

journal
of
interpretation

volume 9
number 1

2004

RESEARCH

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Subscription:
\$35 domestic, \$45 international

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ISSN 1092-5872

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A Note from the Editor

This issue marks a transition in the continued development and evolution of the National Association for Interpretation's scholarly publication, the *Journal of Interpretation Research*. Since its introduction in 1996 under the first editor, Dr. Ted Cable, the *Journal* has grown and progressed under the guidance and dedication of many individuals. I would like to thank all of these individuals for providing me with the template for producing a meaningful, rigorous, and quality publication. The hard work was done by those that passed before me, and I only hope to be able to continue to provide you with a quality publication that meets the established standards of excellence.

I would especially like to thank the most recent editor, Dr. Cem Basman, who served as a capable and dedicated editor who valued the quality and contribution of research to the discipline of interpretation. Cem's oversight and effort resulted in the unfailing quality of publications accepted in the *Journal*. This dedication and commitment to quality increases the professional development and growth of interpretation as a whole.

When I was asked to serve as editor for the *Journal*, the piles of work on my desk almost deterred me from accepting the position. However, just as Dr. Cable and Dr. Basman before me, I believe research is important enough to rise to the top of the pile of "things to do." In fact, I believe research is the key to the survival and development of interpretation. Research provides the glue that links our services, the interpreters, the audiences, and the managers together within the science of the practice of interpretation.

The key to defending and ensuring the survival of the field is to critically examine what interpretation does, how it is done, and what results from it. In other words, conducting *defensible* interpretation is the key to the survival of our discipline. Research serves this purpose. Research is the element in the interpretive process that links all other steps. It is the first, the middle, and the last. It begins the planning process by allowing the interpreter to identify target audiences, understand and know the resource, and establish program goals and objectives. It provides the guidance and direction for the design of appropriate messages to meet audience, resource, and management needs. Research is also the final step in the process. It provides the measurement and assessment of whether or not goals and objectives were

met and by doing so helps establish future issues and goals, thus closing the loop. Research serves to link the manager and administrator to the field interpreter, the field interpreter to the visitor, the visitor to the resource, and the resources to the overall program goals and objectives.

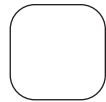
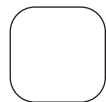
Recognizing the needs of research in the field and the various audiences that need research, this issue of *JIR* introduces two new submission sections, “In Short: Reviews and Reports,” and “In My Opinion.” Both of these sections serve to bridge gaps between researchers, practitioners, managers, and administrators.

The “In Short: Reviews and Reports” section will cover reviews of recent books, government publications, original literature reviews, and bibliographies dealing with interpretation. In addition, abstracts from dissertations, private consultant materials, summaries of research studies, and reports from public agencies will be published in this section as well. The purpose of this section is to communicate current research activities, allow readers to identify colleagues with similar interests, and provide practitioners and administrators with useful information and direction for conducting their own mini-research projects.

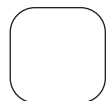
The *Journal* will also publish thought pieces that exhibit excellence and offer original or relevant philosophical discourse on the state of interpretation in the “In my Opinion” section. This section encourages the development of the profession and the practice of interpretation by fostering discussion and debate about issues in the field. This issue of the *Journal* asks a critical question to a practitioner, a researcher, a manager, and an academic...What is the role of research in interpretation?

I look forward to the future developments of our field through your quality submissions to *JIR*.

—C



R E S E A R C H



**The Effects of
Environment-Based
Education on Students'
Achievement Motivation**

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Abstract

This mixed-methodology study examined the relationship between environment-based education and high school students' achievement motivation. Four hundred 9th- and 12th-grade students from 11 Florida high schools participated in the study. A Pretest-Posttest Nonequivalent Comparison Group Design (9th grade) and a Posttest Only Nonequivalent Comparison Group Design (12th grade) were used in the study. Interviews of students and teachers were used to support and explain the quantitative data. Data collection took place over the 2001–2002 school year. When controlling for pretest score, GPA, gender, and ethnicity, environment-based programs had a positive effect on 9th grade students' achievement motivation. When controlling for GPA, gender, and ethnicity, environment-based programs had a positive effect on 12th-grade students' achievement motivation. The results of this study support the use of environment-based education for improving achievement motivation and can be used to guide future program implementation. Implications for formal educators, environmental educators, and interpreters are discussed.

Keywords

environment-based education, environmental education, education reform, high school, motivation, achievement motivation

Introduction

In 1983, the National Commission on Excellence in Education labeled the United States "A Nation at Risk." Twenty years later, there is still much progress to be made. Since 1983, over 10 million Americans reached the 12th

grade without learning to read, and over 6 million Americans dropped out of high school altogether (National Research Council, 1999). According to *The Nation's Report Card: Mathematics 2000*, only 17% of 12th-grade students performed at or above a level of proficiency (U.S. Department of Education, 2001). In science, 82% of 12th-grade students performed below the proficiency level on the 2000 National Assessment of Educational Progress science test, unable to demonstrate competency in subject matter and apply knowledge and skills to real world situations (U.S. Department of Education, 2002b).

Years of Promise, a 1996 report by the Carnegie Task Force on Learning in the Primary Grades, describes these inadequacies in American schools from a different perspective: "Something happens to many American children . . . something elusive and disturbing. Over the years, they lose their natural curiosity and their enthusiasm for learning" (in National Research Council, 1999, p. 36). Educational statistics back this claim, as only 21% of 12th-grade students' said their schoolwork was "quite or very interesting," and only 28% reported that their schoolwork was "often meaningful" (U.S. Department of Education, 2002a).

Given its research-based links to cognitive engagement and academic performance, it is not surprising that declining student achievement accompanies this national trend in declining motivation. Students with positive motivational beliefs will be more likely to become engaged in learning in a deeper, more self-regulating fashion than those who do not have these beliefs (Pintrich & Schrauben, 1992). While having positive motivational beliefs may not lead directly to improved academic performance, these beliefs can lead to increased cognitive engagement in the task, which does have a direct influence on academic performance (Pintrich & Schrauben, 1992). Because of this link to cognitive engagement and academic performance, motivation plays a key role in education reform, and increasing student motivation has been identified as holding great potential for improving student achievement (National Research Council, 1999).

Environment-based education is emerging as an effective means for motivating students and making learning relevant through real-world projects and problem-solving opportunities. Environment-based education is a general term for describing formal instructional programs that adopt local natural and socio-cultural environments as the context for a significant share of students' educational experiences. Its defining characteristics are as follows:

- *Interdisciplinary learning based on the local natural or socio-cultural environment.* As course content is connected to the local environment, the traditional lines between basic subject areas are blurred.
- *Project- and issue-based learning experiences.* Learners are actively engaged in the learning process, posing and solving problems, investigating issues, and producing products. There is an audience beyond the teacher for learners' work, assuring students' their work is needed and worth doing.
- *Learner-centered instruction.* The central focus of the learning experiences grows out of students' interests and questions, and students have a voice in deciding what is needed and how to carry out their work.
- *Constructivist approaches.* New learning activities stem from previous activities, building on skills and understandings learned from past experiences. Reflection is an essen-

tial activity that takes place at throughout the learning process, helping students absorb and process what they have experienced (definition and characteristics adapted from NEETF, 2000; SEER; 1998).

By focusing on the local environment, environment-based education addresses a major educational concern: “the lack of connection between formal schooling and students’ lives, a disconnect that makes learning an imposed chore rather than an opportunity to explore questions that arise from students’ innate curiosity and desire to become competent and contributing members of their families and communities” (Smith, 2002, p. 30). By relating learning to the lives and concerns of students, environment-based education “takes advantage of students’ natural interest in the world and their desire to be valued by others” (Smith, 2002, p. 30).

According to the 1998 study by Gerald Lieberman and Linda Hoody, *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning*, benefits of environment-based programs can include improved performance on standardized tests, reduced classroom management problems, and increased engagement and enthusiasm for learning (Lieberman & Hoody, 1998). The National Environmental Education & Training Foundation (NEETF) report, *Environment-based Education: Creating High Performance Schools and Students*, consists of case studies of schools successfully using the environment to provide meaningful learning experiences. In addition to improved scores on assessment tests and a decline in discipline problems, these environment-based programs are creating conditions conducive to learning, resulting in increased student motivation and higher-level thinking skills (NEETF, 2000).

These results are encouraging, particularly given the need to improve the quality of public education, and have implications for environmental educators and interpreters, as well as formal educators. However, there is limited research documenting a connection between environment-based education and student motivation, and to date, most of the evidence has been qualitative or anecdotal. More research is needed, as research is critical in determining which strategies and programs are worth exploring and which are ready for widespread implementation (Atkinson & Jackson, 1992). Further, research is essential for developing new ideas to their full potential and for “building capacity in the education system for continuous learning and renewal” (Atkinson & Jackson, 1992, p. 13).

Methods

The purpose of this research was to examine the relationship between environment-based education and students’ achievement motivation. The following questions were addressed in this research:

1. What is the relationship between environment-based education and high school students’ achievement motivation?
 - a. When controlling for pretest scores, achievement level, gender, and ethnicity, do 9th-grade students who participated in environment-based education programs have higher levels of achievement motivation than their peers in traditional instructional programs?
 - b. When controlling for achievement level, gender, and ethnicity, do 12th-grade stu-

dents who participated in environment-based education programs have higher levels of achievement motivation than their peers in traditional instructional programs, including traditional environmental science?

2. How does variation in the implementation of environment-based education programs influence its effects on students' achievement motivation?

Participating Programs and Students

Environment-based programs in 12 Florida high schools were selected for participation through operational construct sampling (finding manifestations of the theoretical construct of interest) and maximum variation sampling (purposefully picking a wide range of cases for external validity), as described by Patton (1990). These programs met the defining characteristics of environment-based education (described previously), were in operation for at least two years, and were willing to participate in the study. In addition, these programs represented a range of student socio-economic statuses and average achievement levels, as well as a range of geographic locations (urban, suburban, and rural schools throughout Florida), which contributed to the external validity of the study.

Four hundred 9th- and 12th-grade students from 11 of the 12 selected programs participated in this study. These students agreed to participate and had parental permission through the consent process mandated by the University of Florida's Institutional Review Board. Participants were 42.9% male and 57.1% female; 56.5% were white, 33.2% were non-white students, and 10.3% did not indicate their ethnicity.

Treatment

The treatment examined in this study was an established educational intervention—environment-based education. Environment-based education programs are formal instructional programs that adopt local natural and socio-cultural environments as the context for a significant share of students' educational experiences. A thorough description of environment-based education can be found in NEETF (2000) or SEER (1998). While environmental literacy is often an outcome of environment-based education, fostering student learning in all subject areas is its primary goal. Consequently, it is distinguished from environmental education, which has the primary goal of environmental literacy. Environment-based education is also in contrast to traditional instruction, including traditional environmental science instruction, which lacks problem- or project-based instructional strategies, is teacher-rather than student-centered, and does not use an environmental context for integrating multiple subject areas

Design

To control for differences due to grade level, the 9th- and 12th-grade students were studied separately. A Pretest-Posttest Nonequivalent Comparison Group Design, as described by Cook and Campbell (1979), was used for the 9th-grade study. This involved a pretest and posttest for students in the treatment group ($n = 89$) and students in a non-randomized control group ($n = 83$). Students in the control group received traditional instruction at the same school or a school comparable in geographic setting and average student achievement and socio-economic level. The validity threat of selection differences was addressed through statistical controlling for pre-existing differences in initial motivation level,

Figure 1. The Achievement Motivation Inventor.

Student Number _____

Date _____

Circle: Freshman Sophomore Junior Senior

Circle: Male Female

Is English your primary language? Yes No

Please respond as honestly as possible. There are no right or wrong answers!

	Strongly Agree	Agree	Not Certain	Disagree	Strongly Disagree
1. I'm doing a good job of learning in school.	SA	A	NC	D	SD
2. I often feel like I have little control over what happens to me in school.	SA	A	NC	D	SD
3. It doesn't matter whether or not I learned from an assignment, as long as I get a good grade on it.	SA	A	NC	D	SD
4. In my opinion, what is taught in my classes is not worth learning.	SA	A	NC	D	SD
5. I often worry that I am not very good at school.	SA	A	NC	D	SD
6. I sometimes get to make choices about what and how I learn.	SA	A	NC	D	SD
7. The only reason I try to do well at school is to please my teachers or parents.	SA	A	NC	D	SD
8. Most of what I'm learning at school is important to me.	SA	A	NC	D	SD
9. At times I feel that I'm not good at anything at school.	SA	A	NC	D	SD
10. When I try hard, I do well on my schoolwork.	SA	A	NC	D	SD
11. I try to learn as much from my schoolwork as I can.	SA	A	NC	D	SD
12. School is usually boring.	SA	A	NC	D	SD
13. I feel I always need help with difficult schoolwork.	SA	A	NC	D	SD
14. It doesn't matter how much effort I put into my schoolwork, because I get the same grades whether I try hard or not.	SA	A	NC	D	SD
15. I do not want to learn a lot of different things in school. I just want to learn what I need to get a good job.	SA	A	NC	D	SD
16. I'm usually interested in what I'm learning at school.	SA	A	NC	D	SD
17. I feel good about my ability to do schoolwork.	SA	A	NC	D	SD
18. At school, I have many questions I don't get to ask.	SA	A	NC	D	SD
19. I do my schoolwork so my teachers or parents don't get mad at me.	SA	A	NC	D	SD
20. Going to school is a waste of time.	SA	A	NC	D	SD

Note: This instrument has been revised based on item analysis and factor analysis data from its use in this study. Items 7 and 11 have been revised, which should increase the reliability and validity of scores. Item 7 was originally stated as "I try to do well at school to please my teachers or parents." Item 11 was originally stated as "I set high standards or goals for myself."

Table 1. Table of Specifications for the Achievement Motivation Inventory.

<i>Domain</i>	<i>Number of Items</i>	<i>Item Numbers</i>
Self-Efficacy	5	1, 5, 9, 13, 17
Control	5	2, 6, 10, 14, 18
Goal Orientation	5	3, 7, 11, 15, 19
Task Value	5	4, 8, 12, 16, 20

achievement level (GPA), gender, and ethnicity by adding these variables to the statistical models as covariates.

Because many of the 12th-grade students had participated in environment-based programs in previous years, a pretest was not possible. Thus, a Posttest Only Design with Nonequivalent Groups, as described by Cook and Campbell (1979) was used for the 12th-grade study. This involved a posttest for students in the treatment group ($n = 126$) and students in a non-randomized control group ($n = 102$). Students in the control group received traditional instruction at the same school or a comparable school. The validity threat of selection differences was addressed through statistical controlling for pre-existing differences in achievement level, gender, and ethnicity by adding these variables to the statistical models as covariates.

Research Instrument

The Achievement Motivation Inventory (AMI) measures overall motivation toward academic achievement through a 20-item inventory that takes approximately 15 minutes to complete (see Figure 1). Each item has five response categories: “strongly agree,” “agree,” “not certain,” “disagree,” and “strongly disagree.” Items on the instrument are scored as follows: Each item is worth a maximum of five points, with a possible total score of 100. For the items stated as positive to achievement motivation, the response “strongly agree” is worth five points, and the responses “agree,” “not certain,” “disagree,” and “strongly disagree” are worth four, three, two, and one point, respectively. For the items stated as negative to achievement motivation, the response, “strongly agree,” is worth one point, and the response “strongly disagree” is worth five points. Higher total scores indicate higher levels of achievement motivation.

