Wilderness-Based Semester Learning: Understanding the NOLS Experience

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The purpose of this study was to begin to identify what students learn from semester-length wilderness-based courses that they may not learn from shorter courses. Students on semester-length courses from the National Outdoor Leadership School (NOLS) were asked to respond to the open ended question: "What did you learn on your semester course that you could not have learned if your course had only been 30 days long?" The responses of 468 students were analyzed individually via constant comparison. Eight themes were generated from the responses and the most prominent theme, "expedition behavior," was further analyzed via constant comparison and divided into five sub-themes. These findings are related to the concept of overlearning and provide insight into the concept of expedition behavior. Due to the limited understanding of learning on wilderness-based semester-length courses, this research provides a starting point to begin to recognize what students learn on these courses.

KEYWORDS: wilderness education, semester, expedition behavior, overlearning,

The intended outcome of most, if not all, wilderness education programs involves an opportunity to develop outdoor skills, knowledge, and experience (Propst & Koesler, 1998). The focal point of learning may vary depending on the program and types of students on the course. For some programs, there may be an emphasis on outcomes of teambuilding, self-growth, or communication, while others may emphasize technical skills, leadership, or problem-solving. Whatever the target outcomes, from the broadest to the most simplistic, learning in wilderness education is mediated by particular attributes of the course (Goldenberg, McAvoy, & Klenosky, 2005).

There are multiple factors that may affect how students learn on wilderness education courses. These aspects are inherent to most, if not all courses. Paisley, Furman, Sibthorp, and Gookin (2008) suggested five domains of student learning from the National Outdoor Leadership School: structure mechanisms; instructor mechanisms; student mechanisms; student and instructor mechanisms; and environmental qualities (both social and physical). Others have also found that instructors and group members influence how and what students learn (Goldenberg & Pronsolino, 2008 Sibthorp, Furman, Paisley, Gookin, & Schumann, 2009). Another factor that has been suggested to mediate student learning in wilderness education courses has been course length (Cason & Gillis, 1994; Hattie, Marsh, Neill, & Richards, 1997; Sibthorp, Paisley, & Gookin, 2007).

The length of time students spend in a learning environment is a logical factor that may influence how and what students learn in wilderness education courses. More time may allow students to develop a higher skill competency, become more comfortable in the environment, or provide the time needed to develop stronger relationships with others on the course. Program length may vary tremendously from one program to the next. Short programs may consist of only a few days to a week, while longer programs may run for multiple weeks or up to a semester. Semester-length programs, usually offered by universities or educational institutions, consist of multi-month length courses. The reason for such a large discrepancy in time may depend on the resources available to the program offering the course. Some of the factors that can mediate course length include the availability of money, instructors, permits, gear, and the time necessary to participate in a longer course. These aspects can make it difficult logistically and financially to provide longer wilderness-based courses.

Little research on semester-length courses exists, perhaps because very few programs or institutions are able to offer these courses. If, however, program length is a factor that contributes to student learning in wilderness education, then there is a need for more studies to look at longer course lengths. Few studies have looked explicitly at semester-length wilderness-based courses. Hattie et al.'s (1997) meta-analysis of 96 studies, one of the most comprehensive studies in the wilderness education literature, showed that 72% of the courses were between 20 and 26 days in length, with only four percent of the courses being longer than 26 days. Another meta-analysis conducted by Cason and Gillis (1994), found that of the 43 studies reviewed, 68% of them looked at programs of 21 days or less in length. Both studies asserted that increased course length resulted in more effective outcomes. The results of these two meta-analyses suggest that few studies have examined course lengths exceeding 26 days.

