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A Note from the Editor

My recent trip to the National Interpreters Workshop in Albuquerque reminds me of how critical it is that research is conducted, disseminated, and incorporated. It is only through the critical evaluation and assessment of what we do, why we do it, and what results from it, that our profession will truly advance and develop. In other words, conducting defensible interpretation is the key to the survival of our discipline. All too often I hear of research only being used to give justification for what we already do or what we want to do. And when results differ from what is expected, the methods and the overall integrity of the study itself are questioned. All research has shortcomings and limitations. But instead of immediately questioning the results because they do not support what we wanted to find, the results should also cause us to question the idea or the tradition of the practice. We should examine even more critically that which we hold dear and either find the evidence to support our belief or grow and evolve with new information.

Research should be used to assist in the development and growth of the discipline. In any field there is typically change and refinement of techniques and strategies, approaches are altered as new evidence emerges, and fundamental principles continue to evolve with each development. In this manner, as in the case of interpretation, theory is built based on the continued evolution and refinement of the practice. But this only occurs if the practice is critically assessed and the results are used to guide future direction.

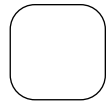
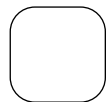
There are three primary steps to this overall process: conducting the research, disseminating the information, and incorporating the findings into the development of the discipline. Each of these steps is crucial and is directly linked to the health of our discipline as a whole. All too often research is relegated to the “if we only had more money” phase of a project. Instead, we need to include research as an integral part of the design and development process. Specific research methods will be refined and techniques will continue to be honed; the critical aspect is simply that we are asking the questions. Disseminating the information is the next essential step. Information learned, despite what might be predicted or desired, needs to be shared with others. There are numerous forums for this, depending on the degree of rigor with which the study was conducted. This *Journal* provides one such venue. It is only through the systematic

dissemination of information that a field as eclectic as ours can benefit from the empirical lessons of others. The third step of the process is incorporating findings into the discipline. This integration of results is made through the development of underlying theory and/or the advancement of a particular interpretive approach or skill.

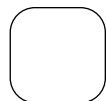
Research in its essence serves to link the manager and administrator to the field interpreter, the field interpreter to the visitor, the visitor to the resource, and the resource to the overall program goals and objectives. The role of research is to educate, to enlighten, and to guide. Research is conducted because we want to know more, and because we want to do better. It must be made applicable to the practitioner, the manager, and the public. It needs to answer useful questions and ask the unanswerable ones. In order to understand the best use of precious economic, human, and biological resources, research must be adequately funded. It should not be treated as an external afterthought to programming, but instead included as an integral part of the process. The survival of interpretation depends on the critical examination of what is done, how it is done, and what results from it. Research is the foundation of the practice of the science of 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



An Interpretation Specialization Continuum of Environmental Volunteerism In Taiwan

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Abstract

The Society of Wilderness (SOW) is a non-governmental organization in Taiwan that relies on volunteers to protect nature through environmental education. Since volunteers play such an important role in natural resource preservation, more information is needed to understand their participation in SOW. The purpose of this study was to develop an interpretation specialization continuum of environmental volunteerism in Taiwan. A mail-back survey was administered to interpreters volunteering at Er-ge Mountain during the winter of 2005. Forty-five of 48 questionnaires were returned, yielding a 93.8% response rate. The resource knowledge and place attachment scores of volunteer interpreters were combined into a 2 x 2 matrix, thus providing one explanation for their level of activity involvement in SOW. Although volunteer interpreters were distributed throughout the continuum, results showed that highly specialized interpreters had greater activity involvement scores than those who were less specialized. Length of membership in SOW had no effect on their activity involve-

ment scores. This specialization continuum addressed key managerial issues, such as recruitment and retention of volunteer interpreters.

Keywords

interpretation, environmental education, recreation specialization, volunteerism, non-governmental organizations

Introduction

Society of Wilderness (SOW) is the largest non-governmental organization (NGO) in Taiwan, established for the dual purpose of nature education and resource preservation (SOW, 2005). Based on the premise that environmental education is a precursor to conservation behavior, SOW uses a variety of approaches to connect people with nature. Sometimes the objective is to promote ecological understanding or to encourage environmentally responsible actions. On other occasions, activities include a stewardship component, such as trash removal or trail maintenance. According to Tung and Zinn (2004), use of environmental education approaches to protect natural resources is a common management strategy for NGOs in Taiwan.

The education and outreach efforts at SOW are conducted by a staff of trained volunteers. According to SOW, volunteer interpreters should have an intellectual and emotional connection with nature, or at least a strong desire to establish these linkages. Knowledge and affection for resources have been identified by Hilten and Hilten (1997) as two components of effective interpretation. Although volunteers should have good communication skills and enjoy working with people in outdoor settings, some of these characteristics can be acquired through “on-the-job” training. This strategy appears to be successful because nearly 1,000 volunteer interpreters have joined SOW since it was established in 1996.

As a focal point of their mission, SOW developed a “people-in-place” concept referred to as an environmental monitoring team (EMT). An EMT consists of a geographic location that is “monitored” by a team of volunteers (Chen, Lin & Wang, 2003). Volunteer interpreters participate in at least one of 40 EMTs across Taiwan. Since SOW is a place-based initiative, it is important for interpreters to become knowledgeable about their respective EMTs. In order to accomplish this goal, volunteer interpreters receive numerous training opportunities that include seminars, workshops, lectures, and guided tours that are EMT-specific. Resource knowledge is fundamental for developing good educational programs.

Although the need for volunteer interpreters to obtain resource knowledge is important, it is only one aspect of preservation. Additionally, SOW wants environmental volunteers to develop an emotional connection with nature. Frequent exposure to the outdoors is one way to achieve this goal. It is thought that place bonding will increase resource sensitivity, thereby motivating volunteer interpreters to respond quickly as environmental issues arise in or near their EMT. Lastly, a strong attachment to resources might cause the public to develop a favorable impression of SOW because of the respect that volunteer interpreters have for the land. The Society of Wilderness recently won a national award for promoting sustainable development and nature conservation from the Taiwanese government (Wu, 2005).

If interpreters are knowledgeable about their EMT and are emotionally attached to nature, then active involvement in SOW would seem likely. Volunteers are encouraged to participate in SOW functions because active involvement is considered to be one of the keys

for success. For some volunteers, the meaning of participation may be more important than the actual behavior itself. Tung and Zinn (2004) encouraged environmental NGOs to provide opportunities for activity involvement so it could make volunteers feel as if their contributions to nature and society were significant. Lastly, active involvement is an important attribute of environmental volunteerism because it indicates the presence of a “green” lifestyle (Hu, 1995). If volunteering has a positive effect on interpreters, then it might be beneficial for the environmental movement in Taiwan (Zheng, 2004).

The Society of Wilderness has an on-going need to maintain a strong volunteer workforce. Yet, little is known about the motivations that underlie environmental volunteerism in Taiwan (Tung & Zinn, 2004), despite the fact that interpretive research has increased within the last 20 years (Wu & Chen, 2005). For some SOW volunteer interpreters, the most important motives are learning and resource protection (Hsuh & Lin, 2000). Ho (1998) indicated that a majority of volunteer interpreters at She-Pa National Park wanted direct contact with nature (85%) and expressed a need for resource protection (74%). Learning was a primary motive of volunteers at Kaohsiung Metropolitan Park (Hsuh, 1998). According to Tung and Zinn (2004), the most important motives for volunteering in the Natural Trails Society (Taiwan) were to enjoy nature, learn about the outdoors, and to benefit the environment. These authors categorize nature-related motivations of volunteers into two domains: 1) experiencing and learning about nature, and 2) benefiting and protecting nature. To some degree, these motives are aligned with resource knowledge and place attachment.

Although the results from previous studies are useful, a framework of environmental volunteerism is needed to explain the relationships between resource knowledge, place attachment, and activity involvement. Perhaps recreation specialization can fill this void, but it has not been applied to interpretation. Are some volunteer interpreters more specialized than others? What factors play a role in specialization? How is it measured? What are the managerial implications of using this procedure? This study seeks to answer these questions.

Literature Review

Recreation Specialization

Bryan (1977, p. 175) defined recreation specialization as, “a continuum of behavior from the general to the particular reflected by equipment and skills used in the sport and in recreation setting preferences.” Four types of anglers were identified and positioned on a continuum ranging from lowest to highest levels of specialization (occasional, general, technique specialists, and technique-setting specialists, respectively). The premise of recreation specialization is that participants move along a continuum in a forward, linear manner. Bryan’s initial study on trout anglers assumed that “occasional” anglers would become “technique-setting specialists,” given enough time. The concept of specialization has generated much discussion in the outdoor recreation literature (Manning, 1999).

On the surface, it might appear that recreation specialization, interpretation, and environmental volunteerism have little in common. However, a continuum that integrates these factors may provide some valuable insights for NGOs that rely on volunteer interpreters. One way to conceptualize recreation specialization is a three-factor model consisting of the cognitive, psychological, and behavioral aspects (Manning, 1999). Following is a brief

discussion of how resource knowledge, place attachment, and activity involvement can be used to measure this concept.

Resource Knowledge

The cognitive aspect of specialization was envisioned by Bryan (1977) to include participants' knowledge about the equipment, activity, and setting attributes. Bryan felt that knowledgeable visitors (i.e., experts) were different from those having less knowledge (i.e., novices). Various authors have attempted to measure cognition by experience-use history and skill levels. For example, Schreyer, Lime, and Williams (1984) reported the attitudes, preferences, and behavior of visitors could be explained by their experience-use history (amount and extent of participation). Hammitt, Knauf, and Noe (1989) argued that experience-use history was aligned closely with recreation specialization. Self-reported skill levels have been used to differentiate recreationists on motivations (Ewert, 1994) and setting preferences (Hopkins & Moore, 1995; Merrill & Graefe, 1998). Although experience and skill are related to cognition, they are indirect measures of knowledge. Another way to measure cognition is through a knowledge test, but this approach has not been reported in the literature. The amount of factual information (resource knowledge) may explain one aspect of recreation specialization, at least for some volunteer interpreters.

Place Attachment

Place attachment is a term that describes the values, beliefs, and meanings that individuals often attribute to outdoor settings (Williams & Stewart, 1998). Sometimes referred to as a "sense of place," it reflects an emotional bond that connects people with nature (Tuan, 1974). Some evidence suggests a positive relationship between place attachment and environmentally responsible behavior (Vaske & Kobrin, 2001). Such visitors often participate in voluntary stewardship activities and become environmental advocates (Mitchell, Force, Carroll & McLaughlin, 1993). Place attachment has been studied in various academic disciplines, however, Jacob and Schreyer (1980) were the first authors to apply this concept to leisure. Although the original definition of recreation specialization included "environmental preference settings," place attachment has not been linked with it until recently (Bricker & Kerstetter, 2000).

According to several authors (Jorgensen & Stedman, 2001; Williams, Patterson, Roggenbuck & Watson, 1992; Williams & Vaske, 2003), place attachment has two dimensions: dependence and identity. Dependence reflects the importance of a place in meeting the functional goals of individuals (Moore & Graefe, 1994; Stokols & Shumaker, 1981; Williams, et al., 1992). In other words, some areas provide desirable features and characteristics for pursuing recreational activities. Identity, on the other hand, refers to the emotional or symbolic relationship that can develop between people and natural settings (Proshansky, 1978; Williams et al., 1992). It represents a psychological investment to a certain place, usually developed over time (Giuliani & Feldman, 1993). However, some authors have found that place dependence and identity are similar in some contexts (Kyle, Absher & Graefe, 2003). Oftentimes, qualitative studies do not make a distinction between dependence and identity (Mitchell, et al., 1993; Schroeder, 2002; Smaldone, Harris, Sanyal & Lind, 2005).

Activity Involvement

Activity involvement explains the personal relevance and underlying meanings of recreational participation (Havitz & Dimanche, 1997; Wiley, Shaw & Havitz, 2000). Involvement reflects an individual's "attachment" to leisure activities and has been used as a surrogate measure for recreation specialization (McIntyre, 1989; McIntyre & Pigram, 1992). The three dimensions of activity involvement receiving the strongest empirical support are: attraction, self-expression, and centrality (Havitz & Dimanche, 1997; McIntyre, 1989; McIntyre & Pigram, 1992). Attraction refers to the enjoyment and importance of activity participation. Self expression is how an individual perceives an activity to be a reflection of their personality. Centrality indicates the presence of a leisure lifestyle, emphasizing the social aspects of participation in recreational activities.

