

## LONG-TERM IMPACTS ATTRIBUTED TO PARTICIPATION IN ADVENTURE EDUCATION: PRELIMINARY FINDINGS FROM NOLS

Jim Sibthorp, University of Utah  
Nathan Furman, University of Utah  
Karen Paisley, University of Utah  
John Gookin, National Outdoor Leadership School

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One of the key issues in the field of adventure education is determining the lasting value of adventure experiences after a program ends and participants return to life at home (e.g., McAvoy, Holman, Goldenberg, Klenowsky, 2006; Wolfe & Samdahl, 2005). While anecdotal reports regarding life-changing and transformative experiences through adventure program participation are common, very few studies have examined the impacts of adventure education programs months or years after completion. One of the main challenges of documenting and studying learning transfer in adventure education, is that most of the transfer content and contexts would be termed "far transfer," which means that the content (what is transferred) and context (when and where the content is learned) of acquisition are distal from the content and context of application (cf. Barnett & Ceci, 2002).

Much of the research on transfer in outdoor education has examined the retention of targeted program outcomes after program completion. For example, Hammitt, Freimund, Watson, Brod, and Monz (1995) examined responsible environmental behavior after program participation, and Paxton and McAvoy (2000) looked at self-efficacy development and retention six months post-program. Few studies have examined impacts years after program completion, and those that did examine this topic commonly used interviews with small samples. One such study examined the impact of a 35-day wilderness expedition three years post-course and reported that, while some lessons from the program did not apply easily, others did, including self-awareness, respect for different others, and ability to make changes and confront challenges (Miller, 2001). In another small sample study, Gass, Garvey, and Sugarman (2003) found that wilderness orientation participants attributed outcomes of challenging previous assumptions, stronger peer relationships, and general long-term positive impacts to program participation 17 year later. Therefore, the general aim of this manuscript is to examine the potential impacts of participation in an adventure education program years after program completion through a multi-method approach and adding a quantitative approach to the typical type of inquiry of learning transfer in adventure education.

### Background

Fields such as human resource development and cognitive psychology have been unable to agree about several transfer issues, including the definition of transfer (e.g., Leberman, McDonald, & Doyle, 2007), whether it is an outcome or a process (Foxon, 1993; 1994), and whether or not learning transfer can be programmed (Detterman, 1993). Several authors (e.g., Lobato, 2006) consider learning transfer from a constructivist perspective, where it is highly dependent on how a learner is able to personally integrate and apply lessons learned. Part of Lobato's contention is that learning transfer can influence not only what participants are able to do, but also how they

might choose to execute a specific process. In short, Lobato does not believe that transfer can be well-targeted through educational designs, but rather must be approached from the perspective of the learner; learners will make very different connections from the same experiences and, thus, will likely learn and transfer different lessons.

Much of the literature on learning transfer has ascribed to the model proposed by Baldwin and Ford (1988). This model considers the degree of learning transfer as dependant on three major factors: (1) the characteristics of the trainees; (2) the characteristics of the training; and (3) the characteristics of the context where the learning will be applied after the training. It is readily understood that the context of application (life at home) is very different that the context of the training during a wilderness-based adventure education program. This reality makes what is termed "far transfer" generally more applicable to adventure education programs.

While there are a variety of authors who distinguish between different levels and types of transfer, one of the more comprehensive and relevant conceptualizations is presented by Barnett and Ceci (2002). They propose a taxonomy of learning transfer which includes both content and context differences between training and application. For example, training content, such as specific skills, can vary in application from a specific procedure (near transfer) to generalizable principles (far transfer). Likewise, the context of application can vary across time, physical context (place), and social context. According to Barnett and Ceci's taxonomy, adventure education programs are commonly interested in far transfer, which is both more difficult to train for and more difficult to study. For example, teamwork skills learned during a course are thought to apply as general principles (skills), years later (time), at work or home (physical context), with a different social group. Barnett and Ceci outline three different domains of content and six of context; while we have used only four of these to illustrate our point, inspection of all nine dimensions supports the premise that far transfer (not near transfer) is of primary interest to adventure education.

Another important characteristic of learning transfer is the length of time and developmental process it takes for learning to become fully integrated. Foxon (1993; 1994) builds on Baldwin and Ford's model and isolates transfer into five steps: (a) intention to transfer; (b) initiation; (c) partial transfer; (d) conscious maintenance; and (e) unconscious maintenance. It is relatively easy to examine intention to transfer, and initiation of application may directly follow from intention. However, Foxon argues that fully integrated skills, thoughts, and abilities from training (unconscious maintenance) might be termed optimal transfer, or the primary goal of training and education programs. This type of transfer may take years to occur and will largely depend on the individual and his or her environment of application.

Given the substantial contention about the construct of learning transfer, it is essential to describe our interpretation of learning transfer before discussing what types of learning actually transfer from adventure education courses. Adventure education has generally considered transfer as the application or usage of an outcome after program completion. If the lesson learned is lasting, and if the participants view it as usable, researchers have commonly viewed this as evidence of transfer. Although structuring transfer in this way may disregard some of the nuances of the

construct, being able to use learning in a context different from the one learned is probably the hallmark characteristic of transfer.