The past research on semester-length courses is not explicitly wilderness-based; rather, it focuses on *semester at sea* and *alternative semesters*. A semester at sea takes place on a ship that travels around the world where students study about culture and then experience it when in port. The aim is to provide an academic context to "develop cross-cultural understandings of human commonalities and global interdependence, while simultaneously recognizing, defining, and respecting individual potentials and cultural diversities" (McCabe, 1994, p. 276). Dukes (2006)

studied participants from a semester at sea program 22 years after the initial course to understand the impacts the experience had in later life. He found that the experience provided the students with a global perspective that was further used as a starting point for personal growth. McCabe (1994) sought to identify the mechanisms that provided this global perspective, and found that it was a combination of the curriculum and opportunity for experiential learning. Similar notions of this type of learning have been found in "alternative semesters."

One type of alternative semester specifically used permanent yurt sites in a natural environment to teach an academic curriculum that brought students to a better understanding of nature (Johnson & Alexander, 2009). Though the course takes place in a natural environment, the frontcountry amenities and frequent field trips into town do not constitute a wilderness-based experience. However, the authors suggest that the small group experience, simplistic living, and experiential aspects of the program combine to provide the intended learning.

Wilderness-based programs can therefore be distinguished by the environment where they take place and the proximity to "frontcountry" amenities. They occur mostly in remote areas where first-aid and rescue personnel may not be immediately available. Many programs incorporate a technical skill (i.e., sea kayaking, backcountry skiing, hiking) that utilizes the natural environment as a source of learning. Students most often come from suburban environments, are placed into a wilderness environment, and then asked to live in these conditions with just the supplies they can carry in their backpacks. The weather and terrain are unpredictable, requiring students to learn basic outdoor living skills. The main difference between alternative and wilderness-based semesters is that students have to learn how to live as a part of the environment and are not able to just walk inside when it starts raining.

The outcomes of alternative semesters may be similar to the objectives of wilderness education, but these types of courses are not explicitly wilderness-based. If increased course length provides an increased exposure to learning opportunities, which should in turn augment learning outcomes, further research is needed to understand the impact semester courses may have on this learning. Therefore, the purpose of this study is to begin identifying what students learn from semester-length wilderness-based courses that they may not learn from shorter courses.

Method

Program

The National Outdoor Leadership School (NOLS) is a not-for-profit educational institution, founded in 1965, that provides wilderness-based outdoor education courses from 14 days in length to full academic semesters (66 to 93 days in length). Semester-length courses comprise over 50% of NOLS's total field days. Students who participate in these courses are most often college-age students because they are able to receive college credit. However, students of any age and interest can participate in semester courses. NOLS offers eight different types of semester courses on four different continents. A semester course provides an opportunity for students to learn multiple technical skills such as backpacking, rock climbing, river travel, mountaineering, sea kayaking, and, depending on the course location, cultural immersion may also occur. The foundation of learning at NOLS is structured by an experiential method, which uses technical outdoor skills to teach leadership. A typical semester entails multi-week sections focusing on three to four technical skills and at the same time, learning about leadership in the context of logical and meaningful consequences.

Data Collection

Data were collected via the NOLS Course Quality Survey (CQS) in a census beginning September 1, 2009, and ending August 31, 2010. The CQS was developed over a five-year period by a research team from the University of Utah to more fully understand student outcomes on NOLS expeditions. The survey was originally designed to measure six different constructs: communication, leadership, small group behavior, and judgment in the outdoors, outdoor skills, and environmental awareness (Sibthorp, et al. 2007). These domains were measured using 29 items on a ten-point Likert-type scale. Open-ended questions have been added periodically to provide a better understanding of certain aspects of students' experiences. For this study, we were interested in understanding the impact of semester-length courses. The CQS was administered to all students at the end of their NOLS courses. A single, open-ended question specifically asked: "What did you learn on your semester course that you could not have learned if your course had only been 30 days long?"

Recognizing the inherent limitations of self-reported data, we chose this approach for several reasons. First, so little is known about semester-length courses that we did not feel sufficiently prepared to generate specific closed-ended items. Further, due to the exploratory nature of this study, we felt that any such list of items might preclude students' abilities to describe their experiences in their own words. In this case, even though the students had no concrete point of reference, we were specifically interested in what they *believed* to be the value added by additional time on course (past the 30 days of a "typical" course). This approach allowed meaning to be expressed by the students rather than imposed by the design.