Although there seems to be a general consensus on what comprises activity involvement, there is less agreement on the saliency of these dimensions (Kyle, Kerstetter & Guadagnolo, 2002). In fact, some authors have noted a convergence between the factors, depending upon situational variables (Havitz & Dimanche, 1997). However, if activity involvement is viewed as a profile, then it can be useful for understanding the fullness of leisure participation (Wiley, Shaw & Havitz, 2000).

Resource Knowledge, Place Attachment, and Activity Involvement

Several authors have included measures of activity involvement and place attachment in the same study (Bricker & Kerstetter, 2000; Kyle, Bricker, Graefe & Wickham, 2004; Kyle, Graefe, Manning & Bacon, 2004a; Kyle, Graefe, Manning & Bacon, 2004b; Kyle, Graefe, Manning & Bacon, 2003; Mowen, Graefe & Virden, 1998). Kyle, Graefe, Manning & Bacon (2004b) found that place attachment was a stronger predictor of density than activity involvement. Some evidence suggests that activity involvement is an antecedent of place attachment (Moore & Graefe, 1994), but other studies found weak support for this hypothesis (Bricker & Kerstetter, 2000; Kyle, Bricker, Graefe & Wickham, 2004). Much of this work is focused on measuring the empirical relationships between place attachment (identity and dependence) and activity involvement (attraction, self-expression, and centrality).

Few authors have examined the simultaneous effects of place attachment and activity involvement, especially in a holistic manner. Mowen et al. (1998) combined these factors and developed a 2 x 2 typology of specialization. Visitors with the highest attachment-involvement scores evaluated the setting and experience more positively than those having "mixed" or "low" levels. Place attachment was more important than activity involvement in relation to site evaluations.

Since the recreation specialization literature has provided a reasonable explanation for intra-activity differences, this concept was applied to environmental volunteerism. The interaction of knowledge, place, and activity might provide a useful framework for interpretation since these factors are similar to the ones used to measure recreation specialization (cognitive, psychological, and behavioral), but more research is needed to test and explain these relationships.

Purpose of the Study

This study measured three aspects of environmental volunteerism: resource knowledge (RK), place attachment (PA), and activity involvement (AI). The resource knowledge and place attachment scores of volunteer interpreters were combined and used to explain their

activity involvement with SOW. An interpretation specialization continuum of environmental volunteerism was constructed using this approach.

Hypotheses

H_1 : The activity involvement of volunteer interpreters in SOW will not be related to their resource knowledge and place attachment orientation.

H_2 : The relationship between observed and expected number of volunteer interpreters in the specialization continuum will be equal.

Methods

Sampling Procedures

Volunteer interpreters at the Er-ge Mountain EMT were chosen to participate in this study. Forty-nine volunteer interpreters were identified through the SOW registration system as of October, 2004. The sample size was adjusted to 48 volunteer interpreters, since one of the researchers was also a member of Er-ge Mountain EMT. After an exhaustive search for valid mailing addresses, the questionnaires were distributed in late January 2005. Two weeks later, a replacement questionnaire was mailed to all non-respondents in the sample. Data collection was completed within four weeks of the initial mailing.

Questionnaires

The cognitive domain was measured by a site-specific test of resource knowledge, the affective component was measured using a standard place attachment scale, and the behavioral aspect was measured by an index of activity involvement. The RK test consisted of 20 items on the natural and cultural history of Er-ge Mountain. These questions were based on the three "sense of place" themes (geography, ecology, and cultural history) as proposed by Hilten and Hilten (1997). The RK test was scored in a multiple-choice format, only one of four possible answers was correct. Since a test was developed, a Kuder-Richardson 20 formula was used to measure the reliability (Gall, Gall & Borg, 2006). This procedure yielded a correlation coefficient of $r=0.797$.

The second measure was a 12-item PA scale similar to the one used by Williams and Vaske (2003), except for referencing Er-ge Mountain EMT in each statement. The PA scale consisted of two factors: place identity (six items) and place dependence (six items). A psychometric testing procedure revealed strong support for both factors (identity vs. dependence) using generalizability analysis and convergent validity (Williams & Vaske, 2003). The overall reliability of the PA scale was $r=0.895$ using Cronbach's alpha.

The AI scale was identical to the 12-item scale developed by McIntyre (1989), except for the wording "activities of the Er-ge Mountain EMT," instead of camping. This scale consisted of three components, named: attraction (five items), self-expression (four items), and centrality (three items). Using Cronbach's alpha, the reliability coefficient for the AI scale was $r=0.925$.

Volunteer interpreters evaluated each item independently on the PA and AI scales using a Likert-type approach. Each statement used the terms "strongly disagree" to "strongly agree" (coded 1-5, respectively). One item on each scale was reverse-coded.

Development of a Typology of Volunteer Interpreters

Before the specialization continuum could be developed, some preliminary measures were collected and analyzed. First, each construct (RK and PA) was sub-divided into “low” and “high” groups using a median split method. A volunteer orientation (VO) matrix was developed that included four different combinations: neither (low on place attachment and low resource knowledge); place (high on place and low on knowledge); knowledge (high on resource knowledge and low on place attachment); and both (high place attachment and high on resource knowledge). See Figure 1. Mowen et al. (1998) constructed a similar typology on visitors using their place attachment and activity involvement scores. The strength of this procedure relied on the number of variables used to create an index. In this case, the VO matrix consisted of 24 items (12 each for RK and PA). If the relationship between AI and VO was significant, then a continuum of environmental volunteerism could be developed using all three factors.

The final step was to segment volunteer interpreters into “low” and “high” subgroups by dividing their frequency distributions on RK, PA, and AI. Once again, a median split method was used. This procedure resulted in eight unique combinations (see Figure 2). Quality points were awarded for each level of RK, PA, and AI (low=1 and high=2) and their sum was used to position interpreters along a continuum that consisted of four different specialization levels (actual scores ranged from three to six). A similar procedure was used

	Place Attachment	
Resource Knowledge	Low	High
Low	Neither	Place
High	Knowledge	Both

Figure 1. Volunteer orientation (VO) matrix using resource knowledge and place attachment scores of SOW interpreters.

Resource Knowledge		Place Attachment		Activity Involvement		Quality Points	Specialization Level	Assigned Label	Observed n	Expected n
Low	High	Low	High	Low	High	3	1	Least	11	5.63
Low	High	Low	High	Low	High	4				
Low	High	Low	High	Low	High	4	2	Moderately	8	16.87
Low	High	Low	High	Low	High	4				
Low	High	Low	High	Low	High	5				
Low	High	Low	High	Low	High	5	3	Very	11	16.87
Low	High	Low	High	Low	High	5				
Low	High	Low	High	Low	High	6	4	Most	15	5.63

Low=1 point; High=2 points;

Figure 2. A typology of SOW volunteer interpreters.

by Salz, Loomis and Finn (2001). Each level was assigned to a name that corresponded with the interpreter's degree of specialization: 1=least; 2=moderately, 3=very, and 4=most.

Results

Response Rate

Almost every volunteer interpreter in the Er-ge Mountain EMT completed a questionnaire. The final sample size was 45 volunteer interpreters (93.8% response rate). Since there were only three refusals, the potential for non-response bias was considered to be minimal and no follow-up contacts were made.

Sample Profile

Most of the interpreters were females (60%) between 20 and 39 years old (82.2%). Over three-fourths of the sample (84.5%) had graduated from college and/or completed graduate school. The majority of interpreters lived within a 30-mile radius of Er-ge Mountain (84.5%). Most of the volunteers were not members of other environmental organizations (73.4%). Their average length of membership in SOW was $\bar{x}=3.7$ years. Volunteer interpreters attended indoor seminars and outdoor observations at Er-ge Mountain about $\bar{x}=3.98$ and $\bar{x}=3.5$ times respectively during the previous year (24 possible occurrences; 12 for each activity). The frequency of conducting interpretive programs at Er-ge Mountain was $\bar{x}=1.14$ per year (out of a possible four times).

Volunteer Orientation X Activity Involvement

A cross-tabulation procedure was performed on RK (low and high) by PA (low and high) to determine the number of interpreters in VO matrix: neither (n=12); place (n=9); knowledge (n=7); and both (n=17). The relationship between RK and PA was significant ($\tau=0.283$, n=45, $p=0.050$) using a Kendall's tau-b test. These scores were compared against AI (low and high) to assess the relative frequency of interpreters in each of the eight cells. The two combinations having the greatest number of interpreters were: "low" / "neither" (n=11) and "high" / "both" (n=15) based on AI and VO, respectively (see Table 1). The relationship between AI and VO was significant as shown by a contingency coefficient ($r=0.574$, n=45, $p<0.001$), so the null hypothesis was rejected.

Despite the significance of the previous finding, additional measures were taken to determine if AI was an independent factor. Two separate tests were conducted (RK vs. AI and PA vs. AI) using Kendall's tau-b as the test statistic. Since both tests were significant, the results suggested that AI was mutually exclusive (see Table 2).

Length of Membership and Activity Involvement

An argument could be made that AI is not a function of RK or PA, but instead related to length of membership (LOM) in SOW. In other words, AI might be less for volunteers who have served a shorter time and more for those having a lengthy duration of service. If true, this result would lessen the importance of RK and PA. The relationship between LOM and AI was tested using Kendall's tau-b and the result was non-significant ($p=0.343$). See Table 2. This finding showed that volunteer interpreters had similar AI scores in SOW, despite their differences in LOM.

Resource Knowledge X Place Attachment					
Activity Involvement	Neither	Place	Knowledge	Both	Row Total
Low	11 24.4%	2 4.4%	5 11.1%	2 4.4%	20 44.4%
High	1 2.2%	7 15.6%	2 4.4%	15 33.3%	25 55.6%
Column Total	12 26.7%	9 20.0%	7 15.6%	17 37.8%	45 100%

Resource Knowledge median score = 15.62 / 20.0
Place Attachment median score = 3.33 / 5.00
Activity Involvement median score = 3.50 / 5.00

Table 1. The relationship between activity involvement and orientation of SOW volunteer interpreters.

Factors	Value	Approximate T^a	Approximate Sig.
RK x AI	0.329	2.322	0.020
PA x AI	0.684	6.025	0.000
LOM x AI	-0.141	-0.947	0.343

^a using the asymptotic standard error assuming the null hypothesis.

Table 2. Testing activity involvement (AI) of volunteer interpreters against resource knowledge (RK), place attachment (PA), and length of membership (LOM) in SOW.

Interpretation Specialization Continuum

Based on evidence from the previous tests, a continuum was developed that positioned SOW volunteers along four levels of interpretation specialization: least (n=11); moderately (n=8); very (n=11); and most (n=15). The “least” grouping represented the lowest level of specialization. The “moderately” and “very” levels were next, and the “most” category was the highest level of specialization for interpreters. Two levels (1 and 4) were “pure,” and two levels (2 and 3) were “mixed.” Since the relative contributions of RK, PA, and AI in the mixed cells (2 and 3) were weighted equally, it was expected that specialization levels 2 (moderately) and 3 (very) would contain three times the number of inter-

preters as levels 1 (least) and 4 (most). This outcome was different than anticipated as revealed by a chi-square test ($X^2=27.42$, $df\ 3$, $p<0.001$). Therefore, the null hypothesis was rejected. See Figure 2.

Conclusions & Discussion

Some literature has been published on volunteer interpreters in Taiwan, but more research is needed to understand their participation in NGOs. This study is an extension of previous work and provided one explanation for environmental volunteerism. Although the results are consistent with theory, the following limitations apply: 1) Er-ge Mountain may not represent other EMTs in SOW; 2) members of the Er-ge Mountain group may not be representative of those in other EMTs across Taiwan; 3) the sample size for this study ($n=45$) was small, and generalizations should be made with caution; and 4) since this was an exploratory study, the criterion of significance was set at 0.10 to improve statistical power of the tests (Gall, Gall, & Borg, 2006).

The concept of recreation specialization was borrowed from the outdoor recreation literature and applied to volunteer interpreters because of its ability to explain intra-activity variation. Some modifications of the original model were needed. The three constructs remained the same, but they were operationalized differently: cognitive (measured by RK), psychological (measured by PA), and behavioral (measured by AI). The rationale for using this procedure was to focus on the knowledge-place-organization relationships found in real-world settings. If interpretation specialization can be measured in this way, then a framework might be developed for managerial purposes.