### **What Transfers in Adventure Education**

The number of outcomes that may transfer from adventure education can be placed into several broad categories. Ewert and McAvoy (2000) use the categories of *self-systems* and *group dynamics and development* to discuss distal outcomes of adventure education. The addition of two more categories, *personal values* and *technical skills*, sufficiently summarizes the types of learning that have been found to transfer from adventure education programs.

#### *Self-Systems*

Ewert and McAvoy (2000) regard self-systems as the summation of “knowledge and beliefs that an individual holds about themselves and is developed through experience and comparison to others” (p. 17). There is evidence that distal outcomes such as self-esteem (Luckner, 1989), self-efficacy (Paxton & McAvoy, 2000), and self-concept (Marsh, Richards, & Barnes, 1986) gained through adventure experiences have durability for some time post-course. For instance, Propst and Koesler (1998) used an untreated control group and pre-test/post-test design to study self-efficacy levels of students from the National Outdoor Leadership School (NOLS), and found that self-efficacy was elevated from baseline levels immediately and one year after participation. Self (or personal) awareness is also commonly reported as a transferable outcome in adventure and wilderness experiences (e.g., Daniel, 2007; Holman & McAvoy, 2004; Miller, 2001; Sibthorp, 2003).

#### *Group Dynamics and Development*

Teamwork and group development are central to many adventure education programs. Teamwork, group leadership, intra-group trust, improved communication, risk-taking, decision-making, and conflict resolution are all examples of group dynamics related outcomes that may be developed through adventure education (Ewert & McAvoy, 2000; Sibthorp, 2003; Sibthorp, Paisley, & Gookin, 2007). Mitchell and Mitchell (1988; 1989) found that awareness of others and interpersonal skills were outcomes transferred from Outward Bound courses to life post-course. These outcomes were significant two years post-course among the 950 participant sample. Anderson, Schleien, McAvoy, Lais, and Seligmann (1997) found that adventure education participants reported greater friendship development as a result of their experience. Gass and Priest (2006) determined that factors such as trust, communication, collaboration, problem-solving, decision-making, and task completion could be increased among intact groups up to 12 months following a corporate adventure training program, but they stress that these outcomes are best achieved through quality processing involving a combination of isomorphic frames and metaphoric debriefs.

#### *Personal Values*

Adventure education programs are often explicit in their purposes, such as Outward Bound’s “To Serve, to Strive, and Not to Yield.” Some participant outcomes, such as spirituality, environmental ethics, and social justice themes, can be viewed as personal values. For example, Miller’s (2001) case studies of five participants on a 35-day canoeing expedition in Northern

Ontario reported that they developed a commitment to personal activism that was maintained three years post-course.

The development of environmental ethics is a primary goal of many adventure education programs. Mazze (2006) qualitatively examined the environmental attitudes of nine former NOLS students, and found that each of the nine reported an increase in their connection with nature and the outdoors several months post-course. Further, each reported that their NOLS course affected subsequent pro-environmental behaviors. These findings corroborate those of Hammitt et al. (1995), who administered questionnaires to 288 students before, during, and several months after their NOLS courses. The self-reported results demonstrated significantly more environmentally responsible behavior four to eight months post-course. Other authors (e.g. Gillet, Thomas, Skok, & McLaughlin, 1991; Hanna, 1995) have found less positive results examining the transfer of environmental behaviors following adventure education programs.

### *Technical Skills*

Technical skills include the aspects of adventure education that are fundamental to daily living in the outdoors. They include both travel skills (e.g. backpacking and canoeing) and living skills (e.g. cooking and shelter construction). Two studies (Anderson et al., 1997; Holman & McAvoy, 2004) include findings that report participant transfer of technical skills. The transfer of technical skills has not been subjected to a significant number of studies, perhaps because it is considered a relatively inconsequential outcome compared to other types of outcomes. For example, Sibthorp (2003) found that, while participants in an adventure education program reported learning technical skills, these students also considered such skills to be less applicable post-course. Gass, Garvey, and Sugarman (2003) reported that the learning of specific outdoor skills were not very evident in their interviews of wilderness orientation participants 17 years after program completion.

### *Summary of What Transfers*

By focusing on a pragmatic definition of learning transfer, researchers in adventure education have been able to suggest what types of outcomes transfer from courses to life back home. However, many of the studies have been hampered by a small sample size. In addition, although several studies proffer evidence of what types of *content* transfer, little sense of the *magnitude* of transfer is provided. Further, the curriculum of the programs used in the studies is often unreported; thus, conclusions about what *is* transferred cannot be compared to what *might* have been transferred. Although past literature has shed light on the transfer phenomenon, many questions remain.

Taken as a whole, this literature seems to suggest that a diversity of lessons may potentially transfer from adventure programs based on the participants (e.g., Lobato, 2006), their individual needs, program content, and how what is learned may be applied to their home environments. However, it may take years to realize which lessons are applicable and integrated (Foxon, 1993; 1994). In addition, the application of learning may look very different across individuals and their specific application contexts. The differences between an adventure program and home life are likely to make far transfer more meaningful than near transfer of learning for participants not specifically seeking backcountry or outdoor recreation skills. Thus, the specific purpose of this



study is to systematically explore what NOLS participants believe they learned during a NOLS course that remains useful to them one to ten years after course completion, and to see if these transferable lessons varied by course type (program content) or across time. Lastly, we compared the findings of this study to both the transfer literature in adventure education and NOLS' targeted course objectives.