Data Analysis

Constant comparative analysis (Lindlof & Taylor, 2002) was used to analyze and interpret the 502 student responses. Though responses ranged from a few words to several sentences, each response served as the unit of analysis and was coded into only one theme. This initial stage of coding, called "open coding", allowed the researchers to build and loosely define different response themes based on words and phrases expressed by students (Lindlof & Taylor, 2002). This first stage of coding produced 23 different response themes.

After this initial coding, a second round of coding called "axial coding" was performed. This uses "codes that make connections between categories and thus result in the creation of either new categories or a theme that spans many categories" (Lindlof & Taylor, 2002, p. 220). In cases where responses had words or phrases that represented multiple themes, each response was placed into the theme that was first addressed by the student. Following this stage of coding, 15 themes represented the students' responses. In an effort to summarize the results as parsimoniously as possible, we chose to remove themes containing fewer than five percent of the total responses. These themes were believed to be comparatively idiosyncratic. Examples of response themes that were not included in the study were *incorporating feedback*, *environmental studies*, and *health impact*. Multiple researchers analyzed the data and compared their interpretations to ensure consistency. Ultimately, 468 responses were placed into eight response themes for the purpose of this study.

After the eight response themes were identified, an analysis known as *dimensionalization* was conducted on the most prominent theme: *expedition behavior*. The purpose of dimensionalization is to continue to break down a construct into meaningful dimensions that provide a better representation or interpretation of that construct (Lindlof & Taylor, 2002). The 117 responses in expedition behavior were analyzed, again through constant comparison, and by multiple re-

searchers to ensure interpretation consistency. Responses generated five unique dimensions of expedition behavior.

Results

Figure 1 shows the eight response themes that were created, in order of relative magnitude: (a) *Expedition behavior* was defined as contributing to group goals and objectives while supporting the leadership team and members of the group; (b) *Application/transfer* referred to using earlier learned information toward elements learned later in the course; (c) *Outdoor skill diversity* represented the opportunity for exposure and competency in multiple skill sets; (d) *Change in perspective* symbolized looking at the natural world and personal attributes from a different viewpoint; (e) *Tolerance for adversity* showed that students learned to persevere through difficult times and overcame difficult situations; (f) *Leadership* was signified by taking appropriate action toward group goals and objectives; (g) *Impact of course length* was defined by feeling comfortable living in the natural environment; and (h) *Internalization of skills* represented the ability to turn learned information into muscle memory. Though these eight themes are mutually exclusive, we believe that the combination of particular themes provides insight to semester-length courses.