Arguably, two of the most desirable characteristics for volunteer interpreters are RK and PA. Using these two constructs, a 2 x 2 VO matrix was developed based on the responses from interpreters at the Er-ge Mountain EMT. This procedure determined the relative frequency of volunteer interpreters in four cells (neither, place, knowledge, and both). Activity involvement in SOW showed a positive and significant relationship with VO. Moreover, the relationships between RK and PA with AI were significant when tested independently.

These findings suggest that AI played an important role in environmental volunteerism since it measured the personal meaning of participation, not mere responses to a checklist of conservation activities. Active involvement is a desirable outcome of participation, not only for SOW, but also for the fledgling environmental movement in Taiwan. Surprisingly, AI is unrelated to LOM in SOW. This rival hypothesis was tested and the results were not significant. In other words, the same amount of AI was reported from interpreters having different LOMs in SOW. This outcome may not be intuitive for SOW staff.

This study showed that RK, PA, and AI were important aspects of environmental volunteerism and these factors could be merged into a continuum of interpretation specialization. The challenge for SOW is to “move” interpreters from a lower level on the continuum to a higher one (for a three dimensional diagram of this model please see figure 3). Currently, one-third of the volunteer interpreters at Er-ge Mountain EMT are “most” category. Interpreters who are “least” specialized deserve immediate attention, since attrition at this level seems most likely. Perhaps some variation along the continuum is worthwhile because volunteers in the higher levels can serve as positive role models for those who are less specialized. Since there is a tendency for like-minded individuals to be exclusive, SOW should make a concerted effort to minimize this type of behavior.

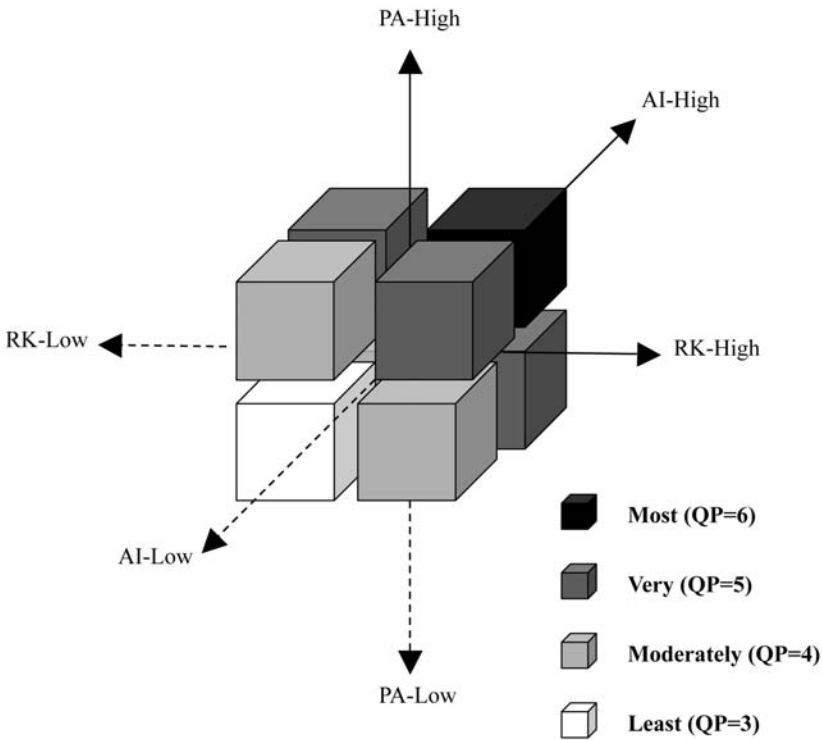


Figure 3. A three-dimensional representation of the interpretation specialization continuum using resource knowledge (RK), place attachment (PA), and activity involvement (AI).

Different management strategies should be used, depending on which deficiency is being addressed. If resource knowledge needs improving, then SOW should provide ample opportunities for interpreters to attend workshops and training seminars. Some evidence indicates that teaching others can result in benefits such as knowledge gain, socialization, and self-esteem (Milton, Cleveland & Bennett-Gates, 1995). If interpreters are lacking place attachment, then frequent visitation to their EOG might be helpful. Some research has shown a positive relationship between visitation and place attachment (Moore & Graefe, 1994; Williams, et al., 1992). Field trips should focus on stewardship activities, like trash removal or trail maintenance so participants can feel a sense of accomplishment after completion.

More than likely, a strategy combining RK and PA would be very successful. Of course, these activities should be performed in social settings so friendships can be nurtured with a variety of individuals. If AI is an outcome of participation, then SOW has no direct control over this relationship. However, SOW can create favorable conditions for AI to develop. Perhaps AI is equally important as RK and PA, but more research is needed to explore this relationship.

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The Development of Semantic Memories Through Interpretation

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Abstract

This study used a phenomenological analysis to investigate the recollections of participants (N=36) of an interpretive program at Lowell National Historic Park. These individuals were interviewed six months following the experience. Four topic areas relating to the participants' long-term memory of the interpretive program were identified: (a) personal connections with the tour, (b) program information retention, (c) positive visitor responses, and (d) ranger attributes. Results indicated that the personal connections made during the program were influential in creating vivid episodic memories. Some of the responses from the participants went beyond episodic information and could be associated with conceptual thinking associated with semantic memory or knowledge. The findings of this study, along with literature associated with long-term memory research, offer a potential model of learning for interpretation related to episodic/semantic memory systems.

Keywords

episodic and semantic memories, phenomenological analysis, visitor relevancy, interpretive learning model

Introduction

The goals and outcomes associated with interpretive programs are as varied as the types of park and recreation sites that offer such experiences (Knapp, 1994). However, an outcome that is inherent in virtually all interpretive programs is gaining knowledge pertaining to the site or associated topics. There has been substantial research related to the immediate retention of information following an interpretive experience. Primarily,

this work has been through immediate post surveys, questionnaires, and/or interviews (Porter & Howard, 2002; Povey & Rios, 2002; Beckman, 1999; Madin & Fenton, 2004; Morgan, Absher, Loudon, & Sutherland, 1997). The evidence that an interpretive experience can promote initial knowledge retention sets up a more difficult question—how long do individuals hold on to this information? One strategy to begin to answer this question is through the investigation of long-term recollections of an interpretive experience.

There has been significant memory research in informal education arenas such as museum studies and school field trips. Falk and Dierking (1997) investigated the long-term recollections of participants in school field trips. Anderson and Piscitelli (2002) investigated the memories of parents of young children concerning their own childhood memories about their early museum experiences. Stevenson (1991), McManus (1993), and Fivush (1983) have also contributed to the literature on memories associated with museums and science centers. All of these studies found vivid memorable elements associated with each experience (Anderson, 2003). Recent interpretive publications have also noted the importance of memory and recall. In discussing cognitive effects of interpretation, Webb (2000) suggested that, “While learning is the input, memory is the output—we assess learning only through memory” (p. 22). In the textbook, *Interpretation for the 21st Century*, Beck and Cable (1998) suggest that interpreters’ first principle should be to not only relate information to the visitor, but also help visitors retain that information. “Effective interpretation produces external stimuli that trigger existing (cognitive) maps, thereby allowing the audience to ‘get it’ and store the information in relation to other information they already possess” (p. 16).

Despite the interest and assessment of long-term memory in informal programs, there is a lack of research directly associated with personal interpretive services. One potential reason for the paucity of research is that knowledge retention from an interpretive experience may be assessed in the short term but is significantly more difficult to measure months, or perhaps years, following these isolated events. One question that can be analyzed is how much does a participant of an interpretive program *remember* long after the experience? This study was an attempt to analyze a basic determinant of long-term outcomes—the constituents’ recollection of an interpretive program.

Since the field has not offered a great deal of literature in memory retention, the author used the field of psychology to aid in further investigating interpretation’s impact on long-term retention. In particular, Tulving’s (1972) proposed distinction between episodic and semantic memories provides the most appropriate framework for event-specific research associated with this study.

Tulving’s Long-term Memory Theory: Remembering and Knowing

Tulving’s theory (1972, 1983) is based on the notion that there are two primary memory systems—remembering and knowing. According to Tulving, *remembering* is recalled experiences/information from particular events and is considered episodic memory. It is a state in which images, feelings, and other context-specific details relating to a past event come to mind such as reliving a particular episode from the past. The second system of *knowing* is a person’s conceptual knowledge about the world. This is knowledge of facts or events without need for recollective cues, which is considered semantic memory. His theory suggests that episodic and semantic systems are functionally independent but inclusively related in that episodic systems are embedded in semantic memory (Conway, Perfect,

Anderson, Gardiner, & Cohen, 1997). According to Tulving, episodic memory is “involved in the recording and subsequent retrieval of memories of personal happenings and doings,” and recalls events that are personally experienced at a specific time and place. Semantic memory is “knowledge of the world that is independent of a person’s identity and past” (Tulving, 1983, p. 9). It enables an individual to recall details associated with these memories that constructs a mental representation of the world. Its content is thus abstract and relational and is associated with the meaning of verbal symbols. Tulving, along with other psychologists, suggests that early learning (related to a particular concept) is acquired and retained in episodic forms. As learning progresses, these memory representations shift from episodic to being more conceptual and hence semantic in nature (Herbert & Burt, 2004).

In relationship to interpretation, episodic memory allows individuals to recall the actual interpretive program and topic(s) and other specific information related to the event. Semantic memory enables the individual to draw in general knowledge that could be stimulated by the episodic memory. Hypothetically, information attached to the episodic recollection would assimilate into the more conceptual semantic knowledge. For example, a visitor’s episodic recall of a bird of prey program that focused on the animals’ adaptations to hunt could then possibly assimilate into semantic knowledge that wildlife has a variety of ways to survive.

Studies subsequent to the development of Tulving’s theory have been conducted in “real world” learning situations and have confirmed, to some degree, a relationship between episodic and semantic memories. For example, Conway et al. (1997) and Herbert & Burt (2001) examined how information in specific university lectures is processed from episodic to semantic memory systems. Both studies indicated that early learning knowledge from the lecture is retained in episodic form. As the learning progresses, memory representations shift from episodic to more conceptual, generalized knowledge which students tend to simply know.

Research related to Tulving’s theoretical structure notes three important variables that can aid in episodic memory systems and hence ultimately increase the odds of “capture” in semantic memory. First, repeated exposure with a particular concept through different contexts has been found to aid in episodic recall and strengthen actual knowledge of the subject. This perspective is consistent with educational research examining long-term retention of knowledge taught in schools (Semb & Ellis, 1994).

A second influence on the strengthening of recall of particular concepts is its actual relevance to the individual. In order for information to become more abstract and, in turn, recalled easier, it should be presented within the context of relevant examples. Research reports that individuals’ ability to retain information is often aided when the content is delivered in a way that is practical in nature, based on real-life experiences and perceived as a connection to their own everyday life (Ramsden, 1997). The field of neurology offers studies that note the importance of relevancy in aiding recall. For example, Markowitsch, Reinkemeir, Kessler, Koyuncu, and Heiss (2000) found that a relationship to personal history aided neural networks in retrieving episodic memories. Holbrook, Krosnick, and Boninger (2004) posit that relevancy-oriented information is even more powerful to aid recall when the event is episodic (such as interpretation). They suggest, “A preference for exposure to information seems particularly likely to influence information gathering when cognitive resources or time are limited. Under such circumstances individuals may be especially inclined to make strategic choices about which information to acquire, and they may there-

fore be likely to expose themselves to information relevant to themselves” (p.2).

A third variable that has been found to aid in episodic systems is related to active delivery of content/concepts. There has been a growing interest in this relationship resulting in a significant volume of research in the area (Koriat, 2003). The result of much of this research has underscored the importance of actions and episodic memory performance. In fact, this phenomenon has been defined as subject-performed task (SPT), or the enactment effect (Kormi-Nouri & Nilsson, 2001). As Kormi-Nouri and Nilsson (2001) suggests, “A better self-involvement in action events helps the rememberer to be more aware of his action and self-knowing, thereby leading to a better episodic memory” (p. 105).

In summary, Tulving’s theory related to episodic and semantic memory systems seems to be a prudent theoretical base to analyze the long-term recollections of an interpretive program. For example, are there particular aspects of an interpretive program that enhance episodic recall? Can the potential episodic memories of such programs be assimilated into semantic memory? This study was an attempt to look at these questions.

