USING TECHNOLOGY TO DEVELOP CONNECTIONS BETWEEN INDIVIDUALS, NATURAL RESOURCES, AND RECREATION

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Abstract: Information technology is here. How we as natural resource providers, researchers and users decide to use it responsibly is up to us. This study presents the facts of information technology and how to use this technology to develop connections between individuals, natural resources, and recreation. Three categories that were explored are (a). an overview of information technology and recreation and tourism, (b) National Park Service interpretation programs, and (c) computer-based learning and education programs.

Introduction

Most Americans cannot imagine their lives without some form of technological interaction. Communication, education, and research have been advanced through technology. But how can technology fit with America's cultural, historic, and natural resource heritage? This question is explored in the following three categories: an overview of information technology and recreation and tourism, National Park Service interpretation programs, and computer-based learning and education programs.

Most National Parks provide an on-line tour for potential visitors. Therefore, some interpretation of the parks is done before they reach the site. However, it is important to distinguish between simply providing information versus interpretation on the web. Visitors to National Park Services are expecting an educational, exciting and stimulating experience. Interpretation has traditionally accomplished this through a talk given by a naturalist or ranger, displays of photos and artifacts created on-site or through slide shows, among other methods. However, technology has changed the way interpretation is presented. The example provided will be using research technology during interpretive programs at Isle Royale National Park.

The computer-based training program is used as a major tool for educational programs and distance learning. Nature centers, gardens, and parks are increasingly using computer based programs to teach youth about the natural environment. However, how can one combine technologies with the natural environment so that youth learn the difference between the out of doors and what is portrayed on a computer screen? An example is provided from the Michigan 4H Children's Garden.

An overview of IT

Information technology (IT) is a broad subject of managing and processing information. The first section of this paper is to provide an overview of information technology and its applications in the field of recreation and tourism. Because IT changes so rapidly, new applications are available everyday. The example provided today maybe obsolete tomorrow. Managers of recreation and tourism should update their knowledge of IT and be informed of the latest applications.

Facts of IT

To realize what IT is and what IT can do for us, it is helpful to see what are the impacts of rapid creation and adoption of IT on the global market. Information technology has been a buzz term for the past decade and is one of the most important components of management systems. The following facts are provided to illustrate how IT has become part of our life in a very short period of time.

- Between 1995 and 1998, IT accounted for about 8% of U.S. GDP and contributed on average 35% of the nation's real economic growth (US Department of Commerce, 1999).
- 56% of U.S. companies will sell their products online by 2000 (NUA Internet survey, 1999).
- 50% of the U. S. workforce will be employed by industries that are either major producers or intensive users of information technology products and services by 2006 (NUA Internet survey, 1999).
- 16.5 million U.S. adults have used the Internet or an online service to make travel reservations in 1999. This is up 146% from the 6.7 million adults in 1998 (Travel Industry Association, 2000).
- Revenues of on-line travel doubling each year, expected to hit $16 billions by 2003 (Jupiter Communications, 1999).

There were only 3 million people connected to the Internet and were only 26,000 domain names in use worldwide in 1993. However, 80 million Americans were connected and approximately 200 million people worldwide in 1999. Currently, there are 5 million web sites and more than 800 million pages on the web (US Department of Commerce, 2000). All of these facts about IT point to one fact- like it or not, IT has become one of the most important forces in the market. Being a manager in the field of recreation and tourism, the question becomes not whether, but how to adapt IT as a management tool for your agency.

