OPTIMIZING OUTDOOR ADVENTURE EDUCATION PROGRAMS FOR LEARNING TRANSFER

By

DANIEL FREEZE

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF INTERDISCIPLINARY STUDIES



We accept this thesis as conforming to the required standards:

Gloria Ramirez (Ph.D.), Thesis Supervisor, Dept. Education and Social Work

Ross Cloutier (MBA.), Dept. Adventure Studies

Lyn Baldwin (Ph.D.), Dept. Biological Science

Mark Rowell Wallin (Ph.D.), Coordinator, Interdisciplinary Studies

Dated this 1st day of April, 2017, in Kamloops, British Columbia, Canada

ABSTRACT

Outdoor adventure education programs are fertile environments for teaching transferable skills that can benefit students in their day to day lives. This interdisciplinary research project draws on research from psychology, human resource development, education, and outdoor adventure education to identify mechanisms affecting learning transfer. The mechanisms are organized according to Baldwin and Ford's (1988) transfer construct input factors, and subsequently evaluated in order to determine their potential for use in outdoor adventure education programing. The findings from this project will help outdoor adventure education program designers and instructors facilitate experiences that benefit students beyond the outdoor context.

Thesis Supervisor: Associate Professor Gloria Ramirez

ACKNOWLEDGMENTS

First and foremost, I would like to thank my parents who have provided me with overwhelming support throughout this process and encouraged me to sign up for this program in the first place. I would also like to thank my supervisor Gloria Ramirez for her incredible ability to help me shape my imaginative but often unstructured ideas into a form that is understandable without taking away my sense of freedom; Ross Cloutier for his support for my project since the beginning and the freedom he gave me in his outdoor education courses where I originally conceived of this project; Lyn Baldwin for being a friend to talk to and bounce ideas off of; and Mark Wallin for making this opportunity in interdisciplinary studies possible.

Contents

AB	STRACT	II
AC	KNOWLEDGMENTS	II
1	OUTDOOR ADVENTURE EDUCATION	2
_	1.1 WHAT IS OAE?	2
	1.1.1 Outdoor Education	2
	1.1.2 Adventure	2
	1.1.3 Experiential Education	3
	1.1.4 Definition for OAE	5
	1.2 PROGRAM CHARACTERISTICS	6
	1.3 TEACHING STRATEGIES IN OAE	6
	1.3.1 Fieldwork in OAE	7
	1.3.2 Adventure Activities	7
	1.3.3 Instructor	8
	1.3.4 Physical and Social Setting	8
	1.3.5 Reflection in OAE	12
	1.4 THE OUTWARD BOUND PROCESS	13
2	LEARNING TRANSFER	16
	2.1 WHAT IS LEARNING TRANSFER?	16
	2.2 TYPES OF TRANSFER	17
	2.3 THE EVOLUTION OF LEARNING TRANSFER	20
3	LEARNING TRANSFER IN OAE	24
	3.1 TRANSFERABLE OUTCOMES	25
	3.1.1 Interpersonal Development	26
	3.1.2 Intrapersonal Development	27
	3.1.3 Long-Term Outcomes	29
	3.2 A PROPOSED MODEL FOR INTEGRATING OAE AND LEARNING TRANSFER	30
4	OPTIMIZING FOR TRANSFER	32
5	OPTIMIZATION	40
	5.1 LEARNER CHARACTERISTICS	40
	5.1.2 Personality Factors	42
	5.2 TRAINING DESIGN AND DELIVERY	45
	5.2.1 The Learner	45
	5.2.2 Teaching Strategies	47
	5.3 ENVIRONMENT OF APPLICATION	54
	5.3.1 Transfer Climate	54
	5.3.2 Reminding	56
6	RECOMMENDATIONS FOR PROGRAM OPTIMIZATION	58

Introduction

Learning transfer is a fundamental assumption in outdoor adventure education (OAE) programs (Sibthorp, Furman, Paisley, Gookin, & Schumann, 2011). Although there is abundant research indicating what outcomes participants transfer from OAE programs to other contexts, little is known about how adventure programs can intentionally facilitate transfer (Sibthorp et al., 2011). The focus of the present study is to examine mechanisms influencing learning transfer from different disciplines in order to develop a set of guidelines and recommendations that can be used by OAE practitioners to design curriculum that will encourage OAE students' transfer of skills to other life contexts (e.g., personal and professional life).