Methodology

In an attempt to learn as much as possible related to long-term memories associated with an interpretive program, the researchers utilized a qualitative approach. Past literature has supported the notion that interview techniques can be more effective than experimental methods for giving a detailed picture of recall (Rennie, Feher, Dierking, & Falk, 2003). As Rennie et al. suggest, “To follow the process of learning is tantamount to getting inside the learner’s head, a difficult task indeed. This necessitates new techniques that go beyond questionnaires and pencil and paper tests. Interviews, both structured and open ended, think aloud techniques, audio recordings, and video recordings have all been used to this effect” (p. 116). In 2003, the *Journal of Research in Science Teaching* supported a policy statement regarding informal science education. This policy included the promotion of more non-traditional research methods, such as qualitative, so that research can “offer opportunities to explore social and cultural mediating factors” (Dierking, Falk, Rennie, Anderson, & Ellenbogen, 2003, p. 110).

This study used a phenomenological approach to investigate the recollections of participants of an interpretive experience. Phenomenology seeks clarification and understanding of people’s perceptions and experiences, especially the meanings they give to events, concepts, and issues (Mabry, 2000). This process examines the experience of each participant and recognizes that these experiences have a relationship with the phenomenon (in this case the interpretive program). There are generally three research processes that compose the phenomenological method: (a) investigation of the phenomena (in this case participant recall of an interpretive program), (b) identification of general themes/essences of the phenomena, and (c) delineating essential relationships among the themes (Creswell, 1998). The researcher gains responses from the individuals who have experienced the phenomena through in-depth interviews. The responses from the participants are then coded into statements or units. The units are then transformed into clusters of meanings and are tied together to make a general description of the experience.

The interpretive program analyzed was a canal boat tour program offered at Lowell National Historic Park located in downtown Lowell, Massachusetts. During the canal boat tour program, visitors rode in a small boat with an interpreter. They traveled along a stretch of canal, through a lock chamber, onto the Merrimack River, and doubling back the way

they came. Tour topics included the industrial revolution, mill operations, the role of the river and canals in powering the mills, immigrants, laborers, natural history, historic preservation, and ways in which Lowell has changed over the years. Ten canal boat tour programs were used for this study. These programs were led by six different interpreters over the course of four days in August of 2004. The programs were consistent in message and general structure. Deviations of the program occurred through different interpretive styles in relating the information and any influences from visitor input during the programs. A sample of 36 visitors was selected to be interviewed. Criteria for selection were their availability and willingness to participate in interviews six months following the interpretive program. It is important to note that the participants' advance knowledge of being contacted at a later date for interviews was an inherent limitation to this study. Due to human subject procedures at both the National Park Service and the researcher's institution this process was unavoidable. The sample size represents approximately 25% of the total amount of visitors participating in the 10 programs. The visitors were predominantly Caucasians and ranged in age from 18 to mid-60s. A majority of the visitors were from the New England area with the remaining participants coming from various locations across the country. Each of the 10 canal boat tour programs was attended by the principle investigator, videotaped, and later transcribed word for word.

Six months following the canal boat program the 36 participants (20 women and 16 men) were contacted by phone. Initial contact with the participants included an explanation for contacting them and then scheduling an interview one week later. This served as a way for the subjects to be prepared to participate in the interview which would include attempted recall of the program. The open-ended and unstructured interviews began with the following statement: "Could you please tell me what you can recall about the canal boat program that you participated in six months ago at Lowell National Park?" Subsequent statements or questions represented attempts to obtain clarification or elaboration regarding the participants' experience. Interviews were participant-centered in the sense that participants controlled the direction of the interview, including the subject matter and the range of topics discussed. The interviewers' responses were limited to minimal encouragement, summaries of content, and clarifications. Thus, there was no pre-planned agenda of questions to be covered in the interview and the researchers consistently adhered to these strategies for all 36 subjects. Interviews were discontinued when no new materials and themes were forthcoming from the participants. The length of the interviews varied from 30 to 40 minutes.

The responses were transcribed verbatim for each subject and a phenomenological analysis was conducted (Creswell, 1998). This was accomplished through three steps. First, raw interview data was analyzed through identifying and coding categories of data using NVivo software. Each transcript was analyzed for phrases that described any memory a participant had from the program and his or her trip to the park. Such coded memories included everything from scenic viewpoints, major concepts, general or specific information from the program, emotions, ranger attributes, connections with other parts of respondents' lives, and recollections of other visitors encountered during the program. Second, emergent topic areas were identified from the clustering of similar coded memories through a constant comparison approach. Finally, these topic areas were reviewed by the author and a research assistant analyzing the categories and their properties by comparing them to one another and checking them with the original interview transcripts.

Results

Analysis of the interview data through the three steps outlined above resulted in four topic areas relating to the recollections of the canal boat programs at Lowell National Historic Park. These were: personal connections with the tour, program information retention, positive visitor responses, and ranger attributes.

Personal Connections with the Tour

A predominant topic area that was found in the interviews of the canal boat tour participants was connections that were made during the program relating to their own personal experiences. In a setting such as Lowell National Historic Park, many of the visitors were familiar with the area, had relatives who were connected with some of the main themes discussed during the program, or had personal connections with the city of Lowell and New England. These characteristics seemed to enhance recall of particular aspects of the program.

One aspect of personal connection to the program was familiarity of the site and/or region. Twenty-two of the 36 interviewed offered an array of connections to the area. Below are representative responses:

I took a tour there, actually, down the street, the Faulkner Mills.... They renovated down there, and they put a museum in, and we took a tour, and that was amazing, and now that connects with Lowell.

When I was in college, I had worked in a dress shop. Actually, a lingerie shop that was in one of those mills.... There were only sewing machines, but the heat of the day in those was, you know, unbelievable.

I think the mills in Lowell were primarily cotton mills. The ones we had, the one in my home town was a woolen mill.... It was basically the same. The processes are almost identical.

In recalling their memories from the canal boat tour program, respondents also mentioned their familiarity with friends or ancestors who had worked in mills. Below are responses that reflect this personal connection:

We actually had a neighbor when I was a child who was a mill girl. So I had lots of stories about the mill girls.... A lot, you know, family members, grandmothers, great-grandmothers, not all of whom I've met, but I've heard the stories throughout the years.

One of my grandmothers worked in the mill.... I really wanted my daughter to see and understand some of the history of our family or it will die with me.

My granddaughter wanted to know if there was anybody in our family who had been in these mills. And we said, "Yeah, that's part of our heritage, too, is the mills...." My wife was the working side of the mill, and my father's people were the owners' side of the mill.

An important topic in the canal boat program is the story of the immigrants who came to this country and who were crucial to the success of the mills. This classic American story was certainly relevant to many of the respondents who were familiar with immigrants and, in particular, had close ties to them, *My mother was an immigrant... I know a little bit about what immigrants faced and what they received.*

Since the interpretive program took place in a canal, a substantial amount of time was given to the workings of canals and locks and, subsequently, memories from the program also seemed to reflect familiarity with this form of transportation. Below are two examples:

To me it's interesting because we live right by the D & H Canal here in New York... A lot of that is run down, and there's been talk over the years of trying to get it to the point where it's like in Lowell where you can put a boat in it.

We have an area close to home that has a dam with similar construction. So I've never gotten a chance to see it from the other side.

Another personal connection that was exhibited through the interviews was close family members that lived in Lowell. Eleven of the 36 respondents mentioned such connections:

I always thought of Lowell as not a city that I would like to go to when I was young, because, you know, we had relatives living there... The Merrimack River, you know, I could remember my parents saying how nasty and filthy and everything it was as a child. So I was surprised to see that they had done so much work on that.

My family grew up there. So it's sort of in a way sentimental for me... I know from past trips I've had, my nieces and nephews who were born in Lowell, were very young when they left here, so they enjoyed it because they felt the same way. They were learning more about their family.

Program Information

A second major topic area that emerged from the interviews was specific information related to the interpretive program. Since an important objective to this study was to learn what could be recalled after six months, this topic area is of no surprise. Such recollections ranged from information about immigrants, laborers, natural history, the Industrial Revolution, the canal, and many other topics discussed during the program.

Twenty-seven respondents mentioned different aspects of the Industrial Revolution, which was a primary topic of the interpretive program:

I have been here for about 22 years and knew none of this history of Lowell, how historic and important a role that it played in American manufacturing, how the Industrial Revolution really got started.

It made a tremendous difference in the industry in the country... I think it was very important for the ranger to show you the success of Lowell as it has been and that Lowell is no longer a dying city.

The human history side of the Industrial Revolution was also recalled by 26 of the respondents. These recollections took on a decidedly empathetic view toward the people of the time and the struggles they went through. Below are three responses that reflect the view of most respondents:

He explained how they had promised the parents that they would watch over them and see that they went to church every Sunday.... Seeing the machines it's hard to imagine how these gals, I don't know if any men worked on the machines, how the women were able to withstand all the noise and the monotony of it, too, the weaving and all.

To hear how they were taken, or how they had to go to work in these mills, how they really, you know, didn't have many options as far as working and that kind of thing went.

I work in HR, and so a lot of the labor laws and things that we have now, it was very interesting for me to hear.... To hear about the struggles that they went through trying to negotiate the pre-union stuff.... Then knowing, you know, how that goes on now. That was very interesting to me.

Beyond information related to the Industrial Revolution and the people that were part of that history, the respondents also recalled specific tangibles associated with the tour and information related to them. For example, 25 respondents had strong recollections associated with the lock system that the canal boat actually went through. Below are two fairly vivid accounts of this experience:

We went through the lock, and they explained how the water dropped and how all that worked, how they pumped the water in and out.... I was most interested in the fact that it's so ingenious when they put the water in and it pumps us up and gets us over and then they pump it out and drops us down and we're back at the other level.

When they did this, opening up the gate, letting us go up, up the Merrimack River and back down, we had the park rangers there that were doing it, opening and closing the gate. ... [The] park rangers [were] explaining everything to us and how the Francis Gate worked.

One aspect of the program's visit through the lock was an elaborate story that was told about the gate. The Francis Gate, as it was known by the Lowell residents, had a rich history related to saving the town. This history was recalled by 25 of the respondents:

Twice it saved the city of Lowell.... They lowered it and it held back the water.... Francis Gate, I guess they had to hit it several times with a sledgehammer to break the chain, I guess, or whatever was holding it up.... Then it was down for several years.

Then there was one big gate ... that I think was almost overcome by a flood That was interesting, how the system locked in place and saved the city.

I know when they put [the gate] in they laughed at Francis. You know, it was Francis' Folly.... They thought it was ridiculous for him to put it in, but then twice it saved the city of Lowell.

Another tangible that was recalled by a majority of the respondents was the canal and river that the boat traveled. Some respondents could recall the use of the river, *The whole purpose of the river was to power the industry to run the mills.* Others recalled the role immigrants played in building the canal, *How they brought in the immigrants to dig the canals so they could get water for transportation and also to provide electricity for the cotton mills that were going to be operating there.... I had no idea they brought in all those immigrants to dig the canals.* These recollections were often followed up with comments noting the hard work these individuals performed, *I guess it was Irish immigrants that built the walls that formed the canals themselves. So that was sort of interesting.... Sort of like building a pyramid in the sense of digging in a quarry and being reasonably precise on the cutting of blocks.*

Many other recollections related to the canal were also noted. They ranged from the drop of elevation of the waterway, *They explained about the locks and all, how they had actually dug these canals to bypass the falls.... It was like a drop of like 35 or 40 feet [to the length of the waterway].... They do comment on how far it's stretched. I mean, you're talking about this water body that goes all the way to Boston.... That was thrilling in itself to hear the distance that it actually flowed, where it went to, and how it goes out to the ocean, because you don't really understand that it goes all the way out there.*

There were also responses that noted their satisfaction in sensing what this time of history was like. Below are three representative comments:

When the people themselves are actually doing the mechanics of it, you know the water levels change and everything, I kept thinking that it was probably just about what it would have been like if you'd been there all those years ago, you know, not much had changed in that respect.... You just really had a good sense of the history and that you were in the same place that other people had traveled through 100 years ago.

You come away from this having been told a story that you have a very good feeling about what happened, whether or not you can recite all the details, and that's the part that I think they do extraordinarily well.

It took me back 150 years in a really quick boat ride.