Information Technology

Information Technology involves an array of modern tools that support information communication and data management. These tools include computer hardware, software, network, video and audio devices,

telecommunications, satellite conferencing, and other media. The definition of IT, according to ZDNET, is "...refers to the broad subject of managing and processing information, especially within a large organization or company. Because computers are central to information management, computer departments within companies and universities are often called IT departments. Some companies refer to this department as IS (Information Services) or MIS (Management Information Services)." (ZDNET, 2000). In short, we can say that IT is any technology that allows for the creation, management, and communication of information (Bryan and Young, 1999). In general, IT consists of four components that function as an integrated data management tool:

- Data Collection (Input)
- Data Management
- Data Processing & Analysis
- Presentation (Output)

None of these components are new inventions to the world. However, IT brings new concepts to these approaches and advances the whole process. The inventions of computer and the applications of the Internet have significantly reduced the time and cost of data collection. The Computer-Assisted Telephone Interview (CATI), for instance, has been used by many recreation and tourism agencies to collect user information. Survey through the Internet and E-mail is another example of how IT can help collecting data more efficiently.

Database management is probably one of the most important components for any recreation and tourism management. Tremendous amounts of data are regularly updated and maintained for three elements in recreation and tourism- users, programs, and facilities. The computer has replaced pencils and index cards in managing database in terms of tracking customer preferences, facilities and programs usage, updates and maintenance. Take the reservation system as an example. All the information can be saved and maintained in a central location for easier retrieval and update. By using the internet and/or intranet communication, a gate keeper of a campground in a remote area can update their inventory on her computer in real time. All the reservation information can get updated no matter if the campers call the toll free number and make reservations or just show up and make the reservation at the gate.

IT also makes data processing and analysis easier than it used to be. Today any desktop computer can perform sophisticated tasks that only mainframe could do ten years ago. Some of the most popular applications include Spreadsheets (Excel), database (Access), and statistical packages (SPSS, SAS, Systat, etc.). These programs help managers to analyze data more efficient and effective than ever.

The presentation has been better and easier because of IT. All these word processing applications have helped in preparing, editing and formatting documents. The use of PowerPoint for business presentation provides both visual and sound effects. With web pages and portable document format files, the output can virtually target as many audiences as desired.

IT and Recreation and Tourism

In general, IT increases productivity and efficiency, changes the way we do business, helps make better decisions, and makes the "global village" possible. The following two examples illustrate how IT has been utilized in the field of parks and recreation.

National Park Service- Natural Resources Interpretation

When Americans think of their National Parks, an image of the Park Ranger is one that often comes to mind. For many visitors, the Ranger campfire program was and still is one of the main sources of information and interpretation of the Park unit that they are visiting. It can be said that Ranger interpretation remains the most public and identifiable component of the National Park Service (NPS). For the purpose of this paper, interpretation can be defined as a method for "people (to) communicate the significance of cultural and natural resources" (Knudson et al., 1999, p. 4). Traditionally, National Park interpretation has been performed by naturalists or Park Rangers referred to as interpreters. These interpreters provide programs, exhibits, and educational opportunities for the public (Mackintosh,1986).

The Isle Royale project suggests a different educational and interpretive approach within the NPS because it involves natural resource researchers presenting the results of their research directly to the public rather than presentations by NPS interpreters. For many years, researchers in cultural resources have presented their findings directly to the public in many settings, but public presentations are more unusual for the natural resources researcher. This project is referred to as a "new-old approach" in recognition of interpretation done by researchers in other fields. For example, interpretation has been done by cultural researchers in Michigan at Fort Michilmackinac for forty years (DNR, interview 1999). There are park units that have a few presentations by researchers during a season, but none to my knowledge are attempting the numbers of programs that the Isle Royale project has already successfully accomplished. There are also a small number of NPS units that are starting to suggest an incorporation of researchers into their interpretive programs (NPS,1999).