This inventory was developed specifically for this study as a non-content-specific, holistic measure of achievement motivation in the context of education reform. It was based on a general social cognitive model (Pintrich & Schrauben, 1992) commonly accepted in motivation research. Four of the items (2, 4, 11, and 15) were adapted, with permission, from the *Learning and Study Strategies Inventory—High School Version* (Weinstein and Palmer, 1990).

After a motivation researcher at Michigan State University conducted a content analysis of the instrument and determined it addressed the four components of the general social cognitive model (self-efficacy, control, task orientation, task value), it was piloted in a Florida school before its use in this study (see Table 1 for a table of specifications). The reliability coefficient (internal consistency) of the pilot data ($n = 81$) was .84, as measured using Cronbach’s alpha. A factor analysis of the pilot data revealed that a one-factor model accounted for 25% of the variance; 19 of the 20 items loaded onto this factor. Based on

teachers' suggestions, three revisions were made: The "Times New Roman" font was changed to "Comic Sans MS," as teachers suggested students would be more responsive to a "friendlier" font. Teachers also suggested adding the instructions for students to respond as honestly as possible, as there are no right or wrong answers. Finally, teachers suggested using "Student Number" rather than "Name" as the prompt for students' identification information, to further emphasize the anonymous nature of this inventory.

The reliability coefficient (internal consistency) of the posttest data collected from 9th-grade students in this study ($n = 172$) was .79 and .76 ($n = 228$) for the 12th-grade data, as measured using Cronbach's alpha. For the purpose of construct validation, the dimensionality of the 20-item scale was analyzed using a factor analysis with a maximum likelihood extraction method. The rotated solution for the 9th-grade posttest data yielded one interpretable factor, which accounted for 21% of the item variance; 18 of the 20 items loaded onto this factor. The rotated solution for the 12th-grade posttest data yielded one interpretable factor, which accounted for 23% of the item variance; 18 of the 20 items loaded onto this factor.

Procedures

All data collection took place over the 2001–2002 school year. The researcher visited each school to explain the data collection procedures and instrument administration guidelines. Teachers administered the instruments to the 9th-grade students as pretests within the first month of the school year and as posttests within the last month of the school year. Teachers administered the instruments to the 12th-grade students as posttests within the last two months of the school year. In addition, information on students' gender, ethnicity, and achievement level was collected.

Qualitative Methods

The purpose of the qualitative investigation was to ensure that the participating programs met the defining characteristics of environment-based programs. This qualitative investigation also was used to determine what students and teachers identify as factors influencing motivation. These insights were used, in conjunction with the quantitative findings, to develop recommendations for future program implementation.

Each program was visited at least once for four to seven hours. Interviews were conducted with one teacher from 10 of the participating programs, lasting 30–90 minutes each, according to techniques described by Lindolf (1995). The following questions were used to initiate the discussion, with the interviewees expounding on what they believed was important for the researcher to know:

1. What do you consider to be the most successful features of your program?
2. Do you think participation in this program motivates students to put their best effort into learning? If the response is yes: What characteristics of your program would you identify as having the greatest impact on students' motivation?

Teachers were asked to select three to six students for in-depth interviews. Interviews were conducted with 44 students representing 10 of the 11 programs, each lasting 10–30 minutes. The following questions were used to initiate discussion with the students:

1. What do you do in this program?

2. What parts of the program do you like best?
3. Has this program changed the way you feel about school or the way you feel about learning? If the response is yes: What about this program has changed the way you feel about school? What about this program motivates you?

During the interviews with teachers and students, data were collected by the researcher through audio tape recorders and field notes. Each tape was transcribed after the interviews at one program were completed and before the interviews at the next program were conducted.

Limitations

The schools involved in this study varied in terms of school culture, administrative support and leadership, faculty experience level and turnover rate, and student populations. Further, environment-based education is a broad term, allowing schools flexibility in its implementation. Due to this naturalistic setting that is common in educational research, the research questions involved in this study could not be investigated feasibly through an experimental design. Thus, the internal validity of the study was weakened. External validity, however, was strengthened through the inclusion of a diversity of programs and settings.

Due to issues of administration time, a single measure of achievement motivation was used. While this minimized the intrusiveness of assessment on class time and student learning, the use of a single measure may have resulted in threats to construct validity from mono-operation (single measure) and mono-method (single method) biases. The quantitative data collected from this measure was supplemented with qualitative data from observations and interviews to decrease these construct validity threats.

Quantitative Data Analysis and Results

Multiple linear regression was used to determine if students in environment-based programs had higher scores on the AMI than students in traditional instructional programs, after controlling for the variance in scores due to students' initial motivation level, achievement level, gender, and ethnicity (Research Question 1). To examine the influence of treatment variations on students' achievement motivation (Research Question 2), a factorial analysis of covariance (ANCOVA) was used. School was used as a proxy variable in this analysis to represent the specific way in which the treatment was implemented at each school, thus incorporating variation in program implementation into the statistical model. The Type I error for the analysis was set at $\alpha = .05$. Because each analysis involved two inferential research questions (the effects of the treatment on 9th-grade students and the effects on 12th-grade students), the Bonferroni method was used to control for a spiraling Type I error rate. Thus, the explanatory variable, covariates, and interaction terms were tested using a Type I error rate of $\alpha = .05/2 = .025$. Missing data was handled through excluding cases listwise.

For the 9th-grade study, the treatment was statistically significant ($b = 2.752$, $t(166) = 2.259$, $p = .025$; see Table 2). These results suggest that when controlling for pretest score, GPA, gender, and ethnicity, there was a significant positive effect of the environment-based programs on students' achievement motivation; 9th-grade students in the environment-based programs scored 2.75 points higher on the 100-point inventory than 9th-grade students in the control group. This effect was not a function of initial skill level (pretest),

Table 2. Summary of Regression Analysis for Variables Predicting Students' Achievement Motivation.

Variable	Unstandardized Regression Coefficient	Standard Error	Standardized Regression Coefficient	Observed <i>t</i> value	<i>p</i> value	Partial Correlation	Semi-Partial Correlation
9 th Grade ^a							
Pretest	.629	.059	.616	10.682	.000*	.637	.594
GPA	2.066	.877	.136	2.357	.020*	.179	.131
Gender	.280	1.222	.013	.229	.819	.018	.013
Ethnicity	1.255	1.264	.056	.993	.322	.077	.055
Treatment	2.752	1.218	.129	2.259	.025*	.172	.126
12 th Grade ^b							
GPA	2.641	1.479	.125	1.786	.075	.119	.110
Gender	.784	1.366	.037	.573	.567	.038	.035
Ethnicity	6.788	2.080	.311	3.263	.001*	.213	.201
Treatment	8.557	1.876	.402	4.562	.000*	.292	.281
Treatment by Ethnicity	7.777	2.792	.275	2.785	.006*	.183	.172

Note.

^a*n* = 172. ^b*n* = 228.

^a*R*² = .484. ^b*R*² = .152.

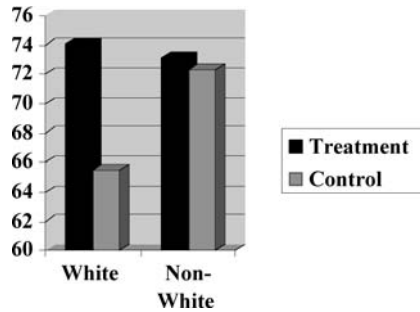
**p* ≤ .025.

achievement level (GPA), gender, or ethnicity. While these variables did not moderate the effect of the environment-based programs, initial motivation level (pretest) and achievement level (GPA) significantly *influenced* students' achievement motivation. Thus, students with higher pretest scores and students with higher GPAs had *systematically* higher posttest scores than those with lower pretest scores and GPAs, but the environment-based programs were not more *effective* (working differently) for the students with higher pretest scores and GPAs.

For the 12th-grade study, the treatment was statistically significant ($b = 8.557$, $t(222) = 4.562$, $p < .001$; see Table 2). However, the interaction term, treatment by ethnicity, was statistically significant ($b = 7.777$, $t(222) = 2.785$, $p = .006$). These results suggest that when controlling for GPA, gender, and ethnicity, there was a significant positive effect of the environment-based programs on 12th-grade students' achievement motivation; this effect, however, was moderated by ethnicity. White students in the environment-based programs scored 8.56 points higher on the 100-point inventory than white students in the control group. Students' scores were not significantly influenced by GPA or gender. The treatment effect was not significant for non-white students, as there were no significant differences between the non-white students in the environment-based programs and the non-white students in the control group. This, however, may be a function of the data, as the scores of the non-white students in the control group were significantly higher than the scores of the white students in the control group (see Figure 2).

In the analyses addressing variation in program implementation, the treatment by school interaction terms were not statistically significant in the 9th-grade study ($F(1, 164) = .093$, $p = .761$) or in the 12th-grade study ($F(4, 213) = 1.389$, $p < .239$). This suggests that variation in implementation of environment-based programs across the participating

Figure 2. Estimated Marginal Means of 12th-Grade Students' Achievement Motivation Posttest Scores.



schools did not moderate the effects of the treatment on 9th- and 12th-grade students' achievement motivation; the effectiveness of the treatment was not a function of program implementation. In other words, some programs were not more effective than others in motivating students. Further, this suggests that the effectiveness of environment-based education may apply to schools beyond this study, as the results were not dependent on the way in which the programs were implemented.

Qualitative Data Analysis Results

Data analysis of the 10 teacher interviews and 44 student interviews consisted of analyzing the transcripts according to a general process of data reduction and interpretation described by Gay and Airasian (1996). This process involves becoming familiar with the data through careful reading, organizing the data by coding pieces of data and classifying them into themes or categories, and synthesizing the organized data into general conclusions or understandings. The focus of this process is analytic induction.

Inductive analysis, described by Guba (1978) in Patton (1990), was applied to find themes, or recurring regularities or patterns, which emerged from the data. The criteria for the creation of a theme, suggested by Krueger (1998), was the frequency and extensiveness of responses, as well as the intensity and specificity of responses.

The following are the themes generated from the inductive analysis described above, followed by verbatim quotations to illustrate each theme and an explanation. To avoid conveying the impression that the results can be projected to a population and because frequency and extensiveness of responses were not the only criteria used, numbers and percentages have not been reported. Environment-based programs appeared to influence students' achievement motivation when they:

- Used the local environment as a motivating context.

“The environmental theme is effective in motivating kids, especially inner-city kids. For many of them, it’s their first time interacting with nature, and it’s a totally different setting than they are used to. Instead of being on edge, they can let their guards down and have some peace and quiet. It helps rebuild their spirits. And once they feel safe and that someone cares about them, they can care about their education.” (White, Male Teacher)

“The environment approach works because the kids are interested in it. It’s

appealing to them, almost an innate interest, particularly in our rural setting. A lot of these kids grew up hunting and fishing. They like being in the environment and that interest makes learning more appealing.” (White, Male Teacher)

Teachers and students at the rural and urban schools placed a stronger emphasis on the ability of the local environment, specifically the natural environment, to serve as a motivating context than teachers and students at suburban schools. Students at these rural and urban schools intensely echoed their teachers' emphasis of the natural environment's ability to serve as a motivating context. Other students and teachers described a different source of motivation relating to the environment. Using the environment as a context for learning provided teachers with interdisciplinary opportunities to tailor learning experiences to the interests and strengths of the students.

“One of my students, a track star, was really struggling with math. He had failed algebra and was back for a second year. This program gave him a purpose. He could tie the projects back to what he needed to learn for class—the number of square feet a gallon of paint could cover and how many gallons would be needed for the picnic tables at the state park. He didn't give up because he loved being outdoors, and we did our math out there.” (White, Male Teacher)

“Generally when you think of coming to school, you think of sitting in class and taking notes, getting homework, and going home. But here, you actually interact and get to do stuff you're interested in, and it makes it a lot more fun to learn. I think it helps us see what we are good at.” (Black, Male, 12th-Grade Student)

- Involved the application of content and skills to real-life issues and problems through relevant, meaningful, hands-on learning that often generated a final product.

“I like this program because it's hands-on. It's so hands-on I get blisters!” (White, Male, 9th-Grade Student)

“We have had to speak at school board meetings and at the city council meetings. Our actions have real consequences. The community actually uses the research we do, and they're counting on us. They need our data, and it makes you think, ‘Oh my gosh, I have to get it right the first time!’ because they are going to be using that information.” (White, Female, 12th Grade Student)

“I have kids that aren't troublemakers, but they just haven't had opportunities that motivated them. But once they get to serve their community, they find their niche and become more confident and motivated to put their best effort forward.” (White, Female, Teacher)

“It's amazing that you can have kids that can't seem to get here with their shoes tied and properly dressed, but when they are told they are doing something that somebody in the community is going to use, then by gosh, they get it right!” (White, Male, Teacher)

Through relevant, hands-on learning, students had the opportunity to feel that they were valued members of the community. Their work had an audience beyond the teacher, who

affirmed their work was needed and worth doing. Often these projects resulted in a tangible final product, not just a grade, which also motivated students to put their best effort forward.

“The final product is what motivates me—being able to see the final product of what you’ve worked on all year.” (Asian, Female, 12th-Grade Student)

- Empowered students to be responsible for their own learning.

“It’s because it’s student-driven. We make decisions, and we have responsibilities. I can learn at my own pace, and I can absorb more when I’m learning for a purpose.” (White, Male, 12th-Grade Student)

“You gain a lot of confidence because of the big projects we do. You gain a lot more confidence in yourself when you plan and carry out a project, rather than if someone just tells you exactly what needs to be done and how to do it. Now rather than looking at something and thinking that it’s an impossible task or too big of a problem, now I know that I can do it.” (Black, Female, 12th-Grade Student)

In the environment-based programs, the learning experiences were infused with learner choice, design, implementation, and revision. The investigative approaches of these programs allowed students to develop their own paths of learning and discovery, which were guided by their interests and concerns. Students and teachers consistently attributed increased motivation to opportunities to make choices about their learning and experience success and self-empowerment from processes and products that were their own.

These themes represent program characteristics that students and teachers believe influence achievement motivation. These characteristics, in essence, describe three of the defining characteristics of environment-based education programs: interdisciplinary learning based on the local environment, project-based learning experiences, and learner-centered instruction. Because improvements in achievement motivation were attributed to defining characteristics of environment-based education, this analysis can be interpreted as supporting the quantitative results: Environment-based education programs have a positive effect on students’ achievement motivation.

Discussion

The results of this research suggest environment-based education programs have a positive effect on 9th- and 12th-grade students’ achievement motivation. This effect at the 12th grade level, however, is moderated by ethnicity. Further, these results suggest the positive effect of environment-based programs on achievement motivation may also apply to schools not involved in this study, as variation in implementation is not moderating the results. Thus, a variety of environment-based program formats and settings seem to be effective in improving achievement motivation.