Positive Visitor Responses

This topic area encompassed visitor reactions and emotional statements and reflections made in response to the memories recalled during the telephone interviews. Consistently, with virtually each responder, positive recollections of the program were conveyed. The most predominate category under this theme was general positive reactions to the tour. Thirty-four out of the 36 reported a general positive response to the tour. Statements such as, *We thought it was so fantastic and so well-presented* and *We both really thoroughly enjoyed the whole experience* were offered through the interview process.

The positive reaction toward the program carried on beyond the actual tour itself.

Thirty-three out of the 36 mentioned post-program actions that were related to their positive experience. Below are representative responses:

We've talked about it with friends and relatives after we got home.

I know I discussed it with my daughter, and we talked about the mills and the old town and the preservation of the area.

My husband's always trying to instill in the children an appreciation for things, and he talks about history and things with them, and so, um, you know, we talked, we did talk about it some.

These post positive reactions went beyond sharing information about the trip to others. Many responses from the interviews offered specific actions that were taken due to the interest from the topic and/or program. For example, one respondent commented, *When we got back to Atlanta, I looked it up on the Web because it, it opened up my imagination.* Another typical response from this category was, *I've read some of the stuff since then about that era.... So it got people like me a little more interested in the history of New England.*

Ranger Attributes

A final topic that emerged from this study was the recollection of the interpreter who was leading the canal boat programs. Twenty-four of the 36 respondents offered unsolicited comments/recollections related to the interpreter. Many remarked on a variety of different communication skills associated with the interpreter. Below are representative remarks:

The fact that they provided visual aids, pictures of these events that had happened that they were talking about was excellent.... It's not in me to visualize what it was like, so to actually see the picture, it's much easier for me to understand.

It doesn't matter how good and beautiful the place is if the person can't make it come alive.... That's what they do, they make the place come alive, I guess is probably the succinct way of putting it.

Along with the communication skills, 20 of the respondents were impressed with the interpreters' other qualities:

He seemed to be, you know, well-versed.... [He] knew the history, which definitely makes things more interesting when you're doing something like that, to have a person who's really knowledgeable about the area and what they're talking about. ... To have a guide that is interested and knows the history, you really feel like you're learning something from him.

She really made it very exciting.... It just keeps everyone awake and light and extremely interesting. She would ask questions, and at least you'd answer them to yourself. I think that's great, it stimulates thinking.

Discussion and Conclusions

This study attempted to analyze long-term memories associated with an interpretive program using a phenomenological approach. Further, this study was an attempt to discern the relationship of these recollections to episodic and/or semantic memory systems. As noted previously, there are potentially three variables that may increase the “power” of episodic memory and potentially be “captured” into semantic memory. These are: (1) The repetition of a concept, (2) making the information relevant to the participant, and (3) providing active-based experiences.

The results of this study offer potentially strong parallels to at least one of the variables noted as an important influence on episodic memory—relevancy to the participant. As noted previously, episodic memory allows individuals to recall the actual interpretive program and topic(s) and other specific information related to the event. The relevancy of Lowell’s history to the participants created vivid recall that included general ideas/knowledge attached to participants’ recollections of the interpretive experience. Below are some examples:

You really got a sense of where people came from for this mill work and how it grew up around Lowell, and what a really important place Lowell has been in the whole history of the Industrial Revolution.

The significant role that Lowell played in the beginning of manufacturing in our country affected not just Lowell but became a forerunner for the rest and a model for many other parts of the country as well.

You walk away with an appreciation of all the sacrifices that people made and appreciate the hardship of the people and what they had to do to bring us forward economically in this country.

These responses suggest the possibility that the episodic recall has potentially been “captured” in semantic memory. As noted previously, semantic memory enables the individual to draw in general knowledge that could be stimulated by episodic recall. Hence, the depth and richness of these answers suggests memories that were beyond recall or remembering, but rather, information that possibly was processed into a conceptual representation or knowing. Conway (1997) et al. offers a more descriptive view of this process, “We hypothesize that shortly after the first learning experience is retained in a predominately episodic form, the memory representations move to a more conceptual and schematized type of representation. . . . When this occurs, knowledge access is associated with knowing” (p. 397). The preceding responses (along with others found in this study) notes conceptual thinking that moves beyond specific recall of the interpretive event and reflects a sense of knowledge of the topic.

In relation to interpretive outcomes, this semantic knowledge closely associates with two themes desired by the park. The responses above, along with others noted in this paper, directly relate to the importance of Lowell to the Industrial Revolution and empathy for the people that were a part of that history. In fact, Lowell National Historic Park designated these two themes as primary intangibles that they attempt to convey as outcomes of their interpretive programs (National Park Service, 2005).

A Model of Learning for Interpretation

The findings of this study, along with literature associated with long-term memory research, offer a potential model of learning for interpretation. This model is couched in episodic/semantic memory systems which, as posited previously, are the most pragmatic approach to view impacts of a one time event such as an interpretive program. The model (Figure 1) is based on the idea that an interpretive event would offer a set of experiences that would relate to one or more of the three variables that enhance episodic memory systems (active experiences, repetitive content, and information relative to the participants). As the results of this study have shown, at least one of the variables (relevant information) would then potentially aid in the development of these recollections into semantic memories.

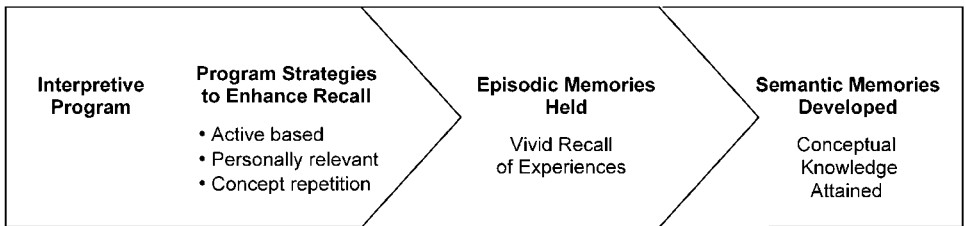


Figure 1. A Learning Model for an Interpretive Program

Figure 2 is an example of the process of learning from the Lowell National Historic Park canal boat program using the proposed model. As noted previously, this interpretive program offered experiences that many of the visitors could relate directly or indirectly. The visitor connections developed during the boat program aided in vivid episodic memories. These recollections, in turn, enhanced the potential for semantic memories and conceptual learning.

Canal Boat Program	Relevant Topics • Immigration story • Mill life • Canal history	Specific Recall • Lock system • Francis Gate • River's use	Knowledge Gained • Importance of Lowell as an industrial center • Influence of worker during this era
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Figure 2. An Example of the Process of Learning at Lowell National Historic Park

The simplicity of the proposed learning model reflects the episodic nature of interpretation. However, its linear structure emphasizes the longitudinal impact that must be assessed to evaluate the “success” of learning. The program strategies offered in this model can only be implemented within the duration of the interpretive program which is, in many cases, less than an hour. Therefore, the types of experiences offered in the second stage of the model are crucial. This study has shown that personally relevant topics can potentially be a

successful approach. Other research has found that active-based approaches have created vivid recall and semantic knowledge (Knapp & Benton, 2004). The third program strategy, concept repetition, would seem more difficult to address due to the short-term nature of the interpretive program. However, it may call to attention the need for interpreters to offer strongly themed experiences that focus on a primary topic that is reiterated throughout the program. Below are interpretive methods that would exemplify the three program strategies:

Active-based Experiences. Since the canal program was primarily a didactic tour, more boat “responsibilities” could be assigned to the visitors. This could include aiding the interpreter in citing key points along the way or offering their own ideas of what they are seeing prior to the guide’s explanation. This approach could even include songs that were reflective of the mill era.

Concept Repetition. This strategy would be enhanced in this program though the elimination of some of the content to enable more focused and repetitive discussion related to their primary theme of the role of Lowell in the Industrial Revolution and the importance of immigrants in this story.

Personally Relevant. This program succeeds in attaining vivid episodic recall through personally relevant information. However, this approach could have been further developed by giving participants opportunities to share their own connections to the park. Visitor stories shared through this format would have potentially motivated other stories from participants enabling more personal connections to be developed.

Ultimately, all three program strategies, suggested in the second stage of the learning model for interpretation, must be studied further to learn if memories are held and ultimately captured into semantic knowledge.

It has long been believed that the success or failure of an interpretive message is based on the ability of the interpreter to relate the information to his/her constituents (Beck & Cable, 1998). This “belief” has come from seminal writings in the field such as Freeman Tilden’s *Interpreting Our Heritage* (1957) and Sam Ham’s *Environmental Interpretation* (1992). This study, along with the associated learning model, offers longitudinal evidence that the core value/essence of interpretation has the potential to make significant impact on visitors’ long-term memory and knowledge of a park site and the message related to the site.

Acknowledgements

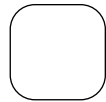
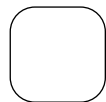
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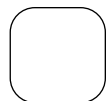
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IN MY OPINION



The Common Roots of Environmental Education and Interpretation

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Environmental Education and Interpretation: Two Trees With Common Roots

*Interpretation is an educational activity which aims to reveals
meanings and relationships...."*

—Freeman Tilden

Definitional Difficulties

Even before Freeman Tilden wrote his oft-quoted definition of interpretation, people tried to distinguish between environmental education and interpretation. Although this debate seems to have slowed in the academic literature, our observation is that it is still a source of confusion and conflict in organizations involved with interpretation and environmental education. Most interpreters still would agree with Grant Sharpe, who in his classic interpretation textbook said, "Separating interpretation and environmental education is difficult" (Sharpe, 1982, p. 25). Sharpe's distinction rested primarily on the settings where the activities happen, and to whom it is directed. He said that interpretation is "mostly directed to visitors to parks, forests, and

wildlife areas,” whereas environmental education is “largely directed toward school-age groups, and takes place in such widely diverse areas as schoolrooms, school yards, city streets, and on field trips to museums, parks, and forests” (Sharpe, 1982, p. 25). Sharpe goes on to say, “environmental education is not a substitute but should be regarded as an extension of interpretation.” Others have reversed the order of this statement and seen interpretation as an extension of environmental education. Some see them as totally separate and identifiable activities.

The debate may have peaked in the 1990s when there was a flurry of articles on this topic (e.g., Knapp, 1996; Civitarese, Legg, & Zuefle, 1997; Morales, 1997; Zuefle, 1997).

Authors have distinguished between interpretation and environmental education by using such criteria as setting (formal classroom or lab vs. informal/recreational), audience type (individuals at leisure vs. individuals required to be in attendance), purposes (recreation, evoking an emotional response, or enhancing experiences vs. curriculum-driven teaching or behavior change), exposure time (short, one-time contact vs. long or multiple sessions) and evaluation (informal vs. formal assessment of learning). It is important to note that these distinctions are strongly interrelated (e.g., the site dictates audience type, which in turn influences time available for communication and/or the purpose of the communications).

Twenty years after Sharpe’s textbook, Knudson, Cable, and Beck (2003) followed his distinctions of settings and audiences in their text. They note that environmental educators “generally have a captive audience with learning responsibilities” whereas interpreters “have a volunteer audience for a few minutes to a few hours” (p. 8). They go on to illustrate a crossover in terms by stating, “Yet, often an interpreter hosts school and camp classes and becomes by necessity an environmental educator” (p. 8).

This paper compares the foundational principles of interpretation and environmental education. It discusses job descriptions from a state conservation agency to illustrate the crossover of terms experienced by professionals in the field. The paper then presents the potential for mutually beneficial cooperation between interpreters and environmental educators based upon similar philosophical roots and the progress being experienced in one state.

Common Roots

The overlap and resulting confusion between interpretation and environmental education is understandable if one considers the similarities between the principles of education and interpretation. Both professions are based on almost identical foundations. Weaver (1982) provided an excellent overview of interpretation’s early history wherein he describes the important role educators such as Comenius (1592-1670), Pestalozzi (1746–1827) and Froebel (1782–1852) played in the origins of interpretation. A more recent influential educator not mentioned by Weaver was John Dewey (1859-1952). During the late 19th century, Dewey influenced a new philosophy of education called Progressivism, which became most prominent in the 1920s. This progressive movement contributed to current conservation education programs (Jacobson, 1999). Dewey believed that, “. . . learning that develops intelligence and character does not come about when only the textbook and the teacher have a say, that every individual becomes educated only as he has an opportunity to contribute something from his own experience, no matter how meager or slender that background of experience may be at a given time, and finally that enlightenment comes from the

Table 1. A comparison of Tilden's principles of interpretation and Dewey's philosophy of education (Archambault 1964, Dewey 1916, Morrison 1997, Tilden 1977, Winn 1972).