This project is guided by the question: how can OAE programs be optimized for learning transfer? To examine this question, several lines of secondary research have been pursued to inform a comprehensive understanding of the questions constituent parts. First, OAE, learning transfer, and transfer optimization literature is explored to provide context for a secondary study. The methodology used in the study is a form of descriptive analysis; using Baldwin and Ford's (1988) transfer input factors as organizational structure, an extensive body of literature is examined to compile a list of transfer optimization mechanisms used in training programs. Mechanisms are presented and evaluated according to their potential use in OAE in the discussion section of this paper.

An interdisciplinary approach is used in this project because relevant insights are offered by various disciplines. By combining research from OAE, education, human resource development (HRD), and psychology, this project is able to provide a more complete insight into program optimization for learning transfer and potential OAE program application.

Literature Review

1 Outdoor Adventure Education

A central topic of this paper, and a lens through which the remainder of the project is examined is OAE. This section explores OAE's historical roots, provides an outline of commonly used program characteristics and teaching strategies, and examines an example of an OAE program.

1.1 What is OAE?

What is outdoor adventure education? Outdoor adventure education (OAE) is an experiential approach to education that teaches in outdoor settings through adventure experiences. To inform a working definition of OAE, its three constituent parts, outdoor education, adventure, and experiential education, will be examined in further detail.

1.1.1 Outdoor Education

OAE is a subdivision of outdoor education. Outdoor education uses experiential approaches to teach in, about, and through the outdoors. Guided by a facilitator, students in outdoor education programs analyze, interpret, and gain new understandings from the strong emotional experiences they encounter in challenging activities. An underlying assumption in this discipline is that course participants will apply what they learn beyond the course upon returning to their home and job settings (Lewis & Williams, 1994).

1.1.2 Adventure

Another key element of OAE is adventure, "when a person takes a risk to do something they didn't know they could do" (Ewert & Sibthorp, 2014, p.16). Risk provides action and intensity. Adventure programs are characterized by risk taking, which helps participants develop interpersonal and intrapersonal skills like communication, teamwork, leadership, and self-confidence, self-awareness, and resilience. Another key part of adventure is return and re-entry where the participant engages in a period of telling, piecing together, and searching for meaning after the experience (Ewert & Sibthorp, 2014).

1.1.3 Experiential Education

The third component of OAE is experiential education. Experiential education involves learning from experience and learning by doing; it immerses learners in an experience and encourages reflection about the experience to develop new skills, attitudes, ways of thinking, and capacity to contribute to community (Ewert & Sibthorp, 2014; Lewis & Williams, 1994). In addition to current experience, experiential learning also stresses the importance of a learner's past experience, making it an especially useful teaching style for mature learners who have a wealth of past experiences to draw on (Lewis & Williams, 1994).

A theory that underlies experiential education is constructivism. Constructivism is the notion that what and how a person learns is based on their previous knowledge and experiences. This approach puts a focus on participant experience and the ability of the individual to interpret, mediate, and influence learning (Ewert & Sibthorp, 2014).

Both cognitive and social constructivism exist; in cognitive constructivism (Perry, 1999; Piaget, 1968), individuals construct meaning using their brains. New information is processed using an existing mental model, or requires accommodation and adaptation to be applied in the situation at hand (Ewert & Sibthorp, 2014).

In social constructivism (Vygotsky, 1978), learning and understanding are products of social interactions affected by variables like social language, cultural objects, and institutions which shape and influence how people learn and develop. A central aspect of this theory is the zone of proximal development, which refers to the difference between what someone can learn on his or her own and what he or she might be capable of learning in a group or under the guidance of another person who is more knowledgeable or experienced (Ewert & Sibthorp, 2014). Experiential learning has largely been shaped by two influential figures: John Dewey and David Kolb.

1.1.3.1 Dewey

Experiential education was first conceived by John Dewey. According to Dewey (1916, 1938), experience is continuous from past through present to future; it is not a static process, but one that is dynamic and moving. It involves a transactional experiment in which the learner is modified by the environment as well as the environment by the learner (as cited in Ord & Leather, 2011).