Although the effect sizes were small, the practical significance of these results should be noted. For example, 9th-grade students’ in the environment-based programs scored only about three points higher than their peers in traditional programs on the AMI, but white 12th-grade students in environment-based programs scored almost nine points higher than their peers. Considering that the general trend is for motivation to decrease from 9th- to 12th-grade, these results are particularly encouraging: The trend of declining motivation was counteracted, with motivation levels of students in environment-based

programs increasing from 9th to 12th grade.

It is unclear as to whether the programs are effective in increasing non-white students' achievement motivation. This treatment by ethnicity interaction effect could be related to ethnicity differences in attitudes toward and interest in the environment. However, this would not explain why the non-white students in the control group had such a high level of achievement motivation, with scores on the AMI that were significantly higher than the scores of white students in the control group (see Figure 2). It is possible that environment-based programs were ineffective in increasing non-white students' achievement motivation due to a ceiling effect; the non-white students in the study appeared to already be highly motivated (see Figure 2). Perhaps this ceiling effect is related to trends in high school dropout rates, as the U.S. Department of Education's *Condition of Education 2002* reports that since the early 1990s, non-whites have had consistently higher dropout rates than whites (2002a). It may be that by the time non-white students reach their senior year of high school, they have higher achievement motivation levels than white students, as non-white students with lower motivation levels may have already dropped out of school.

The qualitative findings support the quantitative results, as teachers and students identified defining elements of environment-based programs as influencing students' achievement motivation. Collectively, these findings are consistent with the research literature regarding achievement motivation. For example, Lepper & Hodell (1989) recommend improving student motivation through instruction that is tied to topics and problems that naturally interest students. Teachers, according to their research, should facilitate connections between students' prior knowledge and experiences, illustrating the connection between the curriculum and the real world and emphasizing the relevance of instruction to students' personal lives. Further, research suggests that project-based learning, a defining characteristic of environment-based education, generates an enthusiasm for learning that cannot be generated when instruction is limited to textbooks (White, 2000). The findings of this study are also consistent with the qualitative findings of previous research on environment-based education: NEETF (2000) and SEER (1998) suggest the efficacy of using the environment to motivate students and engage them in learning.

The qualitative component of this study was useful beyond supporting the quantitative results. It extended the breadth of inquiry, providing insight into why environment-based programs have a positive effect on students' achievement motivation. Even though key stakeholders in environmental education and formal education communities often request quantitative data for program justification, the qualitative component of this study illustrates the usefulness of supplementing "numbers" with insights that can help explain the quantitative findings and guide future program implementation. Thus, in an evaluation context, integrating quantitative and qualitative approaches may be helpful.

Implications and Recommendations for Formal Educators

The results of this study suggest that environment-based education can be an effective way to engage high school students in learning by increasing achievement motivation. Teachers and administrators can use the results of this study to justify their environment-based programs, helping assure parents, superintendents, and state policy makers that these programs can produce desired and valued educational outcomes. The results of this study also provide recommendations for future implementation of environment-based programs.

One of these recommendations is to include students of all achievement levels in the

environment-based education programs. The results of the statistical analysis indicated that the effect of the environment-based programs on students' achievement motivation was not a function of achievement level (as measured by GPA). The treatment worked well for all achievement levels. Teachers' perceptions of the importance of including students of varying abilities in the environment-based programs further support these results. Teachers suggested that including students of varying abilities provides lower achieving students with role models and challenging standards and provides higher achieving students with the opportunity for peer teaching. Teachers also emphasized the effectiveness of environment-based education in highlighting the different strengths and skills of all students, resulting in positive changes in the social milieu.

A second recommendation is for continued recognition of the systemic nature of environment-based education in program implementation. Based on the qualitative results of this study, it appears that the environment serves as an effective motivating context for learning. Numerous teachers and students spoke about the power of the environment to engage students and to make learning relevant. The natural environment was particularly effective in motivating inner city students, as well as students in rural settings. However, this study also suggests the importance of the systemic nature of environment-based education—its incorporation throughout the entire educational system, from notions of teaching and learning to authentic assessment and community involvement, as students in environment-based programs had higher motivation levels than their peers in traditional instructional programs, including traditional environmental science classes. Thus, it may be that an environmental context, when confined to traditional teaching methods, does not improve motivation. However, when combined with project-based, learner-centered instruction, an environmental context can be motivating. Thus, the environmental context is not only a good integrator of subject areas, but also a good integrator of best practices in education.

Implications for Interpreters and Environmental Educators

What does student motivation have to do with interpretation and environmental education? Good teaching has much in common with good interpretation and environmental education. Interpreters and environmental educators know well the importance of concepts such as relevance, inspiration, and provocation. These concepts have been applied to formal educational activities through environment-based education, creating conditions conducive to inspiring a love of learning and engaging students in the learning process. Interpreters can model their skills in connecting visitors to the resources and provoking their interest in knowing more, helping teachers find additional ways to make lessons come alive.

Interpreters and environmental educators are often the source of connections between schools and the local natural or cultural resources and settings that become the foundation for students' formal learning experiences. Interpreters and environmental educators play a critical role in supporting environment-based education, as their expertise with the local resources can support research projects or issue investigations, and their skills in communication can effectively convey background content knowledge. They can further support environment-based education by providing students with opportunities to explore questions that arise from their natural curiosity in their surroundings and their desire to become contributing members of their communities. Their support is often essential to the success of environment-based programs, as the majority of the environment-based pro-

grams in this study depended on interpreters and environmental educators in partnering organizations and agencies to work with students on individual or group research projects, provide teachers with professional development opportunities, and connect programs with funding opportunities and other resources.

A further implication of this study relates to the educational trend toward accountability and evidence-based reform. Under the “No Child Left Behind” legislation, the federal government is investing in educational practices that have research-based evidence to support them. Educators will “increasingly be able to choose from among a variety of models known to be effective if well-implemented, rather than reinventing (or misinventing) the wheel in every school,” and “schools making little progress toward state goals may be required to choose from among a set of proven programs” (Slavin, 2003, p. 16). Because this study did not compare environment-based programs against other innovative programs, these results do not suggest that environment-based education is more effective than other school reform programs. However, with evidence of effectiveness and an understanding of the conditions necessary for it to work, environment-based education can at least be considered by formal educators; it can be one of the models or proven programs educators can select and implement in the formal education setting.

The implications of this are significant, as it provides environmental educators with new avenues for funding. For example, through the Comprehensive School Reform Demonstration (CSRSD) program, schools can receive a minimum of \$150,000 over three years to implement a replicable, research-based comprehensive school reform program. While the CSRSD program offers the potential for significant funding, a lack of knowledge within the environmental education community about the CSRSD program and other federally-funded programs, as well as hesitation regarding their focus on improving academic learning, has prevented environmental education involvement in this program (NEETF, 2002). Consequently, the benefits of federal funding and consistent, high-quality access to the formal school setting have yet to be reaped by a wide audience. Therefore, leaders in environmental education should raise awareness of programs such as CSRSD among environmental educators, encouraging them to take advantage of this opportunity to make new connections to school reform activities in their communities.

Recommendations for Future Research

- Explore the connection between the *natural* environment and student motivation: Are natural environments more effective in motivating students than socio-cultural environments, and does the effectiveness vary by school location and setting? Additional research might explore the environment used by suburban school programs to understand why it might be less motivating.
- Further investigate the relationship among achievement motivation, environment-based education, and ethnicity.
- Explore what characteristics make non-formal partnerships most productive and beneficial in motivating teachers and students to engage in environment-based education programs.
- Conduct additional analyses using Hierarchical Linear Modeling (HLM) to provide stronger evidence of the generalizability of these findings and to better

understand how variation in implementation of environment-based education affects the desired outcomes.

Conclusion

The disturbing disappearance of enthusiasm for learning stated by the Carnegie Task Force on Learning echoes a similar concern expressed by writer Rachel Carson over 40 years ago. “A child’s world is fresh and new and beautiful, full of wonder and excitement,” Carson declared in her 1956 book, *A Sense of Wonder*. Carson later wrote, “It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is awe-inspiring is dimmed and even lost before we reach adulthood.”

The results of this study provide evidence of environment-based education’s ability to improve high school students’ achievement motivation and support its use in school reform efforts. In addition to their educational relevance, environment-based programs appear to help students develop a positive outlook toward their ability to correct and prevent environmental problems, as noted in program observations and conversations with students. These programs are also targeting high school students—an audience that environmental educators typically do not reach and providing them with access to the environment. Further, the formal school setting provides the time needed for in-depth coverage of topics relating to the environment. When the goal of improving student learning is viewed as complementary with building environmental literacy, environmental educators and interpreters can help the wider education community understand that environment-based education is simply good education. This will go a long way in ensuring that, in the midst of education reform and its high-stakes standards and evaluation, environmental education does not get lost in the shuffle.

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Authors' Note

This manuscript was supported by the Florida Agricultural Experiment Station and approved for publication as Journal Series No. R-09751. The authors wish to acknowledge the following funders of this research: the Environmental Education Section of NAI, the EPA's National Network for Environmental Management Studies Fellowship Program, and the University of Florida and School of Forest Resources and Conservation's Alumni Fellowship Program.

**Motivations of
Volunteer Interpreters
in Taiwan**

A Survey of Natural Trails
Society Volunteers

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An earlier version of this manuscript was presented at the Northeastern Recreation Research Symposium, Bolton Landing, New York (April 2001). The study was based on data collected for the Natural Trails Society of Taiwan. Funding for data collection was provided by the Natural Trails Society of Taiwan and the College of Health and Human Development's Graduate Student Endowment Fund.

Abstract

We surveyed volunteer interpreters in the Natural Trails Society of Taiwan, an environmental education organization. Seventy-four of the 104 interpreters returned questionnaires, resulting in a response rate of 71%. We compared the importance of different motivations, tested for relationships between motivations and volunteer characteristics, and evaluated motivation items developed specifically for environmental education volunteers. On average, volunteers attached most importance to enjoying nature, followed by learning, doing something to benefit nature and society, religious-spiritual reasons, social contact, achievement, teaching-leading-sharing, filling an empty nest, and fulfilling social obligations. Volunteers with lower household incomes attached more importance than others to enjoying nature. Achievement was more important to those without a college degree than to those with college degrees. Teaching-leading-sharing was most important to those who were younger, single, and without children at home. Filling an empty nest was most important to those without a college degree. Fulfilling social obligations was more important to males than females. Both learning and teaching-leading-sharing were more important to those who had been volunteering for two years or less than to those who

had been volunteering longer. The patterns of motivations we found suggest strategies managers can use to recruit and retain volunteers. Additional research will be needed to explain why motivations differ between subgroups, compare motivations across organizations and cultures, and further develop and refine motivation scales for environmental education volunteers.

Keywords

environmental organizations, motivations, non-governmental organizations, volunteers, interpreters, Taiwan.

Motivations of Volunteer Interpreters in Taiwan: A Survey of Natural Trails Society Volunteers

Since the end of the 19th century Americans have often expressed their charitable impulses by volunteering in environmental non-governmental organizations (NGOs). For example, the Sierra Club was established in 1892 and the Audubon Society was established in 1905. In comparison, Taiwan's environmental NGOs germinated in the 1970s, blossomed in the 1980s and continue to flourish today. Like other NGOs in Taiwan, environmental NGOs rely increasingly on volunteers to promote environmental education and reach the goal of environmental conservation in Taiwan. Little is known, however, about these volunteers. Therefore, understanding who the volunteers are and why they volunteer is important. For those reasons, we investigated the motivations of volunteer interpreters in The Natural Trails Society of Taiwan (NTS), a rapidly-growing, "soft-green" environmental NGO in Taiwan.

Literature Review

Motivations of Environmental Volunteers

Studies of volunteers in North American environmental NGOs have often adopted a social exchange model, in which volunteers willingly incur costs such as time and travel because they are motivated to obtain altruistic benefits, such as helping others, egoistic benefits, such as achievement, and/or social benefits, such as meeting new people (Auld, 1994; Francies, 1983; Searle, 1991). Wickham and Graefe (1998) used a 28-item Motivation to Volunteer scale (Cnaan & Goldberg-Glen, 1991) to assess the motivations of the volunteers at an environmental education center and identified motivations that were altruistic, egoistic, and social. In comparison, Spencer (1998) used a 20-item Reasons for Volunteering scale (Fitch, 1987) to examine motivations of student volunteers in an outdoor education program and found that motivations were primarily egoistic. King and Lynch (1998) found that adult volunteers in a state chapter of The Nature Conservancy (TNC) placed more importance on altruistic motivations and less importance on egoistic or social motivations; 63% indicated they wanted to do something that would benefit nature.

In Taiwan, 85% of volunteer interpreters at She-Pa National Park wanted opportunities for contact with nature and 74% wanted opportunities to work for nature's protection (Ho, 1998). In contrast, motivations to learn were most important to volunteers in Kaohsiung Metropolitan Park (Hsuh, 1998). Motivations to learn as well as to protect the environment were most important to volunteer interpreters in Taiwan's Society of

Wilderness (Hsuh & Lin, 2000). Findings in these studies seem to suggest that being close to nature, doing something for the environment, and learning are important needs for environmental volunteers in Taiwan.

Although uncommon in studies of other volunteers, nature-related motivations have been important in studies of environmental volunteers. In these studies, nature-related motivations have fallen typically into two domains, experiencing and learning about nature (e.g., Graefe & Gitelson, 1994; Ho, 1998; Hsuh & Lin, 2000; Manfredi, Driver, & Tarrant, 1996; Wickham & Graefe, 1998) and benefiting or protecting nature (e.g., Ho, 1998; Hsuh & Lin, 2000; King & Lynch, 1998). The importance of these nature-related domains is one reason both Wickham and Graefe (1998) and Spencer (1998) concluded that the development of specialized scales would contribute to a deeper understanding of the motivations of environmental volunteers.

Motivations and Socio-Demographic Characteristics of Volunteers

Researchers have found a variety of relationships between volunteer motivations and socio-demographic characteristics (e.g., Smith, 1966; Wandersman, 1981). Studies of volunteers in birding (Ordubegian, 1990), urban forestry (Still & Gerhold, 1997), and nature conservation (King & Lynch, 1998) suggest that North American environmental volunteers tend to be well-educated, financially secure, middle-aged males. In contrast, one study showed that volunteers in Taiwan's She-Pa National Park tended to be 21- to 30-year-old, single, male college graduates (Ho, 1998). Gidron (1978) found that younger volunteers were more likely to seek learning and self-development, whereas older volunteers were more likely to seek social interaction. Similarly, King and Lynch (1998) found egoistic motivations (e.g., to learn new skills, make me feel better about myself) were particularly important among younger volunteers.

In summary, research demonstrates that volunteers bring a wide variety of motivations to NGOs and that these motivations sometimes vary along with socio-demographic differences. Understanding patterns in these variations can help organization leaders recruit, train, and lead volunteers in ways that lead to both organizational effectiveness and satisfying volunteer experiences. In the case of environmental education volunteers, past research suggests that motivation scales designed specifically for this group are needed.

