Introduction

The approach to educating college students is shifting as technology and the interests and skills of younger learners require educators to adapt their teaching styles and techniques. Advances in learning theory and new student skills require educators to adjust to these changes. Changes in the use of high technology communication in education, business, management, and general society is changing our future workforce and the way they will accomplish their work.

What is not commonly understood is that the use and demonstration of high technology in education has some unintended, and possibly threatening, outcomes for educating future wilderness and wildland managers. For example, increasing reliance on “instant” access communication and information retrieval may predispose managers to expect such capabilities wherever they are in their workplace, which for wilderness managers is often in extremely remote areas. In turn, the increasing availability of high technology equipment, and the associated operational skills, influences the culture, atmosphere, and standard operating procedures for public land managers in the office, in the field, and when interacting with visitors.

Public land managers must be aware of how their actions will affect visitor experiences through the management practices and techniques they adopt, such as communication for enforcement, search and rescue, education, and other purposes. Discussion of these impacts must be included in education and training processes. Furthermore, intergenerational differences must be acknowledged and considered when decisions about “minimum tool” approaches to management in wilderness and wildland areas are made.

Each generation generally views the technology present while they were growing up and during their school years as acceptable and a “given” baseline condition (Oblinger 2003). The example of high-speed communication and information retrieval will be used here to illustrate a discussion of how these kinds of changes could affect future wilderness managers. The intent here is not to suggest that we shun technology, but rather that we understand its effects on management and visitor experiences, and look at some examples of how educational processes can address some of these challenges when teaching wilderness and wildland public land managers.

Today’s College Students

The current generation of college students was born in or after 1982 and has been variously referred to as the Millennial, NeXT, or Net generations. Every generation has its generalized characteristics, differences in attitudes, preferred learning styles, and historic and cultural events that shaped its collective perspective (Coomes 2004; Coomes and DeBard 2004). The Millennial generation differs from the previous generations (Generation X, birth years 1961 to 1981; Boomers, birth years 1943 to 1960) in some significant ways.

Today’s college students are early adopters of computer and communication technology with the majority of
them initiating use of this technology in school and then going on to be heavy users for Internet, cell phones, email, instant messaging, computer games, and other activities as an integral part of their lives (Oblinger and Oblinger 2005; Prensky 2001). By the time these Millennial students reach college, Prensky (2001) refers to them as “digital natives” because they are very adept at a digital language that is not common to most other older generations, whom he refers to as “digital immigrants” because it is a new language to them. The class of students who entered college in the fall of 2006 (see figure 1) generally think of the world of communication as wireless and are always connected through communication technology. To them, text messaging, instant messaging, and cell phones have always existed (Oblinger 2003; Oblinger and Oblinger 2005; Jones 2002).

Each generation has a personality or generalized characteristics (Howe and Strauss 2003). The generalized character and tendencies of any generation shapes the social, political, and economic world they inherit. The Millennial generation had 6.9 million students in colleges and universities by 2002 and is projected to increase to 10.5 million by 2010 (National Center for Educational Statistics 2006). As the largest generation in the history of the United States, they number about 80 million Americans (U.S. Bureau of the Census 2004) and will begin to establish themselves in professional and administrative positions by 2012.

The characteristics of the Millennial generation have been summarized fairly positively by some educational authors (Howe and Strauss 2003; Coomes and DeBard 2004) and more critically by others as the research and educational feedback has accumulated (Taylor 2006); they note that Millennial students can (1) act as informed and involved consumers regarding education; (2) expect education to be entertaining; (3) multitask and shift attention rapidly; (4) seek immediate gratification of needs; (5) exhibit poor long-term planning, critical thinking, and problem-solving skills; (6) constantly seek personal connections and to be socially involved over various forms of communication; (7) demonstrate open, adaptable, and pragmatic approaches to experiential problem solving; (8) be skeptical about information and more often trust personal experience; (9) act cynically toward social institutions; (10) show concern about safety; (11) be stressed about the expectations placed upon them; and (12) disengage intellectually and academically.