Tilden's First Principle: Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.

Dewey: "The more a teacher is aware of the past experiences of students, of their hopes, desires, chief interests, the better will he understand the forces at work that need to be directed and utilized for the formation of reflective habits."

Tilden's Second Principle: Information, as such, is not Interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.

Dewey: "[The teacher] is concerned, not with the subject-matter as such, but with the subject-matter as a related factor in a total and growing experience."

Tilden's Third Principle: Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical, or architectural. Any art is in some degree teachable.

Dewey: "(I believe that) education thus conceived marks the most perfect and intimate union of science and art conceivable in human experience. When science and art thus join hands the most commanding motive for human action will be reached, the most genuine springs of human conduct aroused, and the best service that human nature is capable of guaranteed."

Tilden's Fourth Principle: The chief aim of Interpretation is not instruction, but provocation.

Dewey: "The educator's part in the enterprise of education is to furnish the environment which stimulates responses and directs the learner's course."

Tilden's Fifth Principle: Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.

Dewey: "Education is child-centered, and schooling should take into consideration the whole child; that is, needs and interests in all areas—cognitive, physical, social, and emotional."

Tilden's Sixth Principle: Interpretation addressed to children (say, up to the age of 12) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

Dewey: "The question of method is ultimately reducible to the question of order or development of the child's powers and interests . . . Education which treats all children as if their impulses were those of the average of an adult society is sure to go on reproducing that same average society without even finding out whether and how it might be better."

give and take, from the exchange of experience and ideas” (Winn, 1972, p.123).

Moreover, Dewey believed that curriculum should be based on and built around students’ interests, take into account the whole child, emphasize thinking and problem-solving more than knowledge itself, be active, and show connections between school and society (Morrison, 1997). He said that to “learn from experience” a student can make a “discovery of the connection of things” (Winn, 1972, p. 39).

In the late 1950s Freeman Tilden developed a set of principles for interpretation that became the guiding doctrine for the interpretation profession (Tilden 1977). Readers familiar with Tilden’s book *Interpreting Our Heritage* will notice the strong similarity between Dewey’s philosophy as stated above and Tilden’s principles.

At the same time that Dewey was writing about effective educational approaches, Enos Mills (1870–1922) was writing about effective interpretation techniques. Dewey and Mills expressed very similar thoughts. Dewey’s writings on his educational philosophy were well known at the time; perhaps Mills was familiar with Dewey’s teachings. Although the link between Dewey and Mills is purely speculative, certainly the Progressive Movement that was sweeping the nation influenced Mills and he shared its societal values and supported its political agenda (Drummond 1995). Tilden’s principles are strikingly similar to the teachings of Mills (see Beck and Cable 2002 for direct comparison) and Dewey.

While Dewey himself did not publish a specific set of principles like Tilden, his philosophy can be organized into basic principles of the Progressive Curriculum. Table 1 presents six of Dewey’s teachings about education and compares them to Tilden’s six principles of interpretation. This table illustrates the close similarity between their ideals.

Why Does It Matter?

If environmental education and interpretation stem from such similar roots as Dewey’s and Tilden’s then where is the disconnection? If it is not a philosophical difference, is it merely an institutional issue? Within interpretive/environmental organizations, those unaffected by these definitional difficulties may assume it is merely an academic debate and ask, “Why can’t they all just get along?” To others, the confusion and competition associated with these terms is a source of considerable anxiety.

One way in which it matters to interpreters is confusion over job titles and associated responsibilities. Knudson, Cable, and Beck (2003) point out that many museums and zoos use the terms *education curator* or *public education personnel*, whereas agencies such as the National Park Service and U.S. Forest Service use the term *interpreter* for similar positions.

Within agencies the aforementioned “crossover” of responsibilities for individuals can be illustrated by reviewing job titles and descriptions from the Missouri Department of Conservation (MDC) (www.mdc.mo.gov). For many years MDC has had interpreters called naturalists. According to the formal job description, some of a naturalist’s duties and responsibilities include conducting “interpretive presentations and guided hikes both on-site and off-site” and developing “programs for school-aged groups in accordance with the standards outlined by the Missouri Department of Education.” Naturalists present “programs to a wide variety of audiences ranging from school and scout groups to civic groups, from preschoolers to senior citizens.” They also assist with special events, exhibits, and the training of volunteers among other duties.

Within the last five years MDC has created a new position called education specialist. The qualifications for an educational specialist position includes at least one year of teaching

experience, whereas this criterion is not required for the naturalist position. Originally hired as educators to specifically teach school children in a conservation classroom, their roles evolved and their site flourished into a successful center that now hosts weekend special events and public programs that most would call “interpretive.” According to the formal job description, an education specialist “develops and presents curriculum-based experiential education programs for urban schools and youth groups.” While their other duties rotate mainly around this conservation classroom, with no mention of off-site programs, the education specialist also assists with special events, exhibits, and training volunteers. Recently, they are reaching beyond the schools out to the larger community by doing public programs on the weekends.

Interestingly, the word “educates” appears in the naturalist job description while “interpretive” appears in the education specialist description. Also, both positions are asked to develop programs aligned with the Department of Elementary and Secondary Education Performance Standards. Not only educators use these guidelines, but also interpreters are combining creativity and inspiration to cover topics for which schools are required to test their students. These interpretive programs help the students link their studies with the world outside their classroom.

To add to the ambiguity, job titles throughout the state stay the same, along with the associated salaries and benefits, but each site may have its own description of the duties associated with the title. These job descriptions overlap when the duties expand from strictly environmental education or interpretation to a combination of the two. One nature center has part-time naturalists and full-time education specialists that work together. The education specialists at this site provide “educational/interpretive programs both on and off site for various audiences.”

As illustrated by these job descriptions, job titles specifying a naturalist position or education specialist do not define whether you are an interpreter or environmental educator and regardless of the title the duties overlap. This makes it sometimes difficult for a professional to know their specific professional identity when doing their work which leads to practical questions like, “Which organizations should I belong to?” and “Which meetings should I attend?” Not only do duties overlap, but also leadership can influence whether employees perceive themselves as an interpreter or educator. Within MDC some education consultants or conservation education supervisors supervise naturalists, whereas some naturalists are supervised by nature center assistant managers.

We have observed in other organizations that, in addition to the confusion over mixed titles and duties, the distinction between environmental education and interpretation matters because values and tasks associated with these terms have led to bureaucratic turf wars within agencies. With limited funding in many organizations the fear is that one or the other job title may “win out.” This fear may lead to a lack of trust, unhealthy competition, and the building of walls and other defense mechanisms. Some interpreters feel a sense of inferiority, or fear a lack of respect or attention when supervised by formal educators, many of which are former classroom teachers or school administrators. Moreover, agency administrators with specific funding agendas pay attention to these distinctions when preparing budgets.

Common Canopy

The fact that interpretation and environmental education are based on nearly identical prin-

ciples and have overlapping (although not necessarily identical) purposes should be a unifying factor, bringing both groups together. Not only does interpretation share common roots with environmental education, but as we look to the future it might be helpful to extend the metaphor and think of the two professions as two branches stemming from the same trunk and forming with all of the respective sub-disciplines and activities a common canopy of common purpose.

Interpreters have much to gain by learning about and applying educational theories and principles. Knudson, Cable, and Beck (2003) devote a chapter in their interpretation textbook to theories and approaches gleaned from the education literature. The authors state that, "Interpretation of natural and cultural resources involves and uses most education principles" (p. 131). They add that, "Understanding the different ways that people learn helps interpreters to organize experiences people will remember. Educational theories give interpreters guidelines for communicating more relevantly. . . . [and] lead to more worthwhile and valuable programs—interpretation with a punch" (p. 131).

Moreover, interpreters would benefit by formally assessing learning in their audiences as environmental educators often do. Again, interpretation textbooks and publications and training resources of the National Association for Interpretation encourage interpreters to evaluate their programs and provide evaluation tools and techniques.

Likewise environmental educators can enhance their effectiveness by applying interpretation principles and approaches. It has long been understood that emotions affect learning, learning can be fun, and recreational activities can be used to teach. Environmental educators could learn and apply interpretive techniques to help students make emotional connections and discover personal meanings associated with the course material. Moreover, environmental educators can take better advantage of recreational situations and settings to achieve their learning objectives.

In Missouri, recently, those in the fields of interpretation and environmental education have begun talking of partnering together in a union that they hope will strengthen their ability to achieve their joint mission of inspiring and educating others about the outdoors. Specifically the Missouri Environmental Education Association and the Association of Missouri Interpreters have discussed periodically offering joint workshops.

Likewise, MDC has begun to assimilate educators with interpreters in many ways. The aforementioned situation whereby education consultants or conservation education supervisors supervise some naturalists, while other naturalists are supervised by nature center assistant managers, may be seen as confusing, but those employees consider this arrangement a positive development rather than a source of frustration. For them, the combined team of environmental educator and interpreter broadens their impact in carrying out the mission of MDC. They recognize that there is strength in numbers as well as strength in diverse talent and training.

MDC education specialists were welcomed to the 2005 Naturalist Workshop—a workshop previously only attended by those thought of as interpreters. Although content of the workshop still focused heavily on interpretation, the coming years may provide more of an opportunity for the educators and interpreters to learn from each other. Also both groups intend to strengthen their skills through NAI Certified Interpretive Guide training.

Summary and Conclusion

In the early 1900s, the roots of two philosophies began to grow. While Enos Mills was planting ideas in the field of interpretation, John Dewey was planting similar ideas in the field of education. In the 1950s and '60s Freeman Tilden spread these ideas throughout the National Park Service and beyond. Although these men were from different fields of study they agreed on almost identical principles related to educating and inspiring individuals. Hence foundational principles of interpretation and environmental education are nearly identical. Environmental education and interpretation are like two trees that appear to be separate trees above ground, but that upon closer inspection are found to be grounded with common roots.

These two concepts may never be defined to everyone's acceptance and satisfaction. In fact, Freeman Tilden, author of the most widely quoted definition of interpretation, found the notion of limiting interpretation to a specific definition to be distasteful. He said, "The true interpreter will not rest at any dictionary definition" (Tilden, 1977 p. 8). Many people who identify themselves primarily with the term "environmental education" feel the same way. In fact, Dewey himself struggled with the limits of formal versus informal education (interpretation) saying, "... one of the weightiest problems with which the philosophy of education has to cope is the method of keeping a proper balance between the informal and the formal . . . modes of education" (Dewey, 1916, p.10). Deciding on definitions may be less important than that recognition of common philosophical roots and approaches that are not merely compatible, but complementary. Rather than feeling like an educator in an interpretive world or an interpreter in an education world, finding the perfect blend between the two worlds strengthens the way messages are conveyed to the public.

Instead of directing negative energy at choosing labels for what we do, we should devote ourselves to daily becoming more effective branches benefiting the whole tree. Both professional branches would benefit by cooperation and an exchange of ideas and approaches such as what is occurring in Missouri. Regardless of whether we call ourselves environmental educators or interpreters the important thing is that we apply the aforementioned common principles with professionalism and passion.

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**Form Follows
Function:
Interpretive
Wisdom for
Environmental
Educators**

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Abstract

A review of the literature reveals that interpreters' emphasis on individual connection to the resource offers environmental educators key strategies to promote engagement and addresses critiques of environmental education practice as too generalized, behaviorist, manipulative, or negative. Interpreters serve as the nation's front-line environmental educators, with the foremost opportunity to inspire adults to engage in the free-choice learning that may, at best, motivate deeper ecological awareness and personal environmental activism. Pairing interpreters with teachers can extend the same opportunities to students.

Keywords

interpretation, environmental education, free-choice learning, interpretive programming

When a newcomer enters a room where rich, lively conversation predominates, gauging when (or if) to contribute is a challenge; humility, not hubris, is called for here. I have been a volunteer interpreter and environmental educator, and recently immersed in literature reviews in both fields while completing a master's degree in environmental education at Prescott College. My studies and observations convince me that interpretation offers key strategies for environmental educators.

The literature reveals that critics of environmental education philosophy and practice—from both within and outside the field—focus on three main contentions:

- environmental education lacks specificity (Van Matre, 2004; Payne, 2006)

- environmental education is essentially behaviorist (Robottom & Hart, 1995)
- environmental education is negative in tone, over-emphasizing environmental problems (Sobel, 1996; Orr, 2004).