Study Purpose and Setting

We designed the study to (a) identify important motivation domains for volunteer interpreters in a Taiwanese environmental NGO; (b) test for relationships between motivation domains, socio-demographic characteristics, and past volunteer experience; and (c) test a motivation scale developed specifically for environmental education volunteers, as recommended by other researchers (Spencer, 1998; Wickham & Graefe, 1998). To conduct the study, we surveyed volunteers at NTS, a Taiwanese environmental NGO that uses nature trails to promote environmental education. The leaders and volunteers plan and build nature trails in small forested areas at the margin of Taipei city, conduct guided walks on the trails, and publish an interpretive brochure for each trail. Our study population was the 104 adult men and women who volunteered to be NTS tour guides in the year 2000.

Method

Development of Motivation Items

Consistent with the recommendations of Wickham and Graefe (1998) and Spencer (1998), we used a three-step approach to identify motivation domains and develop items specifically for volunteers in environmental organizations. We began by reviewing the literature on the motivations of volunteers. Because the literature was based primarily on United States volunteers, the first author, Yi-Fan Tung, conducted one focus group discussion and three follow-up interviews with members of Taiwan's Society of Wilderness, a "soft-green" NGO similar to NTS. The focus group and interviews served as an additional way to compare motivation domains across the two cultures and identify domains that might be important in Taiwan but not in the United States (Kerstetter & Gitelson, 1997; Minnis, Holsman, Grice, & Peyton, 1997).

Based on our focus group discussion, interviews, and literature review, we identified nine motivation domains that might be important to NTS volunteers. Eight of the domains identified in the focus group discussion and interviews had been used previously by two to four other researchers in previous studies (Table 1). In contrast, the Empty-Nest domain that emerged from the focus group had been used previously by only one researcher in Taiwan. For each motivation domain, we developed a pool of items that were reviewed by a panel of university faculty and graduate students who were knowledgeable about motivation research, as well as the president of NTS. Using this review, we reduced the initial pool to 28 items with three to four items in each domain.

Survey Instrument

We surveyed volunteers with a paper-and-pencil questionnaire. In the questionnaire, the 28 motivation items (Table 1) were presented in random order. Respondents rated each motivation item on a five-point scale anchored by 1 (*not at all important*) and 5 (*extremely important*). The remainder of the questionnaire was composed of items about respondents' past volunteer experience (years of experience at NTS, monthly frequency of conducting guided tours, total number of tours conducted, other organizations in which respondents volunteered) and socio-demographic items (gender, age, education, income, marital status, parental status).

We developed the questionnaire in English and then used the translation/back-translation process to ensure that the Chinese version would faithfully represent our original meaning (Bailey, 1994). After translation into Chinese, the questionnaire was back-translated into English by the president of NTS and two Taiwanese doctoral students. The wording of the Chinese version of the questionnaire was then modified to eliminate inconsistencies between the original English version and back-translated English version.

Survey Procedures and Response Rate

The NTS leaders in Taiwan were responsible for administering the survey to the organization's 104 volunteer interpreters. The NTS leaders collected data in two ways. First, they distributed questionnaires during three separate NTS meetings (a supervisor meeting, a research and development group meeting, and a fern-study group meeting). Twenty-two of the 24 questionnaires distributed at these meetings were returned. The

Table 1

Motivation Domains, Studies, and Items

Domain identified by focus group	Other studies that used similar construct	Items selected for use in current study
Learning	Cnann & Goldberg-Glenn, 1991; Driver, Manfredo & Tarrant, 1996; Graefe & Gitelson, 1994; Ho, 1998; Wickham & Graefe, 1998	<ol style="list-style-type: none"> 1. To experience new and different things. 2. To discover new things about nature. 3. To learn more about nature.
Enjoy nature	Driver, Manfredo & Tarrant, 1996; Graefe & Gitelson, 1994; Ho, 1998; Hsuh & Lin, 2000	<ol style="list-style-type: none"> 1. To observe nature's beauty. 2. To enjoy the sights, sounds and smells of nature. 3. To feel close to nature.
Religious-spiritual	Cnann & Goldberg-Glenn, 1991; Driver, Manfredo & Tarrant, 1996; Fitch, 1987	<ol style="list-style-type: none"> 1. To fulfill my religious beliefs and practices. 2. To develop my spiritual values. 3. Because it is a part of my way of life.
Social contact	Cnann & Goldberg-Glenn, 1991; Driver, Manfredo & Tarrant, 1996; Graefe & Gitelson, 1994; Wickham & Graefe, 1998	<ol style="list-style-type: none"> 1. To be with friends. 2. To be with people who love nature like me. 3. To meet new people.
Social obligation	Cnann & Goldberg-Glenn, 1991; Fitch, 1987; Francies, 1983; Hsuh & Lin, 2000; Wickham & Graefe, 1998	<ol style="list-style-type: none"> 1. To meet the expectations of my friends. 2. To meet the expectations of people in NTS. 3. To meet the expectations of my family or relatives.
Achievement	Cnann & Goldberg-Glenn, 1991; Driver, Manfredo & Tarrant, 1996; Wickham & Graefe, 1998	<ol style="list-style-type: none"> 1. To gain a sense of self-confidence. 2. To develop a sense of self-pride. 3. To develop and test my abilities.
Benefit nature and society	Ho, 1998; Hsuh & Lin, 2000	<ol style="list-style-type: none"> 1. To do something worthwhile for society. 2. To help the NTS accomplish its goals. 3. To prepare kids and students to care about nature. 4. To help people develop an accurate understanding of environmental issues.
Teaching-leading-sharing	Driver, Manfredo & Tarrant, 1996; Ho, 1998	<ol style="list-style-type: none"> 1. To help others learn more about nature. 2. To share my love of nature with others. 3. To lead others.
Empty nest	Hsuh & Lin, 2000	<ol style="list-style-type: none"> 1. To do something that makes me feel needed. 2. To do something worthwhile now that I have no obligations (e.g., children, job, housework). 3. To do something to fill my empty nest.

Table 2.

Reliabilities and Mean Importance Scores for Motivation Domains

Domain	Overall	Alpha if	Index	Index
Item	Alpha	Item Deleted	Mean	S.D.
Enjoy Nature	.91		4.57	0.59
To observe nature's beauty		.85		
To enjoy the sights, sounds, and smells of nature		.91		
To feel close to nature		.87		
Learning	.77		4.32	0.71
To experience new and different things		.74		
To discover new things about nature		.74		
To learn more about nature		.62		
Benefit Nature and Society	.81		4.18	0.69
To do something worthwhile for society		.76		
To help the NTS accomplish its goals		.76		
To prepare kids and students to care about nature		.78		
To help people develop an accurate understanding of environmental issues		.73		
Religious-Spiritual	.62		3.99	0.74
To fulfill my religious beliefs and practices		.21		
To develop my spiritual values		.71*		
Because it is part of my way of life		.47		
Social Contact	.78		3.67	0.81
To be with friends		.68		
To be with people who love nature like me		.78		
To meet new people		.65		
Achievement	.75		3.66	0.89
To gain a sense of self-confidence		.65		
To develop a sense of self-pride		.67		
To develop and test my abilities		.70		
Teaching-Leading-Sharing	.56		3.49	0.66
To help others learn more about nature		.38		
To share my love of nature with others		.50		
To lead others		.49		

Table continued next page.

Table 2 continued.

Empty Nest	.69	3.02	0.90
To do something that makes me feel needed		.59	
To do something worthwhile now that I have no obligation (e.g. children, job, housework)		.64	
To do something to fill my empty-nest		.57	
Social Obligation	.70	2.08	0.85
To meet the expectations of my friends		.63	
To meet the expectations of people in NTS		.65	
To meet the expectations of my family or relatives		.56	

* Item deleted; alpha for remaining 2 items = .71; two-item mean = 3.75

NTS leaders then mailed questionnaires and cover letters to the 80 volunteers who had not attended any of these meetings. Seven days after questionnaires were mailed, a thank you/reminder-postcard to each respondent. Fifty-two of the 80 mailed questionnaires were returned. Overall, 74 of the 104 questionnaires (71%) were returned. Although this sample size was small, it was large relative to the size of the population being studied, and we did not test for non-response bias.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to profile respondents. The reliability of the items in each motivation domain was tested with Cronbach's alpha, a measure of internal consistency. Although Cronbach's alpha measured the internal consistency of items in each domain, it did not test item relationships across domains. Factor analysis, a procedure which could be used to test relationships among the nine domains, was not used because the size of the study population (104) was too small (Nunnally & Bernstein, 1994). For each domain, an index was calculated using mean value of items that exhibited acceptable reliability. Mean domain scores for the whole sample were ranked. Finally, mean importance scores were computed for sub-groups (e.g., gender, age, education) and tested for differences with one-way analysis of variance (ANOVA). For ANOVA tests with three levels (e.g., age), post hoc Scheffe tests were used to identify which subgroup means differed from each other.

Results

Sample Characteristics

Among the volunteers who completed questionnaires ($n = 74$, response rate = 71%), ages ranged from 22 to 64, with over half (55%) being 40 to 49 years old. The majority (75%) were female. Respondents were well educated; 81% had a college degree or higher, and all reported that they had completed senior high school. Respondents were also relatively affluent, with 55% reporting household incomes of \$35,000 and above. Most respondents (84%)

Table 3.

Relationship between motivation domains and socio-demographic characteristics (F values)

Motivation domain	Socio-demographic characteristic					
	Age	Gender	Education	Household income	Marital status	Children in home
Enjoy Nature	0.36	0.20	2.92	4.75*	2.17	2.74
Learning	0.51	0.01	2.69	1.81	1.14	2.67
Benefit Nature & Society	0.92	0.56	1.91	0.58	0.36	0.37
Religious-Spiritual	0.03	0.20	3.05	0.05	0.14	0.86
Social Contact	0.28	0.15	1.46	1.86	0.42	2.32
Achievement	0.32	0.12	6.57*	0.02	0.11	0.49
Teaching-Leading-Sharing	6.78**	2.63	0.01	0.19	4.23*	6.71**
Empty Nest	2.01	0.22	4.26*	0.30	0.50	0.47
Social Obligation	0.35	5.32*	0.43	1.39	0.02	0.50

* $p \leq .05$ ** $p \leq .01$

were married, and most (82%) had at least one child. A majority (65%) reported that they had been volunteering for NTS for three years or more. More than one third (37%) reported that they had volunteered for NTS on 26 or more occasions. In comparison, 31% reported volunteering from seven to 25 times, and 32% reported volunteering fewer than seven times.

Motivation Domains

As measured by Cronbach's coefficient alpha, the internal consistency of the nine indices for motivation domains ranged from a high of .91 to a low of .56 (Table 2). Coefficients for seven of the nine indices were deemed acceptable, but coefficients for two indices were low enough to raise concerns about internal consistency. First, the internal consistency of the three-item Religious-Spiritual index ($\alpha = .62$) was low, but dropping the item to *develop my spiritual values*, increased the alpha level to .71. Second, the internal consistency of the Teaching-Leading-Sharing index ($\alpha = .56$) may have been low because we attempted to combine three concepts that were not closely-related in volunteers' minds. This suggests that teaching, leading, and sharing should be measured individually rather than jointly in future research. We did, however, retain the domain for exploratory purposes in our study.

The relative importance of the nine motivation domains, measured with overall mean scores, ranged from a high of 4.57 to a low of 2.08 on our five-point scale (Table 2). On average, volunteers attached most importance to enjoying nature, followed by learning and doing something to benefit nature and society, respectively. The mean importance scores for all three of these motivation domains exceeded 4.0. In comparison, scores for five domains (Religious-Spiritual, Social Contact, Achievement, Teaching-

Table 4.

Relationship between motivation domains and experience level at NTS (F values)

Motivation domain	Years as NTS volunteer	Number of volunteer sessions at NTS
Enjoy Nature	1.84	0.48
Learning	6.64*	0.45
Benefit Nature & Society	0.25	1.99
Religious-Spiritual	0.01	0.61
Social Contact	3.66	0.17
Achievement	0.29	1.21
Teaching-Leading-Sharing	5.27*	3.30
Empty Nest	0.84	0.17
Social Obligation	0.01	1.12

* $p \leq .05$

Leading-Sharing, Empty Nest, in descending order) ranged between 4.0 and 3.0 on the five-point scale. Only the score for Social Obligation fell below the scale's midpoint of 3.0.

Motivations and Socio-Demographic Characteristics

One-way ANOVA demonstrated that five motivation domains related significantly to one or more socio-demographic characteristics (Table 3). First, the Enjoy Nature domain was more important to volunteers with household incomes less than \$35,000 ($M = 4.74, n = 31$) than it was to those with incomes of \$35,000 or more ($M = 4.43, n = 38$). Second, Achievement was more important to volunteers without college degrees ($M = 4.19, n = 14$) than to those with college degrees ($M = 3.54, n = 60$). Third, the importance of Teaching-Leading-Sharing varied in relation to age, marital status, and the presence of children under 18 in the home. This domain was more important to volunteers younger than 40 ($M = 3.89, n = 12$) and those aged 40 to 49 ($M = 3.58, n = 40$) and than it was to those aged 50 and older ($M = 3.13, n = 21$). Teaching-Leading-Sharing was also more important to single volunteers ($M = 3.83, n = 12$) than to married volunteers ($M = 3.41, n = 61$) and more important to volunteers without children under 18 living at home ($M = 3.90, n = 13$) than to those with children under 18 living in at home ($M = 3.39, n = 60$). Fourth, the Empty Nest domain was more important to volunteers without college degrees ($M = 3.45, n = 14$) than it was to those with college degrees ($M = 2.91, n = 60$). Fifth, males ($M = 2.47, n = 18$) attached more importance than females ($M = 1.95, n = 54$) to Social Obligation.

Motivations and Past Experience at NTS

Additional tests using one-way ANOVA demonstrated that the importance of two motivation domains varied with experience level at NTS (Table 4). Compared to individuals who had been volunteering for more than two years, those who had been volunteering for two years or less placed more importance on the Learning domain ($M = 4.61, n = 24$

versus $M = 4.20$, $n = 44$) and more importance on the Teaching-Leading-Sharing domain ($M = 3.76$, $n = 24$ versus $M = 3.42$, $n = 44$).

Discussion

Our survey revealed the relative importance of nine different motivation domains to NTS volunteer interpreters. Volunteers rated the enjoyment of nature, opportunities for learning, and opportunities to benefit nature and society as more important than other motivations. Previous volunteer studies based on social exchange theory have categorized volunteer motivations as altruistic, such as helping others, or egoistic, such as achievement (e.g., Cnaan & Goldberg-Glen, 1991; Wickham & Graefe, 1998). Consistent with that perspective, the two motivations most important to NTS volunteers, Enjoy Nature and Learning, appear to be inclined toward the egoistic, while the third most important motivation to NTS volunteers, Benefit Nature and Society, appears to be more altruistic.

Like earlier researchers (e.g., Gidron, 1978; King & Lynch, 1998; Smith, 1966; Wandersman, 1981), we discovered that motivations of NTS volunteers varied among socio-demographic subgroups and across experience levels. For example, volunteers with lower incomes attached more importance than those with higher incomes to enjoying the sights, sounds, and smells of nature. In another example, NTS volunteers without college degrees attached more importance than those with college degrees to achievement and to the opportunity to fill an empty nest. The importance of the Teaching-Leading-Sharing domain was highest for NTS volunteers who were younger, single, and without children. Because we did not question volunteers about why they placed more or less importance on a given motivation domain, additional research will be needed to determine why these differences between subgroups exist.

