closer to completion.

For these reasons, most of our team members are no longer satisfied with working within the same parameters that we were before. We now look for projec! ! ts that will push us and challenge us to top the stimulation and quality of our last productùin other words, projects that have an element of the extreme in them.