### **Methods and Results**

To best address the study purpose, this project was divided into two distinct phases. Phase 1 involved a series of interviews with NOLS alumni to inductively generate a list of what was learned from NOLS and what was still regularly used or valued by alumni. This list was then used as the basis of the survey instrument in phase 2, which was developed to see if the list generated in phase 1 could be empirically supported through a broader sample of alumni, and to determine the relative importance of their NOLS courses in each of the areas of learning.

#### *Phase 1 Methods and Results*

In 2006, one of the researchers interviewed 41 participants who had completed one of the month-long NOLS backpacking expeditions in the Wind River Mountains of Wyoming between 1995 and 2005. The typical age range of students enrolled on these courses is from 16-22. A random sample of 300 students enrolled on such courses from the years of 1995, 2000, and 2005 were invited to participate in the study, and they returned a postcard if they were willing to schedule an interview. Of these 300 invitees, only 49 postcards were returned. Once the second author, the interviewer for this study, completed interviews with 41 informants, he transcribed and initially coded the data. At this point interviewing was discontinued, as no new codes and information was being discovered by subsequent interviews, and the authors felt that the data were saturated (i.e., new information was rarely being discovered). Of the 41 total interviewees, 15 took courses in 1995, 15 took courses in 2000, and 11 in 2005. Twenty-two of the interviewees were male and 19 were female.

Study participants were asked several open-ended questions in a semi-structured format designed to encourage narrative speaking and then were asked follow-up, probing questions to clarify points. Key questions included: "What did you learn on your NOLS course?" and "What are you using in your life today that you learned on your course?"

Interviews were recorded and transcribed, then analyzed via constant comparison. Constant comparison technique is a three-stage process in which the researcher first fits responses into coding themes; second, integrates the themes by comparing them to one another and checking them against the data; and third, themes are delimited/reduced, if necessary, to maximize parsimony and scope (Henderson, 2006). The primary coder developed initial themes; the second coder then verified themes, at times suggesting that particular themes could be merged, or that the titles of themes could be re-worded. This coding process resulted in the following 17 areas identified as being learned during a NOLS course and still being relevant and useful years after the course: (1) Appreciation of nature; (2) Desire to be in the outdoors; (3) Outdoor skills; (4) Cooking skills; (5) Ability to take care of myself and my needs; (6) Ability to communicate effectively; (7) Ability to work as a team member; (8) Ability to manage conflicts with others; (9) Ability to make informed and thoughtful decisions; (10) Ability to serve in a leadership role;

(11) Patience; (12) Ability to plan and organize; (13) Personal perspective on how life can be simpler; (14) Ability to function effectively under difficult circumstances; (15) Ability to get along with different types of people; (16) Ability to identify my strengths and weaknesses; and (17) Self confidence.

*Phase 2 Methods and Results*

As a transition between phase 1 and phase 2, a survey instrument was designed and bench-tested with a convenience sample of 36 NOLS alumni. The instrument consisted of four main sections: (1) a ten-point rating scale assessing the importance of the learning areas (see 17 codes from phase 1 above) in everyday life; (2) a ten-point rating scale assessing the role of NOLS in developing these learning areas; (3) a forced-choice section where participants selected the primary setting responsible for development in each learning area; and (4) a series of open-ended questions, which were not analyzed for this study. The bench-test phase resulted in several minor changes to wording and layout. Example items are in Table 1.

TABLE 1  
*Sample Questions from Survey Instrument*

Section 1	How important is “self confidence” to you in your daily life?	Most Important 10 9 8 7 6 5 4 3 2 1	Least Important
Section 2	NOLS was critical to my development of “self confidence”.	Very True 10 9 8 7 6 5 4 3 2 1	Very False
Section 3	I primarily learned “self confidence” while at: (check one)	NOLS, Home, Work, School, Sport, Other	

*Note.* In this example, “self confidence” is just a place-holder for any of the 17 skills/abilities that students reported learning in phase 1.

To begin phase 2, a stratified random sample from the NOLS alumni database was identified to receive an invitation to participate in a study during the summer of 2007. This sampling strategy was employed to provide a representative picture of NOLS alumni from 1997-2006. Alumni were stratified by year (1997-2006 alumni) and by course type: (1) semester courses, (2) courses for outdoor professionals, (3) “classic” (wilderness backpacking) courses, (4) adventure (youth ages 13-15) courses, and (5) courses for participants 23 or more years of age. Sixty alumni from each of the five course types for each of the ten years were randomly selected from the alumni database. These 3,000 alumni were mailed an invitation to complete an online version of the survey instrument. In October of 2007, a reminder letter was sent to the non-respondents, which included a hard-copy of the instrument and a postage-paid envelope so participants who were unable or unwilling to complete the questionnaire online could still return their data.

Data collection was closed in January of 2008. By this time, online questionnaires were no longer being completed, and hard-copy questionnaires were seldom being returned. Hard copies of the questionnaires were entered and the online data were downloaded. The data were cleaned

and screened for univariate outliers and participants not meeting the inclusion criteria were deleted from further analyses. To be included in the study, alumni must have completed only a single NOLS course between 1997 and 2006 (inclusive).