Isle Royale was authorized as a National Park in 1931 as one of the nation's first nature parks rather than a scenic park (Runte, 1997). Isle Royale National Park is an archipelago of 400 islands, located within the northwest corner of Lake Superior. The islands, which include the largest island in Lake Superior, vary in size from over 40 miles in length to only a few square feet (NPS, 1995). In addition to the islands, the National Park Service manages the surface of Lake Superior four and one-half miles out from the shoreline. This results in approximately 80% of the Park consisting of water (Isle Royale National Park Pamphlet, 1996). The total area of the Park is approximately 571,790 acres of which approximately

133,782 acres are land. (National Park Service, 1995). In 1976, 98% of the land area of the Park was designated as Wilderness by the federal government; this percent has since been increased to 99% (NPS, 1995). Today, Isle Royale National Park remains one of the largest federally designated wilderness areas in the Midwest. In 1980, the United Nations declared the Park an International Biosphere (DuFresne 1991). This designation is one indicator of the importance of the natural resources in this Park for the world. Isle Royale National Park is one of the least visited Parks in the National Park system, due in part to the difficulty in traveling to it. The total number of annual visitors is less than 20,000 (Isle Royale Report, 1999).

This project involves the presentation of a new format of interpretive programs on board the ship Ranger III as it crosses Lake Superior with Isle Royale National Park visitors. Ranger III is a 165-foot ship operated by the National Park Service and carries up to 125 passengers per six hour trip. This ship makes approximately 64 round trips from Michigan to Isle Royale National Park per season. Park Interpretive Programs traditionally have been offered to the visitors by a Ranger to prepare them for their visit to this wilderness National Park. These Ranger programs have presented topics such as rules/regulations of the Park, safety, and low impact camping. Since 1996, programs have been expanded to include presentations by researchers discussing the results of their research at Isle Royale. The topics of those presentations have included wolf-moose balance, climate change and loon research. The impact of these presentations by researchers on visitors' knowledge and attitudes has not yet been studied. During the summer of 1999, researchers used a large screen television and a computer to display their research directly to the public as part of their interpretive presentations. These presentations incorporating technology through the use of computers (PowerPoint) and being able to display research as it is generated is unusual in the field of interpretation. Researchers onboard the Ranger III present their data directly to the public as soon as they receive it. For example, Lake Superior water study data is collected from the Ranger III using probes. These probes are dropped into the lake and transmit their data directly to the researchers onboard who then display it to the public.

I believe this project will be of interest and benefit to at least three groups. First, the National Park Service will be able to better understand the public's ability to learn from interpretive programs and therefore be able to add to the present formats of programs being presented. The second group that could benefit are the researchers and their related institutions. They will have a better understanding of useful approaches to the public in presenting their research. Finally, the public may develop a greater understanding of and interest in the research that is occurring in the National Parks. Through that understanding, there may be a change in behaviors that adversely affect the Parks and their resources. Additionally, the public may become more supportive of the financial needs of the Park Service. A visitor to Isle Royale National Park wrote the following to the Park Superintendent, "I believe the National Parks were created under the same guidelines as the Constitution. They were created by the people for the people. If the people do not feel welcome, they will cease to come. If they cease to come, they will cease to bring their children. These children will be the ones who will inherit Isle Royale. If they do not know her, when the time comes for funding cuts, they will not hesitate killing something they do not know" (Personal letter, 1998).

One side benefit of this research project is that it is not limited to a narrow field of interest but rather it could appeal to anyone who wants their research better understood by the public. Additionally, researchers may find it beneficial to meet with other researchers as a result of these presentations. Finally, the public may be the biggest beneficiary of this project. Last summer after participating in one of the "real time" programs, an individual exclaimed that it was the first time he had been treated like an adult in a National Park interpretive program in several years. He concluded by saying that unless you are exposed to programs that are over your head you will not learn.

Michigan 4H Children's Garden

Rapid technology changes and widespread use of computers are challenging the natural resources interpretive field on the traditional ways of communicating messages. Electronics and the Internet are changing the way in which communications media is presented. Children are growing up in a sophisticated world of advanced technology in which they want stimulation and excitement. Technology is being utilized more than ever as an educational tool, as a means of communication, during leisure activities, and also for fun. In a study published by Marketing Week (1998), eight out of ten seven to 17 year olds have used screen-based technology during the period of one week for playing games, accessing information, word-processing or calculation.