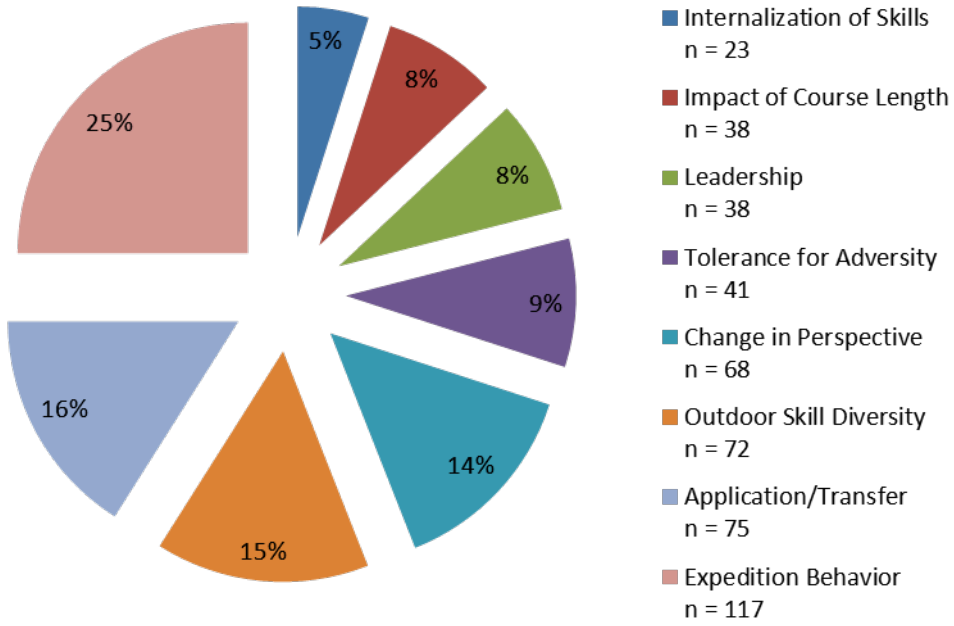

Figure 1. Response themes by percentage of total sample size.

Table 1 provides an exemplary quote of each theme identified. Four themes, representing 29% of all the responses, and which may be unique to semester-length courses, were outdoor skill diversity, internalization of skills, impact of course length, and application/transfer. Fifteen percent of students identified outdoor skill diversity as what they learned on their semester courses. The course length allowed for engagement in multiple activities and an ability to become competent in multiple technical disciplines. One student commented,

"The overall variety and quantity of skills with the opportunity to practice them was something I may not have had the chance to learn in a shorter section."

Internalization of skills meant that students were able to transform learned skills into habit. One student mentioned,

"We elaborated on everything that we had learned in the first section. We had more time to perfect our new skills. That was important because everything we learned became muscle memory by the end."

Impact of course length referred to feeling content living in the natural environment.

"I would not have felt as close or comfortable in the wilderness as I do now. By the end of the course, living in the wilderness was as natural an environment for me as living in the front-country."

Finally, application/transfer represented the opportunity to take learning from one context and immediately apply it to another.

"It gave me an opportunity to compare the different environments we were in and continue to apply and build on the skills I learned in the first section in different terrain and context, which helped to solidify those skills and add to my confidence and flexibility."

The combination of these four themes provides an understanding of what students learned on a semester course and how the longer course length facilitated this learning.

Expedition behavior was the most common theme of semester courses and represented 25% of the total responses. Figure 2 shows the sub-themes for expedition behavior in order of relative magnitude: (a) *Conflict Resolution*; (b) *Group Dynamics*; (c) *Relationship Building*; (d) *Living with Others;* and (e) *Communication*. Conflict resolution represented 27% of the responses. Students felt the extended course length helped them understand how to confront issues, deal with challenging members of the group, and resolve issues that could have otherwise been ignored had the course been shorter.

"When you do not get along with people, you can handle them for thirty days without going crazy. For a semester, you have to solve your problems with people."

The extended length of time on course also helped students understand the concept of group dynamics and how small changes in group structure, such as attitudes and the forming of cliques, can change how the group functions as a whole. Students identified the effects their attitudes and demeanor toward others had on the group. One participant shared,

"The group dynamic was built during that extra time, which was the most important part of the experience for me, [and] I learned the impact I had on the group as an individual."

Table 1

Quote Representing Each Response Theme

Response Theme	Quote
Expedition Behavior	*"I learned how to work with people in difficult situations and that the group goal is often times more important than my personal goals."*
Application/Transfer	*"I had the chance to take things that I had learned during the first half [of the course] and apply them in a safe and encouraging environment."*
Outdoor Skill Diversity	*"Most important was the different skills I learned sea kayaking and sailing that I could not have learned just by doing a 30-day backpacking course."*
Change in Perspective	*"I was able to look at my life from another perspective and see things differently while learning things I never knew about myself."*
Tolerance for Adversity	*"I learned the importance of patience and perseverance… and how to overcome adversity and push through the hardest days."*
Leadership	*"It allowed me to refine my leadership skills and learn how to make important decisions effectively and efficiently."*
Impact of Course Length	*"…it felt natural to be living in that environment. I was able to learn so much more by living in the environment for a longer period of time because it became a part of us, instead of just quickly 'visiting.'"*
Internalization of Skills	*"I had time to sharpen up on my outdoor skills and turn them to habit rather than having to really think about everything all the time."*

Relationship building represented 20% of the responses with expedition behavior, where students had the opportunity to learn more about the members of their groups and develop strong relationships with others that would not have been possible otherwise.