### *Data Analysis*

The initial data analysis involved descriptive statistics examining both the relative life importance of, and the relative role of NOLS in the 17 learning areas. As the same learning areas were scored on both "life importance" and "NOLS' role," a scatter plot allowed us to determine areas that scored higher in importance and in which NOLS had a greater role in developing. Similar to importance/performance analysis, grand means of all 17 outcomes were placed on this plot to divide it into four quadrants representing the relative role of NOLS and the importance in life: (1) areas of high importance and in which NOLS had a significant role; (2) areas of high importance, but in which NOLS had a less significant role; (3) areas of lesser importance in life, but in which NOLS played an important role; and (4) areas of lesser importance in life and in which NOLS played a lesser role in developing. In addition, inferential statistics were used to determine differences between the NOLS role variables.

Given the complexity of analyzing 17 different potential transferable outcomes, Profile Analysis (SPSS 16 GLM) was used. This technique allows for the comparison of the response patterns (profiles) between groups. Profile analysis allowed us to test if alumni from the five different course types and ten different years had different or similar response patterns on the 17 transferable learning areas identified in Phase 1. Significant differences in the parallelism of the profiles was further investigated by comparing differences in the group means on each of the 17 areas to the 99.9% confidence interval for the mean of the combined groups. A 99.9% confidence interval was used to keep the overall experiment-wise error rate below 10%, given the possibility of up to 85 comparisons (17 outcomes times 5 groups). Based on previous research on the role of age in outcome achievement through NOLS courses, age at the time of the course was included in the model as a covariate (Sibthorp, Paisley, & Gookin, 2007).

To address the low response rate (see below) and a potential non-response bias, a number of non-respondents were contacted by telephone to inquire why they did not return the survey. This is consistent with survey research literature that suggests telephone follow-ups are a reasonable tool for researchers to employ. Fowler states, "If the response rate is still not satisfactory, probably the best next step is to call non-respondents by telephone" (Fowler, 1993, p. 46). Although this suggestion is offered specifically in hopes of increasing response rates, in this study it was used to assess a latent bias that was not accounted for.

### *Results from Phase 2*

Five hundred and seventy-nine respondents provided usable data. Given that 238 of the original invitations were returned due to incorrect addresses in the database, the final response rate was approximately 21%. This sample of 579 was further constrained to participants who had only completed a single NOLS course. One-hundred and twenty study participants had completed two (or more) NOLS courses. One additional participant was removed from the analysis because she indicated that she had only taken a single course in 2007, which was beyond our 1997-2006 sample limits, leaving a usable sample of 458 participants.

Despite equal sampling by course type, the returned and usable questionnaires did not represent all course types equally. The professional courses (23% of the sample) and those for adults 23 and older (26% of the sample) were over-represented while the adventure courses for youth (12% of the sample) were underrepresented. The transient nature of the younger participants likely accounts for a portion of this discrepancy.

To assess the potential non-response bias, ten non-respondents from each of the five sub-samples were contacted and asked "Is there a particular reason that you did not return the recent questionnaire with the National Outdoor Leadership School?" Of the 50 individuals contacted, 23 replied that they did not receive the questionnaire; 17 replied that they received it but didn't like to fill out questionnaires; and the ten remaining non-respondents stated that they intended to fill out the questionnaire but didn't get around to it. Non-respondents did not state they were disappointed with their NOLS experience or otherwise maintained a negative bias to completing this particular questionnaire. This diminishes the likelihood of a latent bias affecting the sample, though it does not discount it.

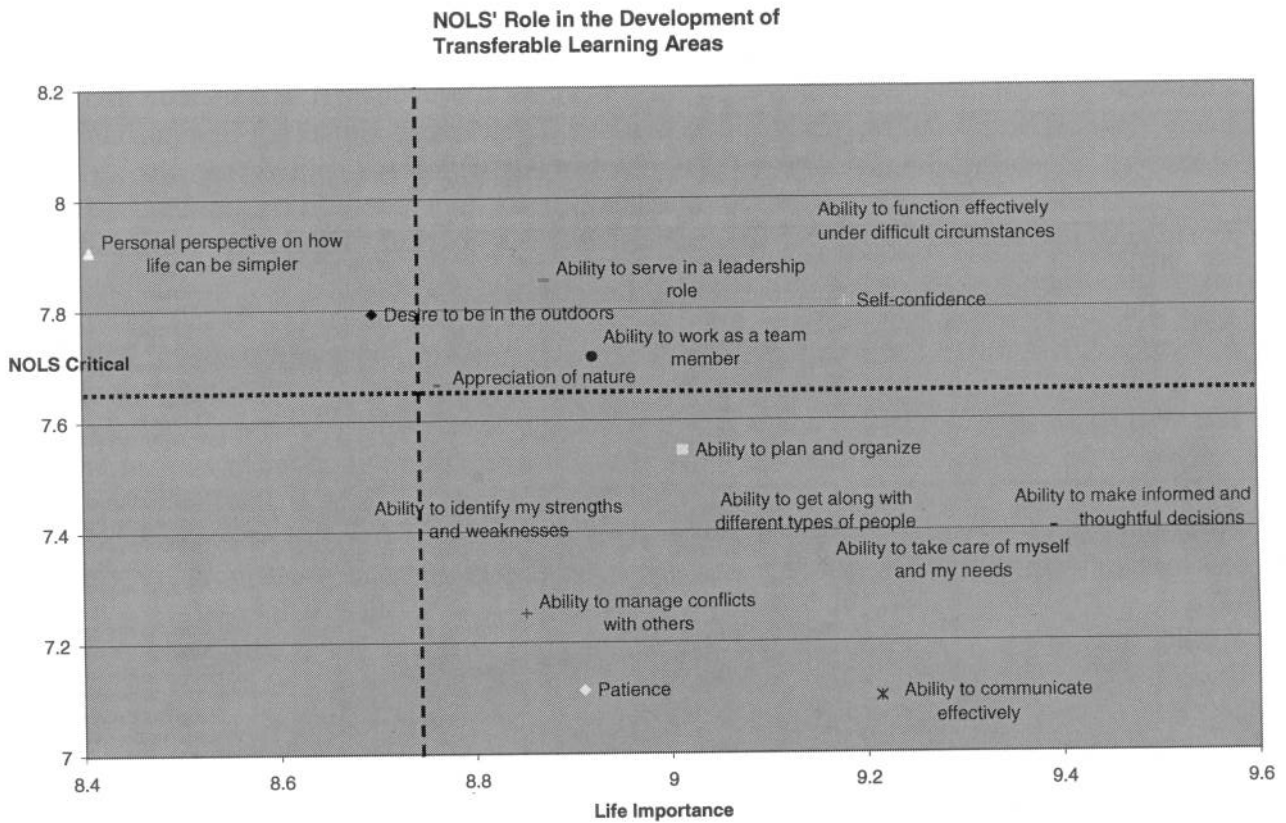
The participants were 53% male, with an average age of 30.3 years. On average, participants had completed their NOLS courses five years prior to completing the questionnaire. Forty-eight percent of the participants had completed typical 30-day courses. Thirty-one percent of the participants had completed shorter courses (about two weeks in length). The remaining 21% had completed semester courses.