American youth are savvy when it comes to technology. They are aware of new products, can easily learn how to operate technological gadgets, and are accustomed to using technology as a means towards education. While many youngsters use technology for fun and games, many are utilizing the Internet and computer software for academic use. They are also becoming accustomed to learning via current technologies. Following this trend, nature centers, gardens, and parks are increasingly using computer-based programs to teach youth about the natural environment. The challenge lies in assembling the appropriate combination of technology and the natural environment so that youth can learn the difference between the out of doors and what is portrayed on a computer screen.

Definition of interpretation

"An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information."
—Freeman Tilden, 1957

This definition is encompassed in the interactive computer programs now being offered at the Michigan 4-H Children's Garden. The garden was established for the enjoyment and education of youth in the activity of gardening. However, many lessons related to the natural environment and science can be learned through gardening. Therefore, the garden uses itself as the original object, provides firsthand experience and learning to children and uses the computer program as the illustrative media to covey its educational message. The technology applied at the Michigan 4-H Children's Garden utilizes the principles of interpretation and has added it's own technological principles of interpretation communication.
Interpretation Principles:

1) Relate the program to the interests of the audience
2) Enrich the program with knowledge of the subject being presented
3) Don't just talk to the audience, create a story, present the material in an artistic fashion
4) Stimulate curiosity of the audience, make them want to ask questions, DON'T provide all of the answers through instruction
5) Address the whole story, situation, and process of the subject being presented
6) Adapt the program to the audience

Technology is an infrastructure for communications. When combining a natural resource based program and technology keep the following ideas in perspective:

1) Technology should be integrated with the learning experience, not considered an "add on" to the program
2) Technology enhances the participants experience by providing an additional dimension of exploration of the environment they might not find by "just looking"
3) Technology can provide a live group experience
4) Technology enhances the learning experience
5) Technology overcomes barriers of time and space
6) Technology lets children use the tools a scientist would in the process of: gathering information, communication, data collection, data analysis, data presentation, and decision-making
7) Kids can imagine themselves as investigators (http://www.4hgarden.msu.edu)

The Michigan 4-H Children's Garden, on the campus of Michigan State University, uses computer-based programs to interpret the natural environment in the garden. It encompasses the principles of interpretation and the technological principles cited. Two computer kiosks resembling the garden cottage are placed in the garden, thus integrating the program in the garden setting. The design of the program uses photos from the garden and real "plant problems" that occur in the garden. Therefore, the Plant Problems Lab computer program is using technology to interpret the immediate surrounding environment.

The Plant Problems Lab computer program leads the users through a series of decision-making steps to decide how best to treat the "plant problem" in relation to how it will affect the surrounding environment and wildlife. First, the plant problems are introduced. A disease, an insect, and a vitamin deficiency are the three categories of problems. Then ways in which to treat the problems are introduced. Do nothing, take out the plant, spray pesticides, etc. are options given to the user. Then a matrix is set up how each treatment will affect the local wildlife in the garden. A dragonfly, frog, bird, butterfly, and a person are among those affected by the treatments. When the users clicks on one of the treatments, the matrix responds with showing how that treatment would affect the wildlife in the garden. The results of treatment are being presented to the user, not the decision on which treatment to use. Therefore, the user can use the facts to come to their own conclusions.

The computer-based programming used at the Michigan 4-H Children's Garden is a method in which children are learning about the natural environment, while using the learning style they are accustomed to. This in turn creates enthusiasm for the subject and is also an enriching educational experience.

Conclusion

It is important for managers in the natural resources and recreation fields to stay updated on the developments and applications of information technology. Marketing strategies on the internet are different than those utilized in traditional marketing styles. Managers need to know necessary elements to provide a connection for their customers and to create a successful program. Strategies also need to be addressed in how to make information technology friendlier for the user.

"The rapid acceleration of computer and telecommunications technologies is a major reason for the appreciable increase in our productivity in this expansion, and is likely to continue to be a significant force in expanding standards of living into the twenty-first century."
—Alan Greenspan, 1999

Technology is here. How we as natural resource providers, researchers and users decide to use it responsibly is up to us.

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