We also found motivational differences between NTS newcomers and those with more years of experience. Both the Learning and Teaching-Leading-Sharing domains were more important to newcomers. This pattern may be related to the fact that veteran volunteers at NTS had already had extensive opportunities to learn about the organization, the trails it operates, and the interpretive techniques used when conducting nature walks, as well as more opportunities related to teaching, leading, and sharing with visitors on the trails.

Implications and Recommendations for Management

Although our results were cross-sectional and represented volunteers from only one organization, the findings may help NTS managers recruit and retain other volunteers and may suggest recruitment and retention ideas for other organizations as well. For example, the importance of the Enjoy Nature domain suggests when NTS managers recruit volunteer interpreters, they should call attention to opportunities to enjoy nature, perhaps by putting appealing photographs of natural trails on brochures and advertisements. In addition, managers could hold as many meetings and training sessions as possible outdoors, in forests or along streams, rather than indoors. Second, the importance of the Learning domain to NTS volunteers is similar to the findings of Hsuh's (1998) among Kaohsiung Metropolitan Park volunteers and Wickham & Graefe (1998) among volunteers at Shaver's Creek Environmental Center. The importance of learning, particularly among newer volunteers, suggests that the NTS managers should provide them with extensive opportunities to learn new and different things about nature and about inter-

pretive techniques. The third important domain for NTS volunteers, Benefit Nature and Society, suggests that managers need to look for ways to show appreciation for the contribution volunteer interpreters are making to nature and society. Finally, managers should encourage volunteer interpreters to become more deeply involved in activities so volunteers feel they are maximizing their contribution to nature and society.

Understanding how motivations differ among volunteers is equally important. For example, the Teaching-Leading-Sharing domain was significantly more important to younger, single volunteers without children. Therefore, NTS managers should ensure that these volunteers have ample opportunities to lead visitors, share their love of nature, and help visitors learn. Furthermore, given the goals of an organization like NTS, it might be especially valuable to recruit young, single volunteers. Because of their enthusiasm for teaching, leading, and sharing, these young, single volunteers (currently fewer than 20% of the NTS volunteer team) may be particularly effective environmental educators.

Motivations vary not only within one organization, but also between organizations, at least in part because organizational purposes differ. For example, the primary motivation of Ohio Nature Conservancy volunteers was altruistic; they had a desire to do something for nature (King & Lynch, 1998). In contrast, NTS volunteers ranked Benefit Nature and Society third, behind enjoying nature and learning, which are more egoistic. This difference is consistent with the Nature Conservancy focus on resource protection and the NTS focus on appreciation and education. To recruit and retain volunteers most effectively, volunteer coordinators for different organizations should remember to seek a good match between organizational purposes and volunteer motivations, maximizing the likelihood that the most important motivations of volunteers who work with the organization will be fulfilled.

Recommendations for Future Research

Future studies should be designed to address three limitations of this study. First, we were not able to investigate the causes for differences in motivations, but these causes are important for the managers of NTS or any other organization that uses volunteers. For example, why did volunteers with more or less education differ in the importance they placed on achievement, and what does this mean for recruiting and retaining volunteers? Although identifying causes is more difficult than describing differences, it will be important work for developing a complete understanding of volunteer motivations.

Second, because our study population ($N = 104$) and sample ($n = 74$) were small and we used 28 motivation items, we were unable to use factor analysis to test for relationships between our nine motivation domains. We confirmed the internal consistency of eight of the nine domains using reliability analysis, but factor analysis may have revealed that some domains should have been divided or that other domains should have been combined. This limitation can be overcome in the future by studying a volunteer population which is large enough to produce a sample size of 150 or more or by using fewer motivation items.

Third, we recommend that additional attention be focused specifically on the Teaching-Learning-Sharing domain, which demonstrated little internal consistency in our study. As conceptualized by Driver and associates (see Manfredro, Driver, & Tarrant, 1996), this is a complex domain with three sub-dimensions. Our results suggest that it may be necessary to measure teaching, learning, and sharing separately or utilize multi-

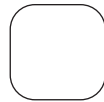
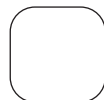
ple items for each sub-dimension if they are being measured together.

Finally, we recommend that researchers compare the motivations and characteristics of environmental volunteers across different cultures and countries. Understanding similarities and differences among environmental volunteers from different cultures will extend the conceptual knowledge of volunteers and volunteering, and it is likely to help managers of many organizations around the world recruit, train, and retain effective volunteers.

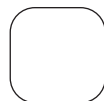
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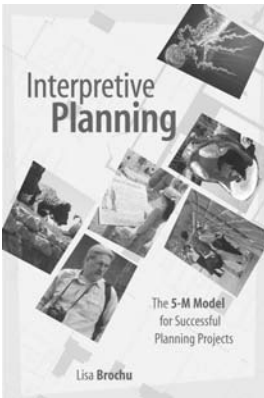
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I N S H O R T



Book Review



Brochu, Lisa. (2003).
*Interpretive Planning
The 5-M Model for
Successful Planning Projects.*
Fort Collins, CO: InterPress.

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Introduction

Lisa Brochu has written the book that I had hoped to write one day. The book (153 pages plus glossary and index) is not only a long overdue treatment of interpretive planning, but is also a catalyst for thinking about the value and process of interpretation today. Though concise, this book raises the bar for interpretive planners and for the overall discipline of interpretation. *Interpretive Planning: The 5M Model for Successful Planning Projects* is sure to be useful for planners, interpreters, instructors, and others involved with interpretation.

The first three chapters of this book define and discuss interpretive planning and provide a useful context for interpretive planning and planners. Chapter 4 provides a synopsis of the planning process followed by five chapters (Chapters 5-9) that address each of the Ms in the 5M model. The final two chapters contain post-planning considerations (Chapter 10) and plan formatting discussion (Chapter 11). This review highlights some of the gems contained in the book, and offers a few observations about why it is a much needed catalyst for the profession.

Review

If you're like me, you often gloss over or perhaps even ignore a book's preface. However, I urge you not to do so in this case. In these early pages of the book, Lisa not only establishes her credibility as an interpreter-planner-manager with nearly 30 years experience, but more importantly, she underscores the *process* of planning over the *product* of planning. This fact won me over right away and is one of the true contributions of this book. The author boldly states that there are no definitive templates or cookbook recipes for interpretive planning. As such, she suggests that the *process* of *planning* requires both flexibility and judgment. In fact, the book's mantra of "*it depends*" starts in the early pages of the book and is woven throughout the rest of the book.

Chapter 1 offers a definition of interpretive planning

and discusses effective planning as a marriage of management, message, market, mechanics, and media—the five Ms that are discussed more thoroughly later in book. In part, her definition of interpretive planning is described as a *decision-making process*. This is refreshing. Again the idea of process over product is evident, and in this case, process infers choices, thinking, and judgment—important topics discussed throughout the book.

Significant attention is also spent in Chapter 1 discussing plan types and distinctions. A helpful graphic suggests possible relationships between the various types of plans. In planning, however, a great deal of confusion comes from the differing terminology used by various agencies and organizations. As a result, it would be helpful if this section included more synonymous terms for the various types of plans (i.e., action plans, operations plans, work plans, comprehensive management plans) and mention of linkages (or lack thereof) between interpretive plans and General Management Plans (GMP), Resource Management Plans (RMP) or other larger planning efforts. The author's discussion of plan types and distinctions however, may provoke important discussion and debate about planning, which subsequently may help clarify the incredible constellation of planning terminology.

Chapter 2 reviews a variety of interpretive facilities by function and target market, and discusses what planning can and cannot do. This chapter will be helpful for those who might be trying to develop an overall interpretive program within their agency or for those trying to articulate how their agency might benefit from interpretive planning. The chapter concludes with some discussion about planning teams and the value of others, including front-line staff, customer/visitor, and management input, in the planning process. The discussion about integrating front-end research is helpful.

Chapter 3 discusses the profile of an effective planner. This brief but helpful chapter seems misplaced in the book. It focuses mainly on the characteristics and professional development of good planners but in doing so, may derail some readers from their focus on the planning process set up in Chapters 1 and 2. Furthermore, the fine line between describing and promoting NAI's professional development capabilities is blurred in some instances.

Chapter 4 introduces an interpretive planning process. At first glance and because of the book's title, readers may think that the 5M model is proposed as a planning process. That however, is not the case. Rather, the author reviews a simplified four-stage planning process in this chapter and then uses Chapters 5–9 to discuss the five Ms that serve as an overlay with important touchstones for the entire planning process. In reviewing the planning process, the author spends time on four major stages of planning—information, analysis, options, and action. It is refreshing to have the process simplified in this way. The accompanying discussion is thorough and instructive, although, as with some of the other chapters, it would be helpful to see more synonymous terms used by other planners. The author concludes the chapter by presenting a list of planning pitfalls and by offering a distinction between the planning process and the 5M model.

Chapters 5–9 discuss each of the five Ms in greater detail. Chapter 5 focuses on management and describes how factors from an agency's management environment (i.e., enabling legislation, vision, mission, history, goals, objectives, policies, issues, resources) are integrated into the planning process. The section on objectives provides a helpful

distinction between management, interpretive, and action objectives, but unfortunately, the reader must seek out examples of the latter two types in later sections of the book. This chapter is essential for understanding and articulating the linkages between agency mandates and opportunities for visitor education.

In Chapter 6 (*Markets*), the author describes the importance of understanding the market environment in interpretive planning (i.e., *the combination of factors that define demand and how an organization will either generate or respond to that demand*). The content of this chapter focuses on the classic five Ps of marketing—product, public, price, placement, and promotion. Each of these factors is described and many good examples are provided. The end of the chapter contains several very good suggestions for collecting market information and for diagnosing (and analyzing) the greater context that might influence the planning effort.

Chapter 7 (*Message*) begins with one of the simplest and perhaps most helpful graphics in the book. The visual depicts a central theme as the intersection between visitor interest, management desires, and resource stories. As obvious and fundamental as this may seem to many interpreters, few other sources have depicted or discussed it as clearly. Throughout the chapter very useful activities for developing themes, sub themes, and storylines are offered. Again, the discussion would benefit from mention of other terms used in theme development (e.g., compelling stories, statements of significance, The Big Idea, main messages) so readers less familiar with these ideas might find it easier to enter the discussion.

The focus of Chapter 7 (*Mechanics*) is predominately a discussion of the visitor experience and how the mechanics of design, site selection, and space allocation interplay with that experience. Several photographs are included to illustrate the concept of a complete visitor experience and a few charts and graphics help illustrate the author's major points.

The last of the 5M chapters (*Media*) discusses media selection and testing, writing media descriptions, market/media/message mix, and media costs. Although much helpful information is provided, the organization of the chapter is very confusing. Many of the sidebar examples are separated from the accompanying narrative, making it difficult for the reader to follow the author's intent.

The book concludes with a brief description of post-planning steps—design development, fabrication, operations and maintenance, evaluation, and phasing (*Chapter 10*), and suggestions for formatting plans (*Chapter 11*). This final chapter seems to fit better after Chapter 9 since the format of a final plan will precede any post-planning steps. Nonetheless, these final chapters provide useful guidance for following through with an interpretive plan.

Conclusion

This book responds to a long overdue need for written, articulate guidance in interpretive planning. For the most part, the writing is clear, the examples are positive, and the provocation is great. For those who are already involved in interpretive planning, this book will serve as a valuable reference and stimulus for quality control among planners. For resource managers, the book provides the best and most up-to-date justification and rationale for interpretive planning. For those who teach interpretation or train others in interpretive planning, this book is a must for outlining the process by which we investigate visitor opportunities and recommend interpretive media. Finally, for field inter-

preters, educators, curators, evaluators, and others in informal education, this book provides a general context for thinking about visitor experiences. Ms Brochu has provided the discipline with a much needed reference for interpretive planning—one that provokes a great deal of thought about where we've been and where we still need to go with interpretive planning.

Book Review



Larsen, D. L., Ed. (2003).
Meaningful interpretation: How to connect hearts and minds to places, objects, and other resources. Fort Washington, PA: Eastern National.

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Csikszentmihalyi introduced the concept of flow several decades ago. To him, flow was the zone where everything “clicks,” the place where our skills are just sufficient to meet the challenges we face. For interpreters, the challenges are high. Our visitors bring diverse backgrounds, meanings, motivations and interests. They value our resources differently. They bring differing commitments to protecting our resource. Interpreters do experience flow, at least some of the time. When flow happens an observer might conclude: when it’s “working” for the interpreter it tends to “work” for the audience. But what exactly is working?

Meaningful Interpretation is a visually appealing, leather-bound volume edited by David L. Larsen, training manager for interpretation, education, partnerships, recreation and conservation at the Stephen T. Mather Training Center in Harpers Ferry, West Virginia. *Meaningful Interpretation* fills an essential need in the ongoing professionalization of interpretation. The workbook-style text helps interpreters crack the code, solve the mystery and put the pieces together to realize their dreams of interpretive excellence and effectiveness.

In recent years a common language has emerged in the field of interpretation. The National Park Service (NPS), the National Association for Interpretation, the Fish and Wildlife Service, and others have defined interpretation using such terms as meanings, interests, and connections. More and more interpreters talk about developing tangible/intangible links to provide opportunities for intellectual and emotional connections to resource meanings. Interpreters increasingly use the process model, multiple points of view, and interpretive themes that incorporate a universal concept to develop interpretive products. *Meaningful Interpretation* demystifies the jargon, reveals continuity with Mills, Tilden, and other influential thinkers, and grounds interpreters in these emerging concepts.

Meaningful Interpretation enables NPS and non-NPS interpreters to join in a conversation, to have a more focused dialogue about the craft and concepts of interpretation.

Meaningful Interpretation consists of 11 chapters, five pamphlets, a DVD, and an index. The chapters cover such topics as “Meanings and Interests,” “Facilitate a Connection,” “The Visitor is Sovereign” and “Something Significant.” The five pamphlets take an in-depth look at single topics such as interpretive themes, the interpretive equation, and the analysis model. The DVD is a professionally acted and produced dramatization of David Larsen’s essay entitled “An Interpretive Dialogue.” Set in Harpers Ferry National Historical Park, the 10 scenes parallel the first 10 chapters in the book. The index helps one navigate through a text that, due to its journal-like format, could pose problems if one wanted to retrace one’s steps, pinpoint definitions or a specific example, or relocate one of the many quotes that pop up and give one pause. Collectively, these features help interpreters solve the mystery of “What is good interpretation?” It transcends the highly personal, often highly idiosyncratic response that “You know it when you see it.” It distinguishes interpretation from interpredata, interpretainment, interpretiganda, and interprecation. It identifies the basic elements of effective interpretation and shows how the pieces fit together.