The quantitative results of phase 2 largely supported the qualitative findings from phase 1. All of the 17 areas were considered important to the respondents in their daily lives. The area with the lowest reported importance was cooking skills, with an average rating of 7.0 out of 10. The importance of outdoor skills averaged 7.4 out of 10. All other ratings were over 8.4 on a ten-point scale.

In response to the second section of the questionnaire, participation in NOLS courses seemed to play some role in development in all of the areas. However, most notably, NOLS was considered highly critical in developing outdoor skills, the ability to function effectively under difficult circumstances, a personal perspective on how life can be simpler, the ability to serve in a leadership role, self confidence, a desire to be in the outdoors, the ability to work as a team member, and an appreciation for nature. These areas were rated higher than average on the role of NOLS of the specific learning area. Means for all 17 of the learning areas are plotted in Figure 1. Of these, outdoor skills, a personal perspective on how life can be simpler, and a desire to be outdoors were less immediately relevant to the participants' lives (the scores were lower than average).



FIGURE 1  
*NOLS' Role in the Development of Transferable Learning Areas*

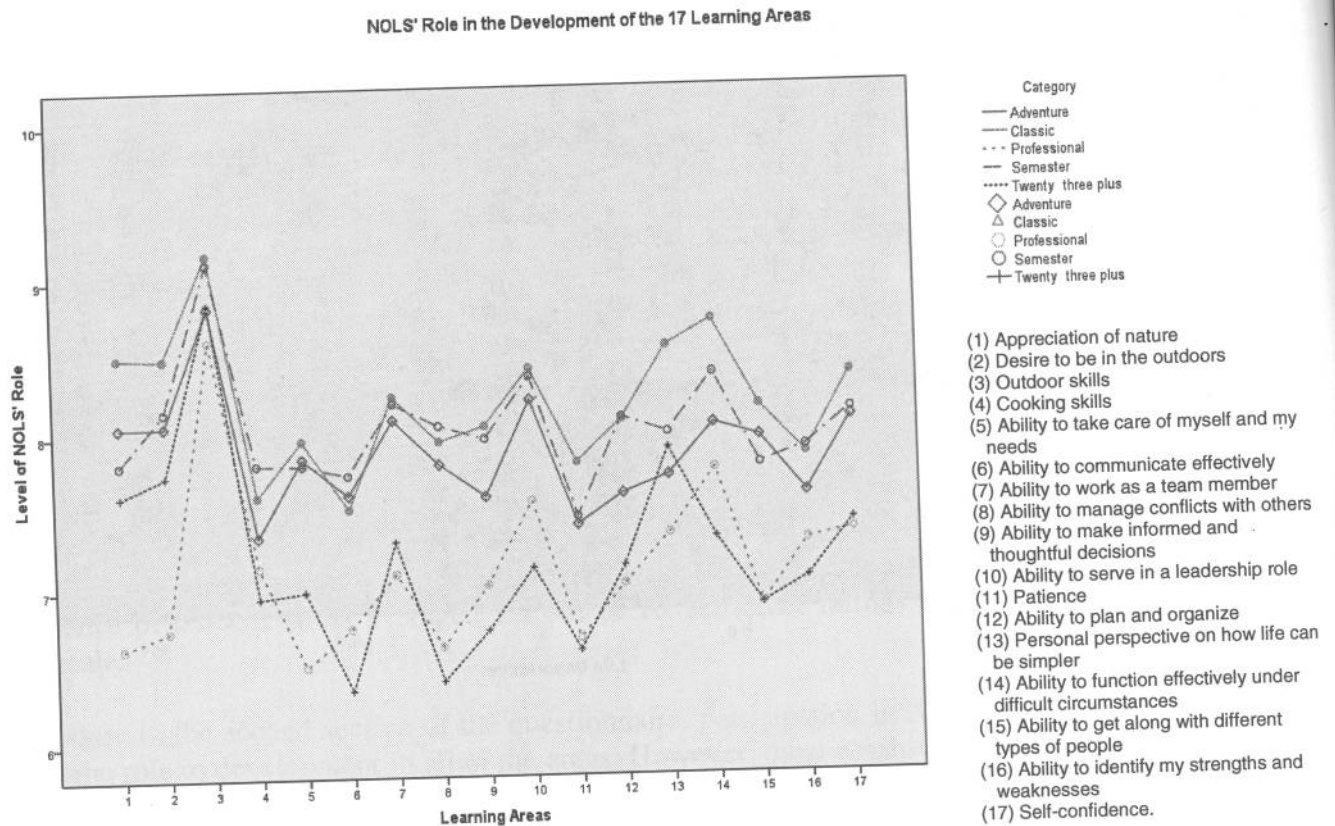


In a related question, participants were asked where they primarily learned about the 17 areas given five choices: NOLS, Home, Work, Sports, and Other. NOLS received the highest percentage of responses for the same four areas with the highest means for NOLS' role above: outdoor skills (67%), personal perspective on how life can be simpler (57%), ability to function effectively under difficult circumstances (41%), and ability to serve in a leadership role (37%). Seven of the 17 areas were primarily attributed to learning that occurred in the home. Work was the most frequently reported learning setting for five of the 17 areas.

The first profile analysis was performed on the 17 learning areas (see above) with the ten years (1997-2006) as the grouping variable. When the data were compared by year, there was no interpretable difference by cohort (e.g., 1 year vs. 10 years post-course) on parallelism or level ( $p > .05$  and 99.9% confidence intervals). This is consistent with the qualitative data that was not markedly different between the 1 year, 5 year, or 10 year post-course samples.

The second profile analysis was performed on the 17 learning areas (see above) with the five course types as the grouping variable. Age at the time the course was taken was a significant covariate ( $p < .05$ ). Using Wilks' criterion, the profiles (see Figure 2) deviated significantly from parallelism ( $F(64, 1690) = 1.96, p < .001, \text{partial eta squared} = .07$ ).

FIGURE 2  
Profile Plot of the 17 Learning Areas by Category of Course Type



To determine the principal sources of deviation from parallelism, means on each of the learning areas for each group were compared to the 99.9% confidence intervals for the group means. A number of specific comparisons were significant, which can be reported as three main findings: (a) differences between the twenty-three plus and professional students and the adventure, classic, and semester students; (b) a lack of differences involving outdoor skills; and (c) classic course participants reporting greater impact on changing life perspectives and functioning under difficult circumstances.