I would argue that interpretive practice and philosophy offer foundational principles and methods to address these critiques, at least in part. I will consider each of the three in turn.

Environmental Education: Too General?

Van Matre (2004) crafted his Earth Education movement to address what he decries as a tendency in environmental education to over-generalize. A full analysis of his methodology is beyond the scope of this article, but his programs emphasize connection with nature as a foundation for later study that aims to influence participants to live more lightly on the planet. Payne (2006) analyzes philosophical foundations of environmental education curriculum, arguing for greater phenomenological awareness of place as one curricular mindset.

Interpreters seek to connect their audiences directly with the resource—natural, cultural, historic. Each resource has its own story, its own voice; interpretation offers the venue for the visitor to hear that site-specific story and share in the work of making meaning.

Atiti (2004) explicitly argues for “an understanding of interpretation and environmental education processes as *mutually reciprocal aspects* of enabling the development of critical environmental literacy” (p. 375, emphasis original). Atiti’s study of schools in Kenya deliberately paired teachers with non-formal interpreters, resulting in schoolyard transformation—as considered by Malone and Tranter (2003)—and creation of thematic units incorporating interpretive materials and principles with environmental education goals. Atiti’s (2004) work is unique in that teachers undertook a personal transformative cycle of partnering with interpreters, becoming interpreters of their own sites, and translating their knowledge, experience, and reflection into educational opportunities for their students. This site-specific focus seems one way to address the criticism of environmental education as too general in its emphasis.

Environmental Education: Behaviorist?

Robottom and Hart (1995) charge that environmental education is essentially behaviorist, and they deplore what they term as “the tendency to individualize the responsibility for environmentalism” (p. 5). The authors specifically criticize environmental education research that, in their words:

tends to create a sense of individual agency and responsibility that is unrealistic in light of a range of sociopolitical constraints in the community; and that it misrepresents the nature of environmental issues by emphasizing individual human agency as the key factor in issue resolution (1995, p.9).

While the role of the individual may appear to be diminished in the current political reality, I do not agree with the authors’ assertion that environmental education efforts—or interpretive programs, by extension—have no value in addressing global environmental issues. I think of the ripple effect of Rachel Carson’s *Silent Spring*, an effect cited by

Gigliotti (1996), another environmental education critic. Gigliotti (1996) argues that while the citizenry is, on average, more aware of environmental issues, the average individual has not made the lifestyle modifications necessary to address a growing ecological crisis.

Stables (1996) argues that the environment can be considered as text, that our experience of the environment is value-laden; he parrots interpretive principles when he says “both thought and feeling inform our response to the environment, our understanding of the environment and our actions in relation to the environment. The processes of environmental education should therefore exploit and develop both affective and cognitive responses” (p. 192). I can imagine Robottom and Hart wincing over the verb “exploit;” I wince myself.

One way to avoid the appearance of exploitation is, well, avoidance. Simmons (1996) analyzed a survey of 1,225 nature and environmental education centers and conducted focus interviews with more than 100 staff members. Some participants expressed discomfort with tackling sensitive local environmental issues, particularly if the center was dependent on local political funding. Simmons concluded that “the centers appear to be trying to avoid controversy, choosing to define their educational roles narrowly and safely” (p. 225).

Tilden (1967) and Beck and Cable (2002) offer the interpretive call to provocation as an answer to this expressed reticence, and to the charge of behaviorist practice. Provocation does not mean that interpreters advocate a biased, one-sided, or simplistic presentation of issues, but that they communicate their visions and perspectives honestly with their audiences. Beck and Cable advocate for courage:

Interpreters are obliged to present the truth. They must acknowledge issues that have not yet been resolved and those with conflicting evidence. Yet when it is clear that, as Leopold admonished, “a thing is right” or “it is wrong,” then it must be logically and forcefully presented as such (2002, p. 45).

Environmental Education: Too Negative?

Many environmental education philosophers and practitioners have warned that the field tends toward a negative world view, emphasizing problems without providing the opportunity for individual connection with nature that might inspire “caring about” as well as “caring for” (Sobel, 1996; Orr, 2004; Payne, 2006). Sobel (1996) focuses on the younger child, while Orr (2004) discusses higher education. Both echo interpretive wisdom in outlining strategies to reconnect students with the environment. Sobel (2004) analyzes the effectiveness of place-based, site-specific educational efforts around the country, with numerous examples of school curricula designed to connect students to their local history, culture, and environment, while empowering them to address, individually or within community, issues or problems their open-ended studies may uncover.

For interpreters, connection comes first, chronologically and in priority. Ben-Ari (2000) asserts: “Once such a bond is established, the theory of resource protection through interpretation goes, people will feel a sense of stewardship, or responsibility, for preserving natural resources” (p. 557). Pairing interpreters with classroom teachers, as did Atiti (2004), seems a strategy with promise to counter charges of negativity in modern environmental education.

Assessment of effectiveness represents a core difficulty with both interpretation and

environmental education. While studies may quantitatively or qualitatively measure an individual's response to an interpretive or environmental education program, ongoing lifestyle change is harder to quantify or predict. As McGuire (2005) acknowledges, "so many factors go into behavior change." Attributing a change in lifestyle only to an individual's interaction with a particular environmental education curriculum or interpretive program ignores the complexity which motivates change. That said, interpreters still seem to me to be the nation's front-line environmental educators, with the foremost opportunity to inspire their visitors to engage in the free-choice learning that may, at best, motivate deeper ecological awareness and personal environmental activism. I would contend that individual connections represent the best means to promote an increased planetary quality of life, as interpreters allow their sites and resources to tell their unique, eloquent stories—one visitor, one student at a time.

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My Relationship with Interpretation and Environmental Education

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I'm not a fan of opinion pieces. These days most of my writing is devoted to research. This is an odd statement from one whose writings 20 years ago consisted of nature trail signs and pamphlets. Not that I've changed my feeling for the importance of such material, but since I'm in the halls of academia, I might as well do what real interpreters don't have time for—find out what works! But back to my first statement—my motivation for this opinion piece stems from a recent exercise in collecting my materials for promotion at my university. Although an exercise in self adulation, it did give me a chance to look back on my own relationship with the two professions that I have studied, worked, and revered for the past 25 years. In completing this reflective journey, I found there to be three phases of my relationship with interpretation and environmental education (EE) during my past 14 years in higher academics. Initially, much of my time was spent in offering delineations between EE and interpretation. Through this process, I began to enter a more “volatile” period of consternation over the status of EE. Finally, for the past several years, I have settled into a period of evaluation and analysis.

Phase I: The Delineation Between EE and Interpretation

A decade ago I was in the midst of attempting to clarify the distinctions between interpretation and environment education, delineations that I still believe are apparent. This includes the fact that the structure/characteristics of both professions are different. Environmental education tends to be associated with formal institutions that require students to participate in a sequential learning process. Interpretation, on the other hand, tends to be voluntary and located in recreational settings. Most interpretive experiences, at best, cover a period of two hours to half a day. On the other hand, curriculum development in environmental education is based on the premise that a student becomes invested in environmental issues (Hungerford & Volk, 1990). This variable is predicated on a period of time longer than the average interpretive experience can offer. Several research studies regarding

environmental behavior list important variables associated with this desired change. Two of the most crucial variables are an individual's in-depth knowledge of environmental issues along with an investment of time regarding these issues. *People need time to attain the sensitivity, knowledge, and attitudes necessary for a positive environmental ethic. Time is certainly one characteristic that an interpretive experience lacks.*

The inherent structural differences between the two fields give support to the notion that an interpretive experience should be considered an *aspect* of environmental education and not environmental education itself. *Interpretation does not achieve the ultimate goal of environmental education. Despite our best efforts, a two-hour interpretive experience does not accomplish behavior change in an individual regarding his/her actions toward the environment. On the other hand, an interpretive experience can be an essential and successful aid in achieving this behavior change goal.*

Phase II: Consternation over Environmental Education

My interest in the delineations of these fields turned to outright concern for the status of environmental education. Seven years ago I wrote a response to my involvement in the Thessaloniki Conference in the *Journal of Environmental Education* (Knapp, 2000). Below are important points to this position paper that I feel are still pertinent today.

Infusion Delusion

Since the inception of environmental education, many, if not most, have believed that for it truly to be successful it must be integrated into all subjects. Despite this call for total integration, few holistic approaches can be found in the United States. In fact, if environmental education is being implemented, it is more than likely found in science-related subjects. As recently as 2005, the National Environmental Education Advancement Project found that if EE was being taught it was through science or social studies and not via a multi-discipline integration (Ruskey & Wilke, 2005).

The Activity Guide Mentality

For the most part, environmental education has taken the "easy way out." Agencies and institutions associated with environmental education have produced an amazing number of activity packets or "curriculum guides." Programs such as Project Wild and Project Learning Tree, although well meaning and for the most part quality material, have created an "activity guide mentality." Budgets, time constraints, and the notion to make one's own mark on the field have brought about these myriad offerings that do not represent a sequential learning order based on a sound educational philosophy. These short and sweet strategies have negated the use of more substantial models that encourage long-term investment and, most importantly, long-term thinking and responsible citizenship behavior on the part of the students. In the same longitudinal national study noted previously, results show that, by far, the most utilized materials for EE curricula was Project Learning Tree, Wet, and WILD (Ruskey & Wilke, 2005).

Activism vs. Action

An important goal for environmental education is to make individuals aware of actions necessary to resolve environmental problems. Unfortunately, much of this work has resulted in "environmental activism" rather than environmental action. In many cases, educators use

their positions to “preach from the pulpit.” Criticisms range from assertions that environmental education is based on emotionalism rather than facts and tends to be issue-driven rather than information-driven and is politically motivated. But one of the most alarming charges of environmental education is that much of the values and positions that are formed are driven by the instructor and not by the student. A report by the Independent Commission on Environmental Education (1997) asserted that several widely used EE teachers’ guides urge students to take political and social stances related to the environment without educating them on all points of view.

NAAEE Response: Perpetuating the Activity Guide

The North American Association for Environmental Education (NAAEE) has attempted to resolve some of the concerns reviewed above through the development of environmental education standards and guidelines (*Environmental Education Materials: Guidelines for Excellence*) to uphold these standards. It is the assertion of the author that these documents underscore and, unfortunately, reinforce some of the key issues in the field. Accountable EE is attained through a sequential process that allows for in-depth investigation into environmental issues and autonomous decision making by the student. *The Guidelines for Excellence* does not enhance this curricular tack but, instead, offers a variety of standards that supports virtually every subject taught in our educational system. In several sections of this document there is support for the inclusion of sciences, social studies, math, geography, English, arts, physical education, and occupational education. Certainly EE has an interdisciplinary flair but with this type of view it is difficult to discern what EE is or is not. If environmental education is all things to all people, it then becomes nothing to anyone.

Phase III: Evaluation and Analysis

For the past seven years I have dedicated my work to research in interpretation and nonformal EE. This phase of my career has been the most rewarding and ultimately beneficial. I have conducted both quantitative and qualitative research on longitudinal impacts on interpretive experiences and informal education programs. I have become much more pragmatic in my beliefs of what can be accountably analyzed through such an episodic event. Hence, I have focused my most recent work in association with theories in cognitive sciences related to long-term memory. This approach is still in its formative stages but is already yielding results that have reinforced some beliefs in our field and possibly added other posits that could enhance pedagogy in informal programs.

Summary

The three phases of my academic career encapsulate how I perceive the status/relationship of both environmental education and interpretation. First, both are distinctive in their own right with aspects that certainly could be considered interchangeable. However, interpretation is a *process* and EE has a *terminal goal*. If you place 100 interpreters in a room you may get 100 different outcomes for their programs. As Freeman Tilden noted, interpretation is an art form and we are artists with different canvases and tools to paint our pictures. On the other hand, if you have 100 environmental educators in the same room they would at least agree on one thing—an ultimate aim to produce environmentally literate and responsible citizens. Hence, interpretation is a process that delivers a variety of topics. On the other

hand, environmental education is (or at least should be) a sequential curriculum guided approach to attain an ultimate goal—environmental stewardship.