Many interpreters possess passion and talent—sometimes raw talent. This is true for brand new and experienced interpreters, students and coaches, volunteers and paid professionals. Passion and talent may elicit admiration and applause, but they can stop short of achieving the ultimate goal: helping visitors care about the resource so that they can begin to care for the resource. The book is not cheap—at about \$60 it represents an investment in interpretive excellence. Corky Mayo, chief of interpretation for the NPS, has observed that the Interpretive Development Program, the core content of which this volume reflects, has dramatically improved the quality of interpretation at participating sites. Whatever improvement interpretation realizes in the future, however “best practices” from museums, environmental learning centers, historic homes, zoos, aquaria, and other interpretive sites are integrated, whichever concepts and techniques have enduring value, this text will be a touchstone in the process of evolution. In the meantime, *Meaningful Interpretation* will serve as an invaluable tool for supervisors, coaches, and academics as they strive to raise the level of interpretation at interpretive sites and in the classroom. *Meaningful Interpretation* and its many contributors, however, will primarily assist aspiring interpreters in achieving their dreams of interpretive excellence, that is proficiency in the craft of interpretation, and interpretive effectiveness, that is the ability to facilitate visitor connections to resource meanings and in this way to foster resource care and stewardship.

Processing and Utilizing
Counterintuitive
Information in
Interpretation and
Resource Management:
A Case Study

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Interpreters and other professionals working with the public in natural resource management settings depend on good information in order to develop effective communication and education strategies. But what happens when credible information that challenges some of the dominant assumptions of these professionals becomes available? The following research project was designed to yield valuable insights into one group of stakeholders in a wildlife management project in upper Appalachia. While it met its original goal, the project is also valuable because it serves as a case study of what happens when empirical data and field observations are seen as intuitively unappealing.

The project was undertaken in an effort to better understand the disposition of a local population of rural Appalachian residents toward the Ohio Division of Wildlife and its management of timber rattlesnakes (*Crotalus horridus horridus*) as an endangered species. Professionals within the division believed that the immediate need for this project was grounded in three premises: 1) the recent documented killing of several timber rattlesnakes; 2) the general belief by some within the division that local residents in southern Ohio may “persecute” (i.e., molest or kill) or support the persecution of the protected rattlesnake; and, 3) the need to develop focused and effective educational appeals to adult Ohioans to enhance support of division policies regarding this animal.

Division employees cited various bits of evidence for accepting these premises, such as the recent discovery of dead snakes deposited in conspicuous locations, personnel reporting encounters with disgruntled individuals complaining about the division’s policies, and the apparently widespread circulation of a fallacious rumor which described purported reintroduction efforts by the division.

A focus group approach was selected as the principal method of data collection. Focus group research usually yields qualitative data and is often utilized in marketing and public

policy research. It is designed to facilitate a discussion forum where all participants can speak and where the possibility of establishing consensus is present. The focus group format is a semi-structured group interview with an informal “feel” that necessitates the participation of a skilled facilitator to moderate discussion and keep the group on task. Focus groups typically consist of six to 12 participants and a facilitator, with a suggested duration of 1.5 to 2.5 hours.

Focus groups have been utilized by natural resource managers both as components of larger research projects (Absher, 1998) and as a stand-alone methodology (McCarville, Sears, & Furness, 1999). Focus groups have also been utilized specifically for wildlife management research (DiCamillo, 1995). While new strategies to enhance data collection and promote public participation are still emerging, focus groups continue to be utilized by wildlife agencies as a progressive form of research (Schusler & Decker, 2002). Focus groups are considered a valuable way to gauge individual and group attitudes. This was a particularly important aspect of this study as attitudes of local residents can be possible correlates of future behaviors (Manfredo, Vaske, & Decker, 1995).

The focus group sessions in this project were all conducted in the summer of 2000 with residents and recreationists in a region adjacent to Shawnee State Park and Forest in the Appalachian hill country of southern Ohio. This region is one of the target management areas for the animal. It is mostly rural and heavily forested, provides good habitat for timber rattlesnakes and has topography suitable for their ancestral den sites. Previous field research has shown that it is home to one of the last large and viable populations of the study animal in the state.

Six focus group sessions were completed. The mean size was 7.5 participants and they lasted from 1.25 to 2.50 hours, averaging approximately 1.75 hours. The focus groups were supplemented with a short self-administered questionnaire which was given at the beginning of the sessions. The questionnaire helped not only to gauge individual attitudes, beliefs, and behaviors, but assisted in providing focus on the discussion topic. No coding was utilized on the surveys, and no electronic recording of focus groups was performed. All participants in the focus groups were assured of confidentiality. The Division of Wildlife offered assurance that no attempt would be made to link data to individuals or to utilize data for purposes other than research, such as criminal investigation or prosecution.

Six general findings emerged from the project, including: 1) the study population exhibited a moderate-to-high knowledge level of the animal for laypersons; 2) the majority of the study population was indifferent or supportive rather than antagonistic toward the animal and efforts to protect it; 3) the majority of the study population did not base judgments on the division from an anti-government bias, but sometimes specific past experiences with other divisions of Ohio Department of Natural Resources (ODNR), especially the Division of Forestry, did affect respondents’ opinions; 4) the majority of the study population was opposed to commercial harvesting, poaching, and molestation of the animals and even seemed to harbor a latent respect for timber rattlesnakes; 5) while not many participants professed to “like” or “love” snakes, few were committed “snake-haters” and instead of being opposed to rattlesnake protection efforts, most were either somewhat supportive or completely indifferent to the policy; and, 6) the chief interests of the participants could be reduced to a few very specific concerns about safety, liability, availability of assistance, and property rights.

Additionally, every group independently came to a level of consensus, with limited dissent, regarding two specific propositions: 1) they would not be happy to see the rattlesnake “become extinct” (i.e., become extirpated) in Ohio; and, 2) they were opposed to the commercial harvesting or wanton destruction of rattlesnakes and other snakes. Many persons wasted no time in describing persons who would go out of their way to kill rattlesnakes or destroy dens as “sick.” A number of individuals spoke out to acknowledge that even though they were afraid of snakes, they believed the rattlesnakes had a place in the environment. This was often qualified with something to the effect of, “Yeah, but just not in my yard!” Within several groups, individuals even expressed a vague sense of pride in living in a region where such wild animals were present.

In the end, while there were a few individuals who exhibited some degree of animosity toward the animal and efforts to protect it, most in the groups did not. Instead, they evinced a complex set of opinions that, when analyzed, yielded evidence of a small bundle of specific concerns regarding the preparedness of local emergency services for snakebite care, the potential for financial loss associated with medical care for pets or humans, the availability and readiness of ODNR agents to assist in the capture and relocation of snakes found on private property, and a fear of possible prosecution on criminal charges from unintentionally inflicting harm to rattlesnakes.

In light of these findings, the final report included several recommendations, including: giving consideration to further public education efforts in the area, sponsoring new interpretive programming in the Shawnee State Forest & Park region, facilitating a formal mechanism for handling nuisance animal calls, providing all appropriate Ohio Department of Natural Resources (ODNR) employees with “capture kits,” distributing first aid information and equipment to emergency response units, and clarifying the official position on the likelihood of prosecution in the case of unintentional harm to rattlesnakes. Recommendations to clarify the distinction between the Division of Wildlife and other ODNR divisions and to address the compatibility between rattlesnake protection and current forest management practices were also made, as was simply addressing the several confusing and erroneous ODNR listings in local telephone directories.

Initially, when these results and recommendations were discussed in a meeting with employees of the division, other state and federal agency representatives, and foresters employed in the private sector, they were met with considerable skepticism. It was clear that these findings, no matter how well they were grounded in accepted research methods, were also considered hard to believe. The idea of a relatively well-informed rural constituency which desired direct answers to a few specific questions, one with no endemic anti-predator or anti-government agenda, was an idea that apparently seemed far-fetched.

Many of the professionals in attendance expressed strong opinions that seemed to be based on a few isolated incidents, personal anecdotes, or second-hand information. In short, their rather poor initial opinions of the study population and its knowledge, attitudes, and behaviors appeared to be based more on hearsay and institutional prejudice than on empirical evidence. It was only after further discussion and reflection that the acceptance of these ostensibly counterintuitive findings became possible. As a result, prior assumptions were set aside, and these agencies and their private partners decided to follow up on many of the recommendations made by focus groups. Some of these changes have arguably yielded measurable success.

Such internal discussion, reflection, and introspection proved essential to this process of evaluating research and implementing recommendations. It is also consistent with the ongoing need within the interpretive profession and the greater natural resources community to address misinformation and misunderstanding that, left unchecked, can hinder the efficacy of public communications (Zuefle & Beck, 1996).

Additional recommendations that emerged from the study are ones that go out to the whole profession. First, interpreters and other natural resource professionals may wish to reexamine some of the prevailing beliefs and attitudes toward constituent populations such as rural residents. Secondly, a reconsideration of communication style may also be in order. At times it seemed these professional agencies and their constituents were “separated by a common language,” as it were. The regular utilization of professional jargon such as “persecution” and “extirpation” did nothing to promote clear communication with residents. Unfamiliar terminology can breed confusion, while heavily value-laden terms can have connotations which are powerful and far-reaching, and may function as a disservice when used to communicate with the public.

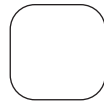
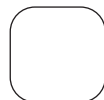
Lastly, one of the most overriding observations that could be drawn from this research project is that sometimes agencies have much less resistance from the outside than is believed to exist from the inside. Attention to the original findings of this study served to address the rather specific concerns of southern Ohio residents, garner further support for resource protection efforts, and to help ensure the future of the timber rattlesnake in Ohio. Attention to the accidental findings may yield similarly positive results in other settings.

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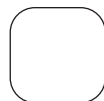
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IN MY OPINION



Research in
Interpretation:
Researcher's Perspective

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Is Interpretation Research a "Catch 22"?

A "push me, pull me cart."¹ Catch-22. The old torture technique of pulling arms and legs simultaneously. These are the analogies and metaphors that drift into my interpreter's brain as I think about research and interpretation. I wonder why the images have such stress and strain attached to them when research should and can be an exciting endeavor of exploration, discovery and problem-solving. In brief, I believe it is due to the conflicting and contradictory demands often placed on researchers (at least university-based researchers) when the expectation is that research can be exciting, integrative, and have multiple benefits and applications. Thus this puzzling dilemma becomes itself a subject of inquiry. A study would be nice, but my reflections across nearly 25 years of involvement with interpretation, research, and universities will suffice for this opinion piece.

During this time, I have observed changes in the nature of interpretive curricula (from "majors and degrees" to "emphasis areas and concentrations" to single courses; changes in "home departments" for interpretation; growth of interpretation at teaching-oriented colleges and declines at many research-intensive universities).² I've observed incorporation of interpretation into education programs, museum studies programs, and resource management programs. I've seen it placed in the context of mass media

1 To see a photo of a Push Me, Pull me cart, see the North Carolina State University physics demonstration lab web site, at <http://demoroom.physics.ncsu.edu:8770/html/demos/279.html>

2 Note that these are observed patterns, not researched trends for all universities.

communications, as a tool for the experiential component of tourism, and as a “set of techniques” for environmental education. Within several land management agencies, I’ve seen the decline and restructuring of social science research agendas (of which interpretation is a small component). Illustrating a reduction in priority, the National Park Service now has a single social science unit, directed part-time by a university faculty member. Lists of U.S. Forest Service research publications contain substantially fewer social science articles than of biologic and physical science research. In general, interpretation research publications are hard to find. In an era when ecosystem and other “systems” management has become accepted, and because we understand that human behavior is an important part of that, it would seem that interpretation, as one component of social science, should be integral to Cooperative Ecosystem Studies Units (CESU)-sponsored research. So why is it not? What are the challenges?

Do We Need Interpretation Research?

In my mind, there is no question that interpretation research is desperately needed, for reasons both scholarly and practical:

- to assess if interpretive principles and techniques we purport to be effective really are
- to justify interpretive programs and personnel
- to provide rationale and direction for interpretive program development to meet changing needs, preferences and contexts of diverse visitors, complex political and management environments, and rapidly changing technological contexts and tools
- to better identify and understand the varied roles that interpretation can play for agencies, communities, individuals and society
- to challenge our thinking about whether interpretation is, in fact, something that is unique and different from communications or education or marketing, and/or how it relates to those areas of inquiry as well as to areas of application (experience enhancement, learning, resource management, behavior change, knowledge gain, attitudes and beliefs, etc.)

If we believe that interpretation research is important, why do we see so little of it published? Why do so few researchers submit articles to the *Journal of Interpretation Research*? Why are so many academics/researchers—who have experience and training in both the practice and research of interpretation—working and publishing in other areas, such as environmental education, tourism, resource planning, and public involvement? We could say that “we just don’t get no respect.” Despite the debate required to address this statement, ultimately it expresses the precise need for interpretation research. If others don’t see its value, then it is difficult to “get respect.” So here’s a Catch 22: If we “don’t get no respect” (and thus, limited dollars to support research), it’s difficult to build a research-based case for the benefits and applications of interpretation to garner respect.

Chasing the Changing Contextual Challenges

Money

As the U.S. economy is increasingly strained, so are the public and nonprofit organiza-

tions that typically provide and use interpretation. Resources to support research continue to dwindle, and universities are increasingly stressed financially. In addition, internal university resources and government grant-in-aid programs to fund graduate students have decreased substantially. Simultaneously, students are in greater need of financial support for their education as tuition and fees continually increase. Universities are placing pressure on faculty to bring in major research grants for multi-year, high overhead (often over 50%) research projects. Small projects (sometimes defined as less than \$100,000, sometimes as less than \$500,000), or those with negotiated low overheads receive less “credit.” Many traditional funding source organizations for interpretation research support “smaller” projects, have lower overheads, and often will not cover certain costs (e.g., computer hardware or software, travel, student tuition, or fringes).

Publish or Perish

In addition to the “push” economics places on conducting interpretation research, Tier I research universities increasingly value peer-reviewed articles published in prestigious research journals. “Interpretation” is not a commonly recognized discipline or profession, having neither a long history nor track record of peer-reviewed journals. Thus, in striving for promotion and tenure, new faculty often do their research in other, more established and recognized areas or, if they do conduct interpretation research, they often publish in better known journals. Catch-22: Without the research and quality research publication submissions, it is difficult to establish credibility and a track record of quality scholarship and theoretical contributions.

Basic or Applied Research, Scholar or Manager/Practitioner-driven

A related question is, “For whom do we publish?” If practitioners and managers tend not to read research journals, and researchers want their research to have practical application, they often choose to publish in more accessible outlets (e.g., internal reports, conference proceedings), focusing on making the research understandable and applicable.

Many researchers strive for an integration of basic and applied research. This raises the issue of whose questions drive research—scholars or practitioners/managers? Scholars may be intrigued by a theoretical question about human behavior and communication that directs their research. Conversely, practitioners and managers usually have a management, resource allocation, or other “problem” for which they need research data to support decision-making. Although basic theoretical inquiry can be embedded in such studies, the research contexts (site, visitors, issue) often are site-specific, making generalizability (and, often, publication in peer-reviewed journals) problematic.

The intended audience for our work has implications for how we write research articles. Do we focus on the method, procedures and statistical results so that our work can be evaluated for its credibility as quality research? Or do we focus on the management and other practitioner implications, translating “research language” to “lay language?” Or do we do both, simultaneously or separately? Push me or pull me?