Some of the characteristics of staying constantly connected and heavy multitasking have affected the Millennial generation more than other generations. Prensky (2001) asserts that the multitasking and different experiences of the Millennial generation have led to different brain pathways and patterns of thinking and learning. Each generation generally has different patterns of thinking due to their shared and different life-altering events, shared historical events, and the societal values of the time. Neuroplasticity refers to the capacity of the brain to change. It is greatest in youth and allows individuals to adapt to their experiences, surroundings, learning, and societal value systems. The modern scientific interest in the concept of neuroplasticity is that mental activity changes the brain and that it can be retrained. Some writers contend that while our capacity to change declines with age, there is always some capacity to adapt and work consciously at change (Begley 2007). The Millennial generation exhibits changes in thinking processes and skills from other generations and have likely developed different brain pathways (Prensky 2001).

Changing Training and Educational Approaches

The Millennial generation has developed different ways of processing information and accomplishing tasks

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than previous generations. That leads to us to trying to anticipate some of the challenges of engaging and involving Millennial students and other generations in wilderness and wildland management. We can likely resolve the challenges of storing, accessing, and transmitting information at high speeds to interested students, and they are likely to be skilled at accessing the information. However, will we be able to consciously transmit the values, benefits, knowledge, and wisdom to sustain and steward wilderness characteristics and conditions to the Millennial generation and other generations?

Some of the adaptations suggested in general education settings (Carlson 2005; Howe and Strauss 2003; Oblinger 2003; Oblinger and Oblinger 2005; Taylor 2006; The New Media Consortium 2007; Wilson 2004) can be adapted for use in wilderness and wildland training programs. Here are examples of some of the things we could do to be more effective in the future:

- Use technology in educational and training programs that fits the skills and expectations of the Millennial generation, but also have detailed discussions of how technology and communication methods will affect wilderness conditions and experiences for visitors and managers, both positively and negatively.
- Foster social connectivity and interaction among wilderness professionals while simultaneously developing the skills and expectations that field conditions require—self-reliance and independence, in many cases.
- Develop critical thinking and inductive and deductive reasoning to enable students to build the linkages between policy, research, planning, and management.
- Expand digital and open access information depositories about wilderness information and research results, such as www.wilderness.net and leopold.wilderness.net.
- Develop more educational programs and information that are readily accessible in online systems and electronic files, such as the Arthur Carhart Wilderness Training Center site (carhart.wilderness.net/index.cfm) and not just in printed books and materials.
- Teach that the context of information and knowledge about wilderness systems is as important as individual facts and skill sets about planning and management.
- Develop more access to scientists and educators on a real-time basis for information sharing and explanations of scientific data application and limitations; augment the transmission of wilderness wisdom based on integrating the results of scientific research with management decision making.
- Directly address the apparent conflict of field staff using technological communication equipment in wilderness that may conflict with visitors’ interest in solitude and remoteness or may be viewed very differently by staff and visitors from different generations.
- Develop older-generation mentors to work with younger generations of staff to transmit the experiences, values, and benefits of wilderness stewardship and preservation through contact and fieldwork that shares the heritage and culture of wilderness experiences (see figure 2).
- Continue fostering the establishment of a wilderness professional organization that supports communication and interaction among wilderness planners, managers, interpreters, maintenance, and enforcement staff.

Recruiting good, qualified students will not be easy because although interest in environmental and natural resources issues is high among high schools students currently, actual interest in starting such a career is low (Hager, Straka, and Irwin 2007). We need to work at recruiting, training, and mentoring the best students we can find in order to assure the future of wilderness areas and programs such as the 107-million acre (43.3 million ha) National Wilderness Preservation System.

Many natural resources educational programs are attempting to set new directions in more comprehensive and challenging programs to ensure that students are well trained (Jacobson 1995); however, much remains to be done in revitalizing wilderness programs in colleges and universities (Dawson and Hendee 2004), as well as in state and federal...
agency training programs, if we are to have well-trained and dedicated wilderness professionals in the coming decades. IJW

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REFERENCES


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The panel recognized that the FS “has been conducting wilderness-related research for many years” and that there are “excellent ongoing programs from which to frame a focused wilderness research and development program.” They recognized that important wilderness-relevant research occurs in all the FS Research Stations, but many of the scientists doing this work “do not consider their work to be wilderness research.” The panel stated that the FS has a great opportunity to provide leadership among the federal agencies by demonstrating “strong commitment and support for this research area.” Special acknowledgment was given to the success of the ALWRI in providing focus for the “science for wilderness” component of wilderness research.

In addition to using this assessment as a measure of program performance to OMB, the FS has committed to “work to implement the panel’s recommendations” and use the information provided in planning and priority identification. A committee of FS scientists and research managers has been constituted to review the panel recommendations and to make suggestions for possible use within the agency. IJW

REFERENCE

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