In examining the profiles in Figure 2, it is clear that the professional and twenty-three plus groups reported less impact on the majority of the learning areas. These differences are largely

significant and seem to represent a fundamental difference in these two groups from the other three. The notable exceptions to this pattern involve the responses to outdoor skills, where all groups reported NOLS' considerable role. The only other meaningful difference may be the elevated reported impact on classic course participants on the outcomes related to changing life perspectives and functioning under difficult circumstances.

### Discussion

The primary purpose of this study was to explore what NOLS participants believe they learned during their courses that remains useful to them years after course completion. In general, this study found support for learning involving outdoor skills, an ability to function effectively under difficult circumstances, changes in life perspective, group leadership, self confidence, a desire to be in the outdoors, teamwork, and an appreciation of nature. Of these, leadership, self-confidence, and, to a lesser degree, teamwork were perceived to be the most valuable in everyday life.

The general framework posited from the literature about what transfers from adventure education programs was generally supported by this study. Self-system related variables, including self confidence and a perceived ability to function effectively under difficult circumstances, remain important aspects of learning that seem to transfer from adventure education to everyday life. This is consistent with a number of previous studies (e.g., Holman & McAvoy, 2004; Marsh et al., 1986; Propst & Koesler, 1998). Despite these consistencies, the "ability to function effectively under difficult circumstances" is, perhaps, a slightly more specific variable and implies a confidence that perseveres specifically when faced with adversity. This variable was regarded as one of the more applicable lessons learned and used from participation in a NOLS course.

Group dynamics and development related variables, including group leadership and the ability to function as a team member, seem to be learned and transferred from NOLS courses. These variables are commonly found in the adventure education literature as appropriate and transferable outcomes (e.g., Ewert & McAvoy, 2000; Mitchell & Mitchell, 1988; 1989; Sibthorp, 2003). Despite these consistencies, it is likely that specific lessons in this area are highly dependent on the nature of the group of participants involved in the program. Intact groups have a very different orientation and history in which to contextualize lessons and, often, have a greater degree of influence on the transfer context (e.g., place of application) than do groups that come together for a discrete course. Last, while the ability to serve in a leadership role certainly implies functioning within a group, leadership is a highly complex construct (e.g., Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000), and might be considered as a separate category in future studies.