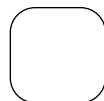
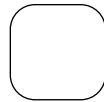
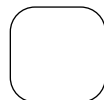
Second, there seems to me to be a tale of two cities. The field of interpretation enjoys a healthy professional status that includes a strong national organization, two major certification processes in full swing through the National Association for Interpretation and another through the National Park Service. There is no denying there are issues such as the public's lack of knowledge as to what interpretation "is" but we do not own sole rights to identity problems! On the other hand, environmental education has suffered from what I call the *Projects Syndrome*. It is an educational profession represented by a massive amount of activity booklets and only a handful of sequential curriculums. This problem, along with others noted previously, has led to a decline in the status of EE. The National Environmental Education Advancement Project's most recent survey noted there are now only three states requiring preservice training in EE, there has been a drop from 30 to 18 states who are requiring EE in-service training, and a nation-wide decrease in EE centers and state associations (Ruskey & Wilke, 2005).

A final point to this paper is the need for more long-term assessments in both environmental education and interpretation. I have always been one to question rigorously the actual ability of environmental education (and its related counter part environmental interpretation) to "prove" the notion that it can change behavior. In fact, I began my academic career with a dissertation that outlined an in-depth model to achieve behavior change through environmental interpretation. Following six years of research related to this model I found it difficult—as many others have—to actually measure behavior change. Therefore, I decided to take a giant leap *backwards* to investigate questions that we can actually answer. For me, it has been exciting to learn what adults and children remember long after a program. Are these results evidence of attitude or behavior change? Are they better citizens for experiencing these types of programs? I don't know. I do know, however, that the programs I have studied for long-term recollections *do* have a lasting impact. Are they memories that aid in knowledge or attitude shifts? I don't know the answer to that either. However, as I continue my work using cognitive science-based models, I may find out. But, for now, it represents an important beginning for someone who has always been in the back of the room shouting, "prove it!"

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**IN SHORT:
REVIEWS
AND REPORTS**



A Public's Awareness of Regional Parks and Park Management Agencies with Implications for Management- oriented Interpretation

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Abstract

South Florida summer residents (n=1806) from five counties (Broward, Collier, Lee, Miami-Dade, and Monroe Counties) were asked to recall the names of two units of the National Park Service and, when prompted, to recognize each of the four national park units located in south Florida. Only 8.4% of respondents could name two units of the National Park Service, yet when prompted many more stated that they had at least heard of the national parks in south Florida.

Interpreters may be able to help raise visitor awareness of resource management issues by including information about the role of the agency in their talks or as part of their interpretive theme. Suggestions for further research and evaluation strategies are provided.

A Public's Awareness of Regional Parks and Park Management Agencies with Implications for Management-oriented Interpretation

One of the roles of interpretation is helping parks and protected areas achieve their management objectives. Unless the public is aware of the value of cultural, historic, and natural resources located in parks and protected areas (PPA), they may not be motivated to support land management agencies (Knudson, Cable, & Beck, 1995). However, for the public to support parks and the agencies that manage them, it seems logical that they must be able to recognize, understand, and distinguish specific parks and actually associate them with their respective agency. Many researchers conducting interviews with visitors in PPA have informally expressed concerns with each other that often visitors did not know which agency was managing the area they were visiting. If this is a widespread issue, then interpreters should focus not only on helping visitors understand the importance of park resources, but also who manages these areas.

Literature Review

Little research has been conducted on the public's ability to recall and accurately categorize units of the National Park Service (NPS) or any other land management agency. In a study of Pennsylvania residents, Kerstetter, Zinn, Graefe, & Chen (2002) compared former users and non-users of state parks in terms of what constrained their visitation. While no percentage was given in the report, some respondents reported that visiting Pennsylvania State Parks was too expensive. Ironically, no admission fees to state parks were being charged at the time of the study. Additionally, 6% of former users and 8% of non-users reported that "rides were too expensive." These seemingly incongruent answers may be due to respondents not knowing what constitutes a state park. The authors noted that "some respondents named popular commercial amusement parks when asked what state parks they had visited during the 12 months prior to the study" (p. 73). The reference to commercial amusement parks suggests that the 6% of respondents who mentioned that "rides were too expensive" may have been confusing Pennsylvania State Parks with amusement parks.

No other research could be located that directly examined the public's recognition of the association of specific parks with their respective managing agency. The purpose of this study was to evaluate to what degree summer residents of south Florida could accurately identify units of the National Park Service and when prompted, to recognize each of the four national parks located in south Florida.

Method

The study population was summer residents in five counties of south Florida (Broward, Collier, Lee, Miami-Dade, and Monroe). While most of these residents live in Florida year round (96.8%), all surveys were conducted in June and July. An unknown but substantial percentage of winter residents move out of Florida each year and were not surveyed. Computer-assisted telephone interviews (CATI) were conducted by the National Opinion Research Services (NORS) in Miami, Florida. NORS employs bilingual (English and Spanish) non-accented interviewers and specializes in sampling Hispanic and Haitian populations. Using the CATI system, 10 attempts were made to reach a person. Interviews were completed with 1,806 individuals. The proportion of respondents from each county matched the population of the counties based on the 2000 U. S. Census. The refusal rate was 27.3% and the response rate, which includes phone numbers that were never answered, was 5.7%.

As part of the study, respondents were first asked to name two national parks that either they were familiar with or they had visited. Then they were specifically asked if they had heard of and/or visited each of the four south Florida national parks and preserves (Everglades National Park, Biscayne National Park, Dry Tortugas National Park, and Big Cypress National Preserve) (Bixler & Hammitt, 2006).

Results

Over half of the respondents (53.3%) were unable to name even one national park, 38.3% were able to name one national park correctly, and 8.4% were able to name two national parks. Of the 3,612 responses received, "I don't know or can't remember" was the most common at 43.6%. The second most common response was Everglades at 20.4%, followed by Biscayne National Park at 2.6%. An additional 311 other answers were received that included national wildlife refuges, state parks, county/city parks, amusement parks, zoos,

aquariums, and botanical gardens. Only 39 respondents or 2.2% listed a commercial amusement park such as Disney World as their example of a national park. Surprisingly few of the iconic national parks outside of south Florida were mentioned ($n=28$ or 1.5%). Yellowstone received 16 mentions, followed by Yosemite ($n=7$), Grand Canyon ($n=8$), Acadia ($n=2$), Shenandoah ($n=1$), and Great Smoky Mountains National Park ($n=1$).

After asking respondents to recall the names of two national parks, they were given the names of the four south Florida national parks by the CATI operator. For each park, respondents were asked if they were familiar with it, and then whether they had visited the park in the last 12 months. Familiarity with the parks was higher when the research technician named each park or preserve for the respondents as part of the question. This is a measure of recognition rather than recall knowledge. While only 20.4% named Everglades National Park in the open-ended format, 89.9% acknowledged familiarity when given the name of the park. For Biscayne National Park, only 2.6% named the park in the open-ended format, while 61.5% reported knowing of the park when given its name. Big Cypress National Preserve was familiar to 52.8% and Dry Tortugas National Park was familiar to 43.7%.

To further understand the relationship between experience visiting national parks and awareness of the managing agency, the ability of respondents to provide one example of a national park based on recall was cross-tabulated with whether respondents were familiar with or had visited a south Florida national park in the last 12 months.

Respondents' familiarity (recognition knowledge) with south Florida national parks in terms of their ability to name at least one national park correctly (recall knowledge) is displayed in Table 1. All relationships were significant ($p<.001$). Respondents who were familiar with the south Florida national parks tended to be able to also name at least one national park although the strength of the relationships was weak to moderate based on *phi*.

The relationship between having visited a south Florida national park and being able to name one national park based on recall is presented in Table 2. For three of the four south Florida national parks, the relationships were significant. Respondents who had visited south Florida national parks were more likely to be able to also name at least one national park, with the exception of Dry Tortugas National Park. Yet 137 of 517 respondents (26%) who had reported visiting Everglades National Park in the last 12 months were unable to name one national park earlier in the interview.

Discussion

Little research exists on the public's awareness of public lands and the agencies that manage them. This study built upon findings from a study of residents of Pennsylvania (Kerstetter, et. al. 2002). The Pennsylvania study was not specifically designed to measure agency recognition yet secondary analysis of data revealed a lack of understanding among some participants in that study. This study in south Florida provided direct measures of awareness of a parks and their corresponding management agency. The major finding of this study is that over 90% of this general population sample in Florida could not name two national parks from memory, not even those in their immediate geographic region. This study did not delve into the public's understanding of what is a national park, only the ability to correctly name any national park and then recognize national park units located in the immediate area. Future research should test for depth of understanding and the ability of the public to distinguish the various federal and state

<u>Named a National Park Correctly?</u>					
		<u>No</u>	<u>Yes</u>		
		<u>Observed (Expected)</u>		<u>Chi-Square</u>	<u>Phi</u>
Have you heard of Everglades?					
Yes	791 (865)	832 (758)		135.3***	-.27
No	172 (98)	11 (85)			
Have you heard of Biscayne?					
Yes	503 (592)	608 (519)		75.1***	-.20
No	460 (371)	235 (324)			
Have you heard of Dry Tortugas?					
Yes	280 (421)	509 (368)		179.0***	-.32
No	683 (542)	334 (475)			
Have you heard of Big Cypress?					
Yes	381 (508)	572 (445)		144.3 ***	-.28
No	582 (455)	271 (398)			

***p<.001

Note: Respondents were first asked to name any National Park they had heard of or visited. They were then asked specifically if they had heard of each of the four national park units in south Florida

Table 1. Relationship between being able to name a national park and having heard of the four south Florida national parks.

public lands and their associated management agencies.

The findings of this study should not be generalized to other regions of the country. Its primary function should be to raise awareness of this issue and to encourage further study. The questioning strategy used in this study should be replicated in other regions and nationally. If a similar lack of understanding is found, and lack of awareness is empirically linked to lessened support for protected areas and land management agencies, then additional research needs to be conducted on the effectiveness of different communication methods to increase awareness.

		<u>Named a National Park Correctly?</u>			
		<u>No</u>	<u>Yes</u>		
		<u>Observed (Expected)</u>		<u>Chi-Square</u>	<u>Phi</u>
In the past 12 months...					
have you visited Everglades?					
Yes	137 (252)	380 (265)	150.2***	-.30	
No	654 (539)	452 (567)			
have you visited Biscayne?					
Yes	108 (141)	203 (170)	19.4***	-.13	
No	395 (362)	405 (438)			
have you visited Dry Tortugas?					
Yes	27 (28)	52 (51)	.07	-.01	
No	253 (252)	457 (458)			
have you visited Big Cypress?					
Yes	60 (77)	133 (116)	7.97**	-.09	
No	321 (304)	439 (456)			

***p<.001, **p<.01

Note: Respondents were first asked to name any National Park they had heard of or visited. They were then asked specifically if they had visited each of the four national park units in south Florida

Table 2. Relationship between being able to name a national park and having visited the four south Florida national parks.

Implications for Interpretation

The United States is recognized around the globe for preserving land through state and federal policies and management. Land preservation depends on the political support of citizens, yet this study documented that between 26% and 35% of local residents in a five-county area where the parks are located and who had visited these parks could not name a single national park when asked. Further research should examine to what extent a lack of understanding of the mission of land management agencies makes it more difficult for visitors and community members to understand their relationship with these places.

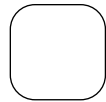
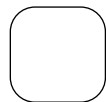
The approach used in this study can be used by any government or non-govern-

mental organization (NGO) when conducting evaluations. Questions about awareness of public lands and managing agencies can be asked in any context whether it be an evaluation of an interpretation program, surveys of park visitors, or regional or national studies of the public. Likewise, formative evaluation techniques should be used in designing interpretive messages and exhibits that explain the role of parks and their resource management agency (Dierking & Pollock, 1998). Additionally, interpreters can immediately begin to use informal audience research techniques (Brochu & Merriman, 2002) to test their audiences for agency awareness.

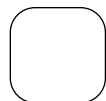
Finally, it is worth investigating whether using integrated messages to explain the role of resource protection as a function of the mission of land management agencies contributes to helping visitors understand what constitutes appropriate behavior in a particular resource management context. A similar strategy may help in interpreting why rules of conduct differ between land management agencies with preservation versus conservation missions. The US Forest Service, part of the Department of Agriculture, is probably widely misunderstood by its publics because they view these areas as similar to or the equivalent of national or state parks. The results of this study are offered as a means of stimulating more formal and informal research and encouraging experimentation and critique of the value of including interpretation of the mission of land management agencies as a part of helping visitors and the public understand park resources.

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APPENDIX



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.

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Ryan, C. and 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.

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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.

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