"I really was able to connect with other students more" and "I got to know my peers on a deeper level."

The extended course length also helped students learn how to "live with others" on a daily basis by understanding the importance of teamwork, patience, and diversity in a group. Though similar to "group dynamics," we believe these students did not fully grasp how their actions affected the structure of the group. Rather, they were more focused on maintaining the status quo of the group.

"I learned how to live in a small community for an extended period of time" and "how to work with a diverse group of people."

The final theme represented the ability for students to understand the importance of and practice their communication skills.

"I learned how to communicate with people in a more open and respectful way."

These five themes provide an opportunity to understand expedition behavior more fully and meaningfully.

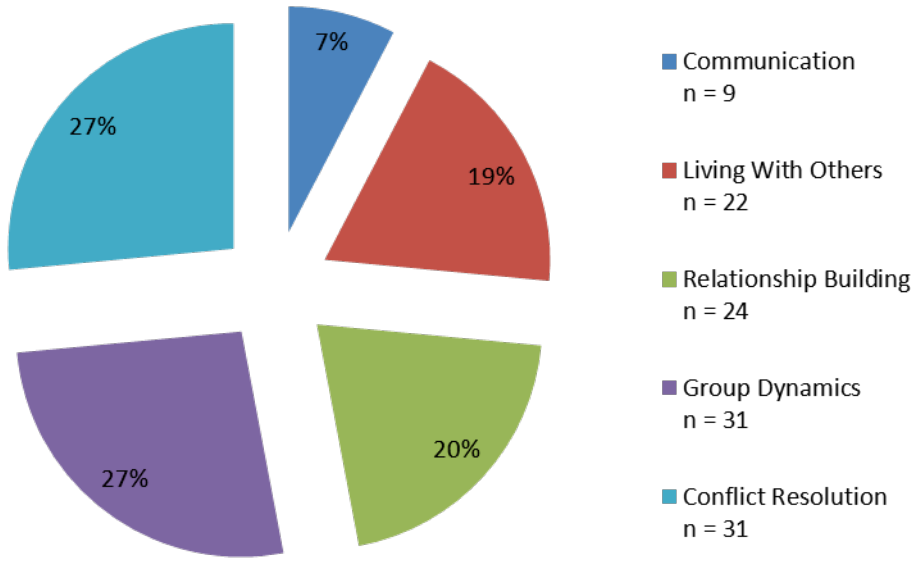

Figure 2. Response sub-themes of expedition behavior represented by percentage of total responses within this theme.

Discussion

The purpose of this study was to begin identifying what students learn from semester-length wilderness-based courses that they may not learn from shorter courses. Recognizing that these data are self-reported perceptions of students, this study provides some initial insight into semester-length wilderness-based courses. Understandably, semester courses should offer settings in which to learn multiple and different outdoor skills because of the opportunities afforded by the long course length. Fifteen percent of the students' responses were placed into this theme.

However, three different themes (internalization of skills, impact of course length, and application/transfer) represented 29% of the responses, which are related to the idea that students