Personal values, including a change in life perspective and an appreciation of nature, were found to be transferable in this study. A number of studies have found that adventure education courses impact personal values (Daniel, 2007; Mazze, 2006). Simply living in such a different context seems to allow participants to reassess some pre-existing beliefs and assumptions. This context seems to stem from both the social environment and the unique physical environments inherently necessary for a successful backcountry expedition (cf., Walsh & Golins, 1976).

Technical skills, such as outdoor skills, remain a commonly learned, yet less frequently valued, lesson from adventure education. Not surprisingly, outdoor skills were rated as one of the most frequently learned skills during NOLS courses and, given the nature of the NOLS curriculum, it is likely that these skills are actively sought out and expected outcomes of course participants. However, in a relative sense, they remain less applicable to most participants after course completion. This is generally consistent with the literature (e.g., Gass et al., 2003; Sibthorp, 2003). However, we speculate that the learning of technical skills remains essential to providing an authentic platform for learning other, more applicable, life lessons: The expedition creates an authentic and necessary foundation for learning, applying, and reflecting upon lessons related to leadership, teamwork, and overcoming challenges.

When compared to NOLS' targeted course objectives, some of the transferable lessons are highly consistent. For example, NOLS purports to teach lessons about communication, leadership, expedition behavior (small group behavior), risk management, outdoor skills, and environmental ethics, most of which can be matched up with the results from this study. There were, however, few comments that directly spoke to learning about risk management in isolation from outdoor skills. Communication was certainly learned and applied by some of the participants, as this theme emerged in the interviews and remained an important theme through the second phase of the study. However, it does seem that other venues (notably work and home) were more important drivers of communication skills. It could be argued that communication is a critical component of both small group behavior and/or group leadership, and both seem to be successfully learned from and applied after a NOLS course.

In contrast, lessons involving self-confidence and changes in life perspective are not explicitly targeted through the NOLS curriculum, yet graduates generally consider them to be important and transferable content learned during a NOLS course. This is consistent with the constructivist view of transfer (e.g., Lobato, 2006), which posits that lessons are more dependent on the individual learner and his/her lessons than on specific training intention or mechanisms. Both self-systems and changing personal values are commonly reported outcomes of adventure course participation across a diversity of programs (e.g., Ewert & McAvoy, 2000; Hattie, et al., 1997; Miller, 2001). It may be that growth in these areas is inherent in a wilderness-based, small group, expeditionary model regardless of specific programmatic intent.

As with previous studies (e.g., Daniel, 2007), we did not see notable differences in reports of the utility of the learning areas based on cohort (time since course completion). Despite general contentions that some of the learning may take substantial time to manifest or become evident (e.g., Foxon, 1993; 1994), we found no significant difference by year of course. Perhaps this is because a year is enough time to either internalize and utilize lessons or to grow skeptical of their utility in the home environment.

Course type did seem to drive some of the difference in what was learned and later applied. While all participants seemed to learn outdoor skills from course participation, those in the professional and 23 and older groups learned less applicable lessons than the other three groups. While these differences may be because of the specific types and functions of these courses, it is



also likely that the students who seek out these courses are simply different. Professional and 23-plus students are typically older, have more life experience, and come to NOLS courses for very specific and individual reasons (parents do not send them during a break in formal schooling).

Another curious finding when comparing course types is that transferable lessons for semester course participants were not markedly different than those reported by classic or youth course participants, even though semester courses are typically three times longer. While research has generally supported the premise that longer courses are more powerful than shorter courses in terms of immediate outcomes (e.g., Hattie et al., 1997; Sibthorp et al., 2007), it is possible that these differences decrease over time. It is also possible that 30 days in the backcountry includes the steepest learning curve for most of the transferable lessons, and that additional time involves less intense learning or covers academic content (e.g., ecology, wildland ethics), or more in-depth skill development, which remain less immediately relevant to most participants. In short, further examination of semester-length courses is needed.

#### *Limitations and Implications for Research*

While this study has several limitations, the foremost is probably the sample and the sampling frames chosen for the phases. The convenience sample of Wind River Wilderness (WRW) course participants used in phase 1 resulted in the scale items for phase 2. It is possible that these specific items were less applicable to participants who had not completed a WRW course. This could have introduced a bias. In addition, the disproportionate number of professional and 23-plus course respondents also skewed the overall sample.

Despite the sampling strategy and intention for phase 2, the low response rate, and its possible non-response bias, essentially makes the generalizability of this sample to all NOLS alumni questionable. In general, the low response rate in this study is consistent with the national trend of falling response rates over the last four decades (Brehm, 1993). This trend has led to an examination of assumptions about the necessity of high response rates. In a review of recent research of survey research, Krosnick states "when probability sampling methods are used, it is no longer sensible to presume that low response rates necessarily signal lower representativeness" (Krosnick, 1999, p. 541). Although a higher response rate is more ideal, it does not necessarily preclude accurate generalizations. Longitudinal studies with lower attrition rates would certainly allow greater confidence in some of the findings.

Omission of "School" as an explicit category for comparison in phase 2 was an oversight. Despite our belief that many of the outcomes being examined (e.g., appreciation of nature) are not traditionally associated with formal schooling, school would have proven a useful and interesting category to include and its omission likely biased the results toward the other categories.