Identity

Interpretation often struggles for identity. Is it a field, a discipline, a practice, a profession, or a set of tools? While in our hearts, we may “know” what it is, this does not help in the scholarly debate for research identity, the development of a theoretical foundation,

or in building a research program specific to interpretation. What we do has so many facets: the process and techniques, the varying contexts and settings, and the diverse audiences. Additionally, we draw on theory and practice from many other fields: learning theory, education, communications, psychology, marketing, persuasion, and others. We often promote the interdisciplinary nature and diverse applications of interpretation, stating that it should be integral to other functions—resource management, tourism, education, community development, stewardship development, and more. Is it important that we develop a separate identity? Or, in efforts to be integral to other things, should we focus on impacts and implications rather than on separate identity? The answer has implications for both the content of research articles we publish in *JIR* and in researchers' choices of where to publish, to have the most impact, both personally (for promotion and tenure review) and professionally (specific to interpreters or to enhance the functions of other efforts).

So What's a Researcher to Do?

A variety of issues, both practical and philosophical, are discussed above. In the best of all worlds, researchers would be broad-based scholars, educators, and outreach/service professionals. We would work with clients to identify important researchable questions for program and management effectiveness, then work together to develop the most effective, efficient ways to research those questions and apply the results. Research would be intertwined with student educational experiences and outreach training. Funding of such studies would receive high priority. Decisions about what research to undertake would be driven by need and timeliness. All types of publications and outreach activities would be valued; managers would read research literature; researchers would write for practitioner accessibility and application.

The challenge is ours—both practitioners and researchers. We all have responsibilities to interact more often and effectively, and to decide if, collectively, we believe that interpretation research is needed and valuable, then to work in our respective “worlds” to take action.

We have a responsibility to find creative ways to:

- conduct interpretation research
- embed interpretation research with other research
- commit to publishing in the field
- take an active role in changing promotion and tenure reviews and processes
- better integrate with other relevant fields
- work more closely with practitioners to identify their problems and help them understand role/process/benefits of research

Although we may still have a Catch-22, active discussion of these issues can move interpreters' identity struggle toward clarification and help us build practitioner/researcher partnerships to explore “what works and why.”

In Search of Research

A Plea from the Workshop
of a Practical Interpreter

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Trusty, or just rusty, tools?

When you open up your interpreter's toolkit, you pick out an enthusiastic pair of pliers to grip hold of a theme, an explanatory hammer to nail down a good story, or an inspirational screwdriver to drive home a message. You don't often make time to check the effectiveness of these tools or the techniques for using them. Because you're busy worrying about what you're doing, you park any thoughts about how they're doing it for you. If you're lucky, you meet colleagues who tell you about improved pliers, superior hammers, or enhanced screwdrivers that research and testing have shown to work better—and why. You didn't read the researchers' reports in the journals and you've forgotten the references to the findings in newsletters. *They* didn't get their message over—and it's *your* fault! Or is it?

It's confession time. I'm pathologically incapable of undertaking consistent research, because I keep having good ideas that seem to pre-empt it. I fall asleep reading research findings that hide conclusions in lengthy and worthy papers, and my memory for what I see in news items is selective at best. Am I alone in this wicked world of interpreters and consultants who know their toolkits are imperfect and wish there were "easy" ways of discovering which interpretive tools actually work best?

I'm no academic and nor, to my mind, are many interpreters. What we need is "revelationary" (and maybe revolutionary!) guidance, based on rigorous investigation, about the simple things of interpretive life, about mechanisms that really work, how they work, and why they are more effective than those that received wisdom told to you about, possibly years ago. Like that monstrous regiment of aliens, the general public, we don't often pick up a new concept at first acquaintance, we don't adopt new attitudes at a single telling, and we learn best when someone gets us to take part in finding out. Maybe what I'm saying is that researchers need to be good interpreters as well as finders-out and "educators."

In my other life, I was a sheep; an ornery one and good at bleating. These characteristics remain with me, and I can see the rolling eyes of fellow operators when I gripe about bits of research I'd like "someone" to undertake, or tell me has been published. My knowledge of research findings is limited—I don't have (or take) time or energy to study them—so I'd like to be reassured that my bleats below can be countered and all I have to do is look in X or Y or Z. However, and I suspect it's the case, some of the topics haven't been investigated, so would someone have a go?

Bleat 1

From general experience, we know (or guess?) that people prefer reading lectern-style panels rather than vertical ones. But why? As one afflicted with two minor sight disorders—astigmatism and old age—I wear "varifocals." This plays havoc with the angle at which I hold my head when looking up, down or across (going down stairs and mountains is a nightmare). What's more, on the silly big "books on walls" that designers insist on producing (why do designers determine so many interpretive media?) the focal distance of the material from my eyes varies by several feet unless I undertake contortions. Has anyone found out about this and its interpretive connotations? I'm just an ordinary person who wears glasses; what about people with severely impaired sight who are not "blind"? I'd like to know what's easiest to read and why from a "scientific" perspective.

While we're on the subject, I'd like someone to confirm that deep line spacing makes text unreadable, that sans serif fonts are always more readable and so on. I don't mind relying on gut feeling (and prejudice?) and years of working with typography, whose rules have been buried by designers bent on fashion over function, but am I right? At least I know from research on Ekarving¹ that controlled line lengths are helpful in graphic text.

Bleat 2

The "pond" separates two cultures that are divided, as they say, by a common language. You Americans have an ease of communication among yourselves that many of us Brits envy. Your site interpreters seem very much at ease with the language they use, which is informal, friendly, personal, and simple. They are not afraid of technical terms or of explaining them elegantly within the context of what they are saying. Equally, their audiences seem comfortable with asking questions that show ignorance (in its true meaning) but real interest. In Britain (and I don't distinguish between its constituent countries), we lack this ease. We're criticized for overuse of the third person in written and even spoken material, we're less at home with slipping explanation and information into storytelling, and we're often hesitant about asking questions.

My belief is that this stems from unnecessary deference to the organization and insufficient concern for the individual, in a society that is hierarchical to a degree and one where use of strong local accents and dialects is often regarded as not speaking "properly." Many people—from different social groups—allow this to infer poorer education, and so listening and questioning are impaired. Allied to this, visitors are also wary of asking what appear to be "stupid" questions simply because they don't want to show their "ignorance," even if there is no reason why they *should* know. Is this just a British

1 Ekarving, the system of text presentation devised by Margareta Ekarv, is worth studying via the Internet

problem? Am I being—as I’m frequently told—out of date and over-sensitive? I would really like to know if anyone knows!

An extension of this goes back to panels. Many people, who are clearly quite capable of reading them, intellectually and physically, don’t; they just walk past. It’s particularly evident outdoors. Is this because reading a panel demonstrates, obliquely, that they don’t know something (and “should”) or is it because the panels are placed—albeit at a perfect angle, with an accessible hard standing etc—in a position that makes people feel vulnerable when concentrating on them? As one who always sits in a restaurant facing the other tables and the door, I’m keenly aware of vulnerability in public places. There is nothing worse than knowing there are, but not knowing about, people behind you. Is this a personal problem of acute defensiveness or do others feel the same? Has anyone actually found out?

Bleat 3

This is a short one. There are many other practical issues like the two or three I’ve referred to. I’d really like to have clear information about them, based on the kind of research that I can only admire from afar, but set out in a way that helps me immediately to understand both the findings and the implications. I’ve no space to go on to all the other day-to-day intellectual and emotional aspects of interpretation, let alone the behavioral ones, but I hope you get my drift. Please can someone, or several someones, look at some of the most basic factors that affect delivery of interpretation and tell us poor non-academics with lively minds how we can do much better than which we do much of.

Interpretation Isn't Magic

An Academic's View on the
Role of Research in Teaching
Interpretation¹

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One of the perplexing things about interpretation from a research point of view is that we haven't always agreed on what "interpretive research" should focus on, even at the most general level. Arguments abound to this day on what interpretation is, and what its functions and outcomes ought to be. This perplexity characterized interpretation circles especially in the early 1960s, and even to this day. Metaphors from metaphysics and magic were often used to describe interpretation. When we spoke about outcomes, we were likely to invoke elusive notions like "gleams in the visitor's eye," "magical experiences," "enlightenment," "awakening," "appreciation," "revelation" and "enrichment." When we spoke about the inputs of interpretation we conceptualized nameless "gimmicks," "gadgets," "tricks," and "approaches." But there was little in these concepts we could sink our teeth into and apply without the benefit of theory and research.

Like most communication research, interpretive research has a decidedly *applied* focus. "Applied" communication research typically uses concepts from behavioral sciences in order to understand the pathways through which communication influences how humans think, feel and behave. Whether I'm a practitioner, manager, researcher, or teacher of interpretation, this focus is central to what I do, and for the most part, being effective at it requires that I understand the factors underpinning successful communication.

"Success," of course, depends on what interpretation is intended to achieve (e.g., provocation to thought, an enjoyable experience, acquisition of a belief or attitude, or per-

1 I want to express my thanks to colleagues Professor Betty Weiler (Monash University, Melbourne Australia) and Dr. Troy Hall (University of Idaho, USA), for their critical remarks on an earlier draft of this essay.

haps a behavior like staying on a trail, buying a souvenir, or a repeat visit). But make no mistake about it, being able to explain success in interpretation requires research. And those of us who teach interpretation must teach our students not merely what “works,” but why it works. If we don’t do this, then what we’re attempting to “teach” our students seems tantamount to magic—tricks that defy logical explanation, rather than strategies and techniques that are based on verifiable principle. Of course, some interpretive methods are known to “work” well with certain audiences, even when we can’t readily explain why. But I still believe the best teachers of interpretation seduce their students with the need to explain them, even when the results of applying particular techniques are never in question.

From the student’s perspective, I’ve never felt that learning to be an interpreter just meant acquiring advanced knowledge in some technical subject area like botany, wildlife, history, or how wine is made. As I wrote in 1992 in *Environmental Interpretation*, “...being an interpreter first means knowing about communication, and being able to recognize and explain the qualities that make it work best...it is an understanding of how communication works, and practical knowledge of how to apply it, that are at the root of most effective interpretive programs” (xviii-xix). As an educator, I’ve always felt that this is the most important thing I can teach my students—to be informed, critical thinkers and decision makers with respect to their professional work, not simply faithful “believers” who see interpretation as some sort of magic trick that can’t be explained. To explain something, of course, you must have a theory about it. In the interpretation and communication field, we have dozens to guide us. To list them all here would be impossible, but interested readers might take a look at Manfredro (1992) and Griffin (2000) for discussions of some of the current ones. Teachers and trainers might also be interested in the many journals dedicated to communication research. One I follow regularly is *Communication Theory* which is available on-line and in most university libraries.

Indeed, interpretation is not magic. At its best, it is the intelligent application of nearly two centuries of research on how communication influences us. Practitioners, managers, and especially teachers of interpretation need to be familiar with this body of knowledge since it is the one disciplinary focus that binds us all together, regardless of where we work and what we interpret. Yes, it’s critically important that those who deliver and manage interpretive programs be expert in the things they interpret. But every time interpreters change job locations, those things must be learned anew since new plants, new animals, new geology, and a different human history will need to be interpreted in the new place. However, their knowledge of communication principles will be relevant and applicable wherever they work. Clearly, communication is also the interpreter’s professional body of knowledge, not just the technical subject areas we interpret.

My experience as an interpretive trainer over the past 30 years has taught me this repeatedly. Today, I’m as likely to be called to do workshops for lawyers, journalists, marketing firms, wine and food businesses, or teachers, as I am for parks, zoos, and tour operators. Like interpreters, all are practitioners of applied communication, each focused on a different subject matter targeted at different kinds of audiences, and each practiced in a different kind of setting. Yet achieving “successful” communication outcomes is what they all want to do. And how to accomplish this on purpose—as a matter of intent and strategy—is what I’m asked to teach them. Yes, they always want to know what “works.” But far more exciting to them, usually, is learning why and how it

works—that is, the principles underlying communication success. They realize that even though the situations in which they must communicate successfully will change over the course of their careers, the principles that give rise to success in each situation are resilient—they can be applied anywhere. So even when audiences and settings change dramatically, and “old” techniques no longer work, the versatile practitioner armed with knowledge of the “why” and “how” is able to repackage and reapply the same principles and enjoy uninterrupted success.

Or so it should be, anyway. But teachers and trainers of interpreters are a key to this. If we bring the fruits of systematic inquiry into our classrooms and training centers, if we infect our students with the irresistible need to know why and how, we serve them and our profession far better than if we simply pass onto them unquestioned “interpretive truisms” and folklore. As nearly as I can tell, equipping students with substantiated theory, and the research behind it, is a teacher’s only hope of producing the informed, critically-thinking professionals we all agree are needed. If we’re not producing critical thinkers, are we instead producing people who perform interpretive magic tricks they can’t explain? This question is disconcerting to a lot of us.

But isn’t this true of any applied field? When I go to my physician with an ache or pain, I want that person to analyze my condition through eyes that have been informed by the latest research and arrive at a carefully reasoned diagnosis of my status. Then I expect him or her to intelligently apply a body of learned knowledge to arrive at an equally careful decision about how to treat my ailment. I would expect no less from any “professional”—my plumber, electrician, auto mechanic or chef, or for that matter, people who manage and deliver interpretive programs. Each, we hope, is expert in a body of knowledge related to his or her craft. From that knowledge evolve principles, and from those principles, evolve techniques that intelligently apply the principles. In my view, the difference between a “technique” and a “trick” rests mainly in the practitioner’s ability to explain why and how the thing works. Going back to the example of my physician, I would be horrified if s/he referred to my treatment as a “trick” (“Gee, let me try this trick on your body and see if it works”). No thanks. I’d much rather hear the reasoning behind your diagnosis and why you’re recommending this particular technique to treat me, thank you. In a similar vein, I’m heartened when I hear interpreters discussing the strategy behind their choice of themes and approach, and the reasoning that led them to do things in a certain way. When what they say is consistent with theory and supported by research, my smile could fill a room. These are the interpreters I want out there on the front lines because they’re the ones who’ll make the biggest inroads into how other people think, feel and behave with respect to the things they interpret.

In my opinion, research and theory are central to understanding, practicing and teaching interpretation. Our students are not budding magicians but rather the next generation of professional communicators who can make a difference *on purpose* in how other people think, feel and behave with respect to some of the world’s special places and to things we all care about deeply. This, as I understand it, is both the premise and promise of interpretation. To squander such an awesome opportunity by resorting to the teaching of magic in our classrooms would, in my view, be irresponsible.

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**Research:
A Voice of Our Own**

A Management Perspective
on Research

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During my third season, the park conducted an interpretive study. The staff was skilled (no evidence for that but my memory, intuition, and the quantity of praise from visitors who liked us) but we fought the research. We dragged our feet, called meetings in protest, and tried our best to skew the results in our favor.

I think we were afraid.

We knew we were good and we believed our quality could not be quantified. Because we were certain the professors and managers could not measure our success, we were also sure they could use the results against us. We were afraid that research would end the interpretation we practiced.

The professor got tired of our resistance and gave up. It was our loss.