were able to internalize the information and skills they learned, and apply them to different contexts later in the course. Students believed they were able to master previously-learned concepts by the ongoing practice and application that the longer duration provided. This idea is related to the notion of *overlearning*, which can be thought of as continued rehearsal and repetition beyond initial success, typically with the intent of committing information to memory (Driskell, Willis, & Copper, 1992). The impact of overlearning on retention has been supported (Bromage & Mayer, 1986; Driskell et al., 1992) and rejected (Rohrer, Taylor, Pashler, Wixted, & Zepeda, 2005) in the literature. However, much of the research on overlearning focuses on memory retention and incorporating facts rather than on meta-skills, like those central to wilderness education. These results suggest that applying overlearning in the context of wilderness education may provide an opportunity for future research and contribute to the understanding of semester-length wilderness-based courses. Further, focusing on the complexity of overlearned skills on wilderness-based courses may contribute perspective to conversations about the efficacy of the strategy in terms of retention, as well as a general understanding of the concept of overlearning. Instructors may be able to use this concept to understand the learning progressions of their students more thoroughly or assist in the structure and development of technical skills. Therefore, if instructors are able to provide overlearning opportunities, this may also help maximize students' learning retention. The expedition behavior theme also provides an opportunity to understand student learning on semester-courses.

While investigating the expedition behavior theme individually, several insightful subthemes of student learning were identified. The notion of expedition behavior, in the context of NOLS, refers to the contribution toward group goals, supporting the leadership team, and treating others with respect (Gookin & Leach, 2009). These findings suggest that students felt they were able to fully internalize this concept because of the long course length. If wilderness education courses seek to teach expedition behavior to students, no matter the length of the course, it may be that certain levels of understanding are acquired through varying lengths of time. Students may feel they have a strong grasp of the concept after 30 days, but realize after a more extended duration of time that their earlier understanding was limited. This is not to say that students do not learn expedition behavior on shorter courses, but the extent of their learning may be greater if the course were longer. To provide a better developmental opportunity to learn expedition behavior, understanding the elements that students felt were most salient is necessary.

The themes identified within expedition behavior suggest that this is a multi-faceted concept. For most students, expedition behavior meant more than learning how to get along with others. It was about understanding the reciprocal relationship of influence between individuals and the group. One student commented that,

"…prolonged involvement with a core group of people causes constantly shifting group dynamics that would have otherwise been missed."

Multiple students responded that they were able to see first-hand the group development stages of forming, storming, norming, and performing, which allowed them to understand the concept of group dynamics better.

"I learned how the whole concept of forming, storming, norming, and performing occurs [and] our group also grew over the whole section and were able to get to the performing stage."

Thus, students were able to internally understand how personal actions influenced group dynamics, and how group dynamics reciprocated this relationship and influenced personal actions. Paul Petzoldt, the founder of NOLS, suggests that good expedition behavior is "an aware-

ness of the relationship of individual to individual, individual to the group, group to the individual, group to other groups…" (1974, p. 130). This concept was represented by the themes of conflict resolution, group dynamics, relationship building, and communication, which included 81% of the responses.

"I learned that the group goal often times exceeds my own personal goal in importance".

Students were able to learn this relationship and act intentionally on it by resolving conflict in the group, understanding group roles to support the group dynamic, developing relationships with others, and communicating with one another more effectively. At NOLS, expedition behavior is one of seven leadership skills taught on course. An expedition cannot be successful if the members of the team cannot work together toward a common goal. Students who have taken semester courses report a much greater understanding of how expedition behavior affects the group than they would have obtained if their courses were only 30 days.

Conclusion

Our understanding of semester-length wilderness-based courses is limited. The results from this study provide initial insight into what students perceived they learned on semester-length courses that they could not learn from shorter courses. The concept of overlearning seems like a logical explanation of the outcomes of semester-length courses. However, no research in the wilderness education literature was found that uses overlearning, which may provide a context for further understanding of the concept. The theme of expedition behavior was identified as the most common outcome from the student responses. Further analysis into this concept showed that students were able to understand the reciprocal influence between their personal actions and the group dynamic more thoroughly. Many programs expect that students will understand the concept of expedition behavior before the course ends, but these responses suggest that expedition behavior is more fully learned and deeply understood as course length increases.

These findings provide fruitful insights into the learning that takes place on wilderness-based semester-length courses. Though these data are self-perceptions of student learning immediately following the course, they allow us to see the aspects of the course that were most salient for the students. Further research is needed on wilderness-based semester-courses to provide a better understanding of how course length may affect learning outcomes.

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