Biases in the data coders remain an inherent limitation of any qualitative design that relies on interpretation of narrative data into themes. It is likely that two different coders would have viewed the narrative data differently.

In addition to addressing these methodological issues, future research should examine the important mechanisms that foster or increase transfer from adventure education contexts. One possible model for dissecting transfer influences is that of Baldwin and Ford (1988), where specific participant influences are teased apart from the impact of the specific training and the context for training application is more thoroughly investigated. While this study informs the adventure education field regarding the types of learning that can transfer from adventure program participation, it is difficult to attribute outcome retention and use to individual characteristics, training characteristics, or characteristics of the application context. Broad and Newstrom (1992) offered an extension of the Baldwin and Ford model that has been used in recreation programming (see Schaumeleffel, 2005) which suggests transfer can be influenced by different entities (management, trainer, trainee) at different times (before training, during training, and after training). This "transfer matrix" offers researchers a somewhat convenient framework through which to assess transfer influences.

The implications of learning about group dynamics, development, and leadership should be further investigated with both intact (extant) groups and groups that come together only for the purposes of the course. Given the ongoing interest in adventure education to focus specifically on corporate, adult, and intact groups, the differences in programming successfully for these groups is unclear. Intact groups often favor programming for customizable outcomes, similar to those touted by challenge courses. However, little research has been conducted on how intact groups challenge the efficacy of traditional adventure programming.

While this study hints at what can transfer from a NOLS course perspective, similar studies with a wider variety and diversity of adventure education programs would create a more robust sense of the transferable lessons most common in adventure education. When assessing transfer this way, it would be useful to compare the content transferred to the curriculum offered; having a sense of what does *not* readily transfer from adventure education courses has value in addition to knowing what does transfer.

#### *Implications for Practice*

Findings from this study suggest that (1) the ability to function effectively under difficult circumstances, (2) the ability to serve in a leadership role, (3) self-confidence, (4) the ability to work as a team member, and (5) the appreciation for nature are the five most important outcomes for participants that NOLS was most instrumental in developing. These types of outcomes are likely typical of participation in adventure education courses. Practitioners who understand the relative importance of these transferable outcomes may be able to influence the efficacy of their courses by more specifically attending to them. This is far from saying that instructors should not strive to provide individualized instruction per student needs, but to augment it with curriculum that is considered generally important and lasting. By understanding the needs of a general population and crafting curriculum around these needs, instructors will better be able to maximize the ultimate relevance of transfer attained by students.

Some students learned very different things from the same course type. For example, more students reported home was the primary place that communication skills were learned. However, for a minority of students (~14%) this was still a critical area of learning attributed to

NOLS. These findings highlight the need for individualized programming during extended adventure education courses. This type of individualized attention may not be as feasible during shorter courses, in which students spend, proportionally, more time gaining the requisite competence in outdoor skills that enable them to complete activities. However, when student competence in outdoor skills is high enough to focus specifically on self-system, personal value, and group development outcomes, being able to teach to personally relevant outcomes is highly desirable. Accordingly, being flexible with curriculum goals and course logistics is essential to helping students achieve transfer. Often times on a rock-climbing course, for instance, instructors are tasked with helping a student achieve "x" amount of climbing competence by day eight of the course in order to achieve the next set of curricular goals. Realistically, however, some students may be disengaged from the climbing experience and have drawn the conclusion that they will not "become" a climber after the course. Thus, the transfer of climbing skills will not be realized. However, if these students are given latitude to opt out of some technical curriculum and focus on personally relevant goals, the likelihood of achieving transferable outcomes will increase. Also, considering that outdoor skills were reported to be of least importance to study participants post-course, it is critical to remember that technical skill development is meant to be the catalyst for other types of outcome development (rather than an ultimate end in and of itself).

### **Conclusion**

Considering the findings of this study, it does seem that certain types of lessons are more commonly learned, retained, and applied post-course than others. In addition, and consistent with the outcome-based literature in adventure education (e.g., Hattie et al., 1997), it seems that wilderness and expeditionary courses are well-suited to teach outdoor skills, self-confidence in general and confidence specifically during adversity, changes in life perspectives, group leadership skills, an appreciation for nature, and teamwork.

Despite evidence that adventure education programs can substantially benefit participants, the process of how those benefits are achieved is yet unclear. Determining how to intentionally program for specific outcomes, including transfer, within the social milieu and capricious environmental variables of adventure education can best be addressed by a partnership between practitioners and researchers. With the best efforts from both, adventure education professionals can continue to refine their understanding of the process and better serve students. This study should provide a useful baseline and springboard for future studies looking at how competing variables affect the transfer of knowledge, aspirations, skills, and abilities from wilderness-based adventure programming.

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**Contact Information:**

Jim Sibthorp

University of Utah, Department of parks, Recreation and Tourism

250 S. 1850 E. Room 200, Salt Lake City, UT 84112

[jim.sibthorp@health.utah.edu](mailto:jim.sibthorp@health.utah.edu)

# RESEARCH IN OUTDOOR EDUCATION

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For more information on the Coalition, please contact:

Charles H. Yaple, Executive Director  
Coalition for Education in the Outdoors  
Department of Recreation and Leisure Studies  
State University of New York at Cortland  
Cortland, NY 13045  
Voice: (607)753-4972  
Fax: (607)753-5982  
<http://www.outdooredcoalition.org>