Good Reasons for Research

People who manage interpretation should value research for a variety of reasons. Research provides direction for investing limited resources as well as the opportunity to improve the work of individual interpreters. Many times I've seen site-specific research used in training. Interpreters "meet" the people they encounter every day in a provoking and equitable venue when they read transcripts from audience interviews. They are often surprised at how successful their programs are—and even more surprised at the unexpected ways audiences connect with the resource and the program. I've heard again and again statements like, "I never realized they were thinking about that!" Such increased knowledge of the audience helps individual interpreters make shifts in their own style and programming and infuses new excitement and enthusiasm into a staff.

These are good reasons to invest in research, but there is another.

The study my colleagues and I sabotaged 20 years ago could have improved the credibility of the profession.

A Shared Understanding

Interpretation is not yet a defined profession with commonly understood intent, value, and application. Professional interpreters have not constructed generally accepted theories. We have not created consistent methods, definitions, or standards. We are lacking a unified and shared professional language.

Established and successful professions all have theories, shared understandings, and common language. Professional language provides the structure through which issues can be discussed, discoveries made, conflicts resolved, standards established, work improved, and research systematically and comprehensively conducted. Professional language also communicates purpose and value to those who require the services of the profession.

Interpretation is disadvantaged by not having a coherent professional language based on shared theory and understanding. In my first years as an interpreter, we intuitively reached Tilden's outcomes. Those of us who were new benefited from educators who were natural interpreters and historians who were passionate about the site and gifted communicators. They taught us well. But we created an exclusive world. We defined our successes with our own words.

I suspect my colleagues all over the world have similar experiences. Most interpreters who care about the work can recall how they came to learn what they know and how they formed opinions about the way things should be. Most interpreters desire quality, but attach different meanings to the concepts and words they use. Many have little contact with interpreters outside their own location and become imprinted, like I did, with a site-specific culture. Without common standards, purpose, and application, but real passion for their own understanding of the resources they interpret, interpreters constantly re-invent interpretation.

Many interpreters are frustrated—unable to communicate their purpose and worth. They feel constrained, unequipped, and even forbidden to carry out tasks they can successfully accomplish. Lacking a language that allows them to speak persuasively, many give up. The result is an insular group of professionals who do not compellingly articulate their own role.

Because interpreters fail to present a coherent vision to the mission of interpretation, individual managers do it for them.

Too Many Interpretations of Interpretation

Managers need quality interpretation to protect the resource. This century brings increasingly varied demands on resources. Park managers will have to defend and articulate the reasons for ever more difficult decisions.

Some managers understand the potential of interpretation and demand quality. Other managers sense interpretation should be stronger, but don't have the tools, personnel, or history to achieve quality. More managers have never been exposed to the preservation possibilities quality interpretation offers. These managers define the function subjectively and accept low standards or apply their own vision.

Perhaps most managers undervalue interpretation altogether. Without an accepted definition or understanding of what quality interpretation should be, managers generally fail to demand high standards and contribute to the fragmented nature and often-unfulfilled potential of interpretation.

Today is the Day

I believe the lack of theory, standards, and language is changing. Interpretation is building on the seminal work of Freeman Tilden, Bill Lewis, Sam Ham, and others and is developing their ideas into true theory—ready for testing and scientific evaluation. The National Association for Interpretation and the National Park Service have developed definitions, curricula, and certification programs that provide researchers with significant opportunities. The influence of museum studies and other disciplines, the exploration of meaning making, and the emergence of interpretation graduate degrees are all contributing to a growing professional coherence, language, and expertise.

Interpretation can better implement and benefit from comprehensive research now better than ever before. Interpretation's blossoming theories and cohesion provide an opportunity to conduct coordinated research that will show increasingly valuable and cumulative results. In short, research can help interpreters describe the purpose, execution, and value of the work.

Credibility

Research will help interpreters establish credibility.

When budget time comes around, no one questions the purpose or need for resource management or resource protection. Those professions have tested methodologies and established protocols. Managers understand their value and benefits, direct their expertise, and rarely tell the practitioners how to do their work.

I understand and honor the credibility possessed by these fellow resource professionals. I don't actually read many of their studies—but I know those studies exist.

Until those outside the field of interpretation know interpretation requires standards and accountability, until it's commonly understood that interpretation is a specialty that provides a critical resource protection function, and until interpretation realizes that credibility comes from objective research and evaluation, interpretation will continue to be defined, misunderstood, and mismanaged by others.

I wish I would have started 20 years ago!

Interpretation Research

A Perspective from the Field

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The recently published *Meaningful Interpretation* (Larsen, 2003) contains Tanaka Shozo's wonderfully poetic observation: "The care of rivers is not a question of rivers, but of the human heart." Shozo eloquently summarizes the challenge that has faced preservationists since the days of John Muir and Enos Mills. Landscapes (including rivers) and cultural heritage are protected because people *want* them that way. As interpreters, we understand that protection of heritage resources occurs only when people see greater value for special places and objects in their preserved state, rather than value gained through development. Interpreters who wish to learn what must be done to ensure the protection of parks should first look into the human heart and know the people they seek to motivate. This path leads directly to interpretive research.

If park managers were guided by Shozo, interpretation research would be an active park presence guiding long-range planning and park operations. Interpretive program managers would have broad knowledge of the interpretation literature, a good handle on interpretation research trends, and a strong sense of how the lessons from interpretation research can be applied to optimize the impact of programs and visitor services.

While some parks may be nearing this sociological nirvana, for most sites the reality is far different. Interpretation research at the park level is generally less robust and less well institutionalized than its counterparts in the hard sciences.

In many natural area parks, field research studies in the life and earth sciences number in the dozens, or even hundreds of projects each year. Wildlife biologists, geologists, botanists, ecologists, archeologists, and historians are regular park presences and are often found giving updates on their research to eager audiences of park managers, field staff, and the general public. Natural and cultural resource program managers are often personally acquainted with

leading researchers engaged in park-related studies and can summarize and discuss their key findings.

The situation seems quite different in the field of interpretation research. Studies focusing on visitors are much less evident at the park level. There are many reasons for this, but in my view, some of the significant ones are:

- 1) Field interpreters remain largely unaware of the existing body of social science research and how it can help them build effective programs. Educational backgrounds for interpreters are more likely to include life and earth sciences, history, or the liberal arts. Some interpreters may have gone through undergraduate teacher's certification programs, but in most cases, exposure to interpretation research is still very limited in these fields.
- 2) Many field interpreters either don't have access to interpretive research or are unaware of how to access it. Computers are relatively widespread in parks, but time to conduct literature reviews is hard to come by. Historically, park interpreters have not received agency training in how to use and evaluate the social science literature.
- 3) National Park Service managers are not well prepared to use and evaluate social science at the park level. It's not covered in agency training for site managers. There is also a tendency for agency personnel to rely on their own intuitive judgment about park visitors rather than seek assistance from the social science community (Loomis, 2002). Occasionally, independent interpretive research or other visitor studies are conducted, but few, if any, parks have resource management plans or comprehensive interpretive plans that address their social science needs in a strategic manner.

Interpretation in the National Park Service finds itself at an interesting crossroads today. The Parks As Classrooms program has done a great deal to institutionalize curriculum-based education services within the agency and has brought park interpreters in much closer contact with professional educators. The Interpretive Development Program has for the first time created a set of professional certification standards for park interpreters, standards that are the most comprehensive for any occupational group within the agency. Partnerships with universities and distance learning technologies are opening new opportunities for field interpreters to pursue advanced degrees in interpretation, giving the profession a more solid academic foundation on a par with park resource specialists. The National Park System Advisory Board in its 2001 report issued a strong recommendation to the Park Service to make education a fully embraced part of its agency mission.

Yet for all these positive developments, national priorities in a wartime America are pointing the agency away from education and visitor services. There is, and will continue to be, downward pressure on the operating budgets for interpretation and education as agency resources are shifted to support increased, post-9/11 security responsibilities. Backlog maintenance and resource preservation continue to be high agency priorities leaving interpretation to scramble for scarce leftovers at the budget table.

If interpretation in the National Park Service is going to weather these challenges and continue to mature as a professional discipline, it needs an active partnership with the social science research community. Park managers need to see more studies that show clear results from the resources they commit to park interpretation and education programs. Planning for interpretive services and media needs to be founded on solid

learning theories that optimize opportunities for visitors to define personal connections with park resources and their meanings. The social science community also needs to develop more visible and accessible platforms for informing Park Service leaders about its key findings and trends. Frankly, interpretation researchers need to do a better job of marketing their services. Research dollars are tight, and visitor studies are, to a degree, in competition with studies on grizzly bears, Joshua trees, air quality, historic artifacts, and many other physical resources.

Most importantly, park interpreters and interpretive researchers should strive to make social science a much more visible presence in the parks. We need to see more social science researchers in parks and in bordering communities conducting field studies that provide solid answers to pressing questions about visitor behaviors, attitudes, and values. The social scientist should be as common a presence at the park level as the research biologist or the paleontologist.

To better understand and serve park visitors and see into their hearts, field interpreters and interpretive researchers must develop closer ties that lead to a stronger, richer NPS social science program. When times are tough, it's wise to seek strength through alliances. Park interpreters and social scientists have much to gain from forging closer working partnerships, and the parks have much to lose if we don't.

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APPENDIX

Manuscript Submission : Instructions to Authors

Purpose

The purposes of the *Journal of Interpretation Research* are to communicate original empirical research dealing with heritage interpretation and to provide a forum for scholarly discourse about issues facing the profession of interpretation. The *Journal* strives to link research with practice. The *Journal of Interpretation Research* is published by the National Association for Interpretation, the preeminent professional association representing the heritage interpretation profession.

General Information

The primary function of the *Journal* is to disseminate original empirical research regarding interpretation. However, the *Journal of Interpretation Research* takes a broad view of the field of interpretation and publishes manuscripts from a wide-range of academic disciplines. The primary criteria for deeming a manuscript appropriate for the *Journal* are whether it adds to the current state-of-knowledge for practitioners, researchers, academics, or administrators who work in the field of interpretation.

In recognition of how diverse the relevant literature is, the *Journal* will also publish reviews of recent books, government publications, original literature reviews, and bibliographies dealing with interpretation. Abstracts from dissertations, private consultant materials, and reports from public agencies will be published in the *Journal* in a section called, "In Short: Reports and Reviews." This section will also provide an outlet for summaries of research studies with limited scope. Interpretation research often consists of small "in-house" program evaluations and basic visitor studies. The purpose of this section is to communicate current research activities, allow readers to identify colleagues with similar interests, and provide practitioners and administrators with useful information and direction for conducting their own mini-research projects. Submissions for the "In Short: Reports and Reviews" section should be limited to 800 to 1,000 words and will be reviewed by the editor and two associate editors.

Additionally, the *Journal* will publish thought pieces that exhibit excellence and offer original or relevant philosophical discourse on the state of heritage interpretation. The "In My Opinion" section of the *Journal* encourages the

development of the profession and the practice of interpretation by fostering discussion and debate. Submissions for the “In My Opinion” section should be limited to 1,000 to 1,200 words and will be reviewed by the editor and two associate editors.

Research Manuscript Submission Guidelines

All research manuscripts will be reviewed anonymously by an associate editor and by at least two other reviewers. Based on the nature of the manuscript, special efforts will be made to identify well-qualified associate editors and reviewers to evaluate the manuscripts. From the recommendations of the associate editor, the editor will make the final decision of the manuscript’s disposition and communicate this information to the author.

Manuscripts

Manuscripts will be accepted with the understanding that their content is unpublished and not being submitted elsewhere for publication.

- All parts of the manuscript, including title page, abstract, tables, and legends, should be typed in 12-point font, and double-spaced on one side of 8-1/2” x 11” or A4 white paper.
- Margins should be 1 " on all sides.
- Manuscript pages should be numbered consecutively in the top right corner.
- All papers must be submitted in English. Translations of papers previously published in other languages will be considered for publication, but the author must supply this information when the manuscript is submitted.
- Maximum length of manuscripts shall be 30 double-spaced pages (including all text, figures, tables and citations). The editor will consider longer manuscripts on an individual basis.

Titles

Must be as brief as possible (six to 12 words). Authors should also supply a shortened version of the title, suitable for the running head, not exceeding 50 character spaces.

Affiliation

On the title page include full names of authors, academic and/or other professional affiliations, and the complete mailing address of the author to who proofs and correspondence should be sent. An e-mail address and phone and fax numbers should also be included. As all manuscripts will be reviewed anonymously, the name(s) of the author(s) should only appear on the title page.

Abstract

Each paper should be summarized in an abstract of no more than 150 words. The abstract will preface the paper and should be a comprehensive summary of the paper’s content, including the purpose or problem, methods, findings, and implications or applications. It should enable the reader to determine exactly what the paper is about and make an informed decision about whether to read the entire paper. Abbreviations and references to the text should be avoided. All abstracts shall be listed

on the *Journal of Interpretation Research* and National Association for Interpretation web pages.

Keywords

Authors must supply five (5) to ten (10) key words or phrases that identify the most important subjects covered by the paper.

References and Citations

Include only references to books, articles, and bulletins actually cited in the text. All references must follow the *Publication Manual of the American Psychological Association* (APA), 5th edition. References in the text should cite the author's last name, year of publication, and page (if appropriate). All references used in the text should appear at the end of the typed script in alphabetical order using APA style.

Examples of references:

McCool, S., & Braithwaite, A. (1992). Persuasive messages and safety hazards in dispersed and natural recreation settings. In M. Manfredo (Ed.), *Influencing Human Behavior*. Champaign, IL: Sagamore Publishing.

Ryan, C. & Dewar, K. (1995). Evaluating the communication process between interpreter and visitor. *Tourism Management*, 16(4): 295-303.

Tilden, F. (1977). *Interpreting Our Heritage* (2nd ed.). Chapel Hill: University of North Carolina Press.

Figures

All figures must be discussed in the text and numbered in order of mention. *Each figure must be submitted in camera-ready form.* Photocopies are not acceptable. Digital art of appropriate quality and resolution are acceptable. Figures must be submitted either as black-and-white glossy photographs or as photostats (bromides). Label each figure with article title, author's name, and figure number by attaching a separate sheet of white paper to the back of each figure. Do not write on the camera-ready art. Each figure should be provided with a brief, descriptive legend. All legends should be typed on a separate page at the end of the manuscript.

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All tables must be discussed in the text and numbered in order of mention. Each table should have a brief descriptive title. Do not include explanatory material in the title: use footnotes keyed to the table with superscript lowercase letters. Place all footnotes to a table at the end of the table. Define all data in the column heads. Every table should be fully understandable without reference to the text. Type all tables on separate sheets; do not include them within the text.

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All proofs must be corrected and returned to the publisher within 48 hours of receipt. If the manuscript is not returned within the allotted time, the editor will proofread the article, and it will be printed per his/her instruction. Only correction of typographical errors is permitted. The author will be charged for additional alterations to text at the proof stage.

Submission

Please submit an original and three copies of your manuscript to the address below. Authors whose manuscripts are accepted for publication must submit final manuscripts electronically or on computer disk.

Contact

If you have comments or questions regarding the *Journal of Interpretation Research*, please contact the editor:

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