This transactional experiment is facilitated by a cycle of trying and undergoing. Trying involves the outward expression of the individual onto the environment; the learner realizes the problem, gets an idea, and puts the idea out into the present situation. This leads into the undergoing phase where the environment manifests itself onto the individual. Here the individual experiences the consequences of his or her idea in the environment, which either confirms or modifies previous conceptions about their solution (Lewis & Williams, 1994; Ord & Leather, 2011). Within this cycle, each attempt informs future attempts, and learning from the past guides learning in the future.

1.1.3.2 Kolb's Cycle

Kolb's main contribution is his model of experiential learning, (1984, figure 1) which depicts learning as a four-part cycle involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. As a learner builds a repertoire of experiences, they are able to draw on past experience to inform future experience (Lewis & Williams, 1994).

How these experiences accumulate can be explained using the inner portion of Kolb's model which employs another process of organization/adaptation, and assimilation/accommodation. In the organization phase, every time a student has an experience the information is organized into a cognitive framework and stored in the mind of the learner. Once organized, the framework can be adapted and used in future situations.

To facilitate this later use, the learner must assimilate new information from the present context in order to fill gaps in the framework where information from the original experience is not applicable. Inevitably, following the assimilation phase the framework will not be ready for the new situation, and the learner will be forced to accommodate the framework to the new situation in order to successfully apply it in the new setting (Priest & Gass, 2005). This process of organization/adaptation and assimilation/accommodation is the interior element to Kolb's cycle.

Despite how separate and explicit the steps of this process may seem, Kolb (1984) asserts that learning is a holistic process, and at the heart of the learning experience, there is a profound relationship between abstract detachment and concrete involvement (as cited in Ord & Leather, 2011).



Figure 1. Kolb's experiential learning model. Reprinted from *Experiential Learning, Experience as the Source of Learning and Development* (p.42), D. Kolb. FT Press (1984).

1.1.4 Definition for OAE

Together, outdoor education, adventure, and experiential education shape contemporary OAE. It is a broad field that involves the risk and benefit of adventure, the teachings of education, and an experience that stems from a connection that stands to be made with the natural environment. Ewert and Sibthorp (2014) define OAE as a

variety of teaching and learning activities and experiences usually involving a close interaction with an outdoor natural setting, and containing elements of real or perceived danger or risk in which the outcomes although uncertain, can be influenced by the actions of the participants and circumstances (p.5).

1.2 Program Characteristics

This definition highlights some of the key aspects of OAE; a variety of activities, interaction with nature, danger and risk, uncertainty, and empowering the participant. OAE programs maintain some common elements, and some of these consistencies include underlying principles. Ewert and Sibthorp (2014, p. 37) outlined five key principles for OAE programming:

- 1. Experiences need to support reflection, critical analysis, and the transfer of things learned to other aspects of an individual's life;
- Learning is personal and provides a foundation for developing meaning and relevance;
- 3. Participants are encouraged to examine their own values and behaviors during and from the OAE experience;
- 4. Participants need to be engaged at the physical, emotional, cognitive, and intellectual levels; and
- 5. Outdoor adventure educators actively engage in a process that parallels that of participant.

Beyond these key principles, other themes in OAE include a sense of freedom and choice; an experience that is done for its own sake; compelling tasks concerned with developing inter and intra personal relationships; a state of mind that transitions from feelings of uncertainty to feelings of enjoyment, satisfaction, or elation; a search for excellence; expression of human dignity; action as a whole person; feelings of competence and effectiveness upon completion; optimal arousal characterized by complexity, challenge, and cognitive dissonance; the role, power, and potential of the natural environment; and the relationships between human and nature that are formed as a result of that relationship (Dyment & Potter, 2015; Ewert & Sibthorp, 2014).

1.3 Teaching Strategies in OAE

These principles and themes come to fruition in teaching strategies that contribute to defining OAE. Five key strategies are fieldwork, adventure activities, instruction, setting, and reflection.

1.3.1 Fieldwork in OAE

The first important strategy is student fieldwork. In OAE fieldwork makes up the core content of any program curriculum. It embodies the experiential approach advocated for by Dewey and Kolb, and can be defined as "any component of the curriculum that involves leaving the classroom and learning through first-hand experience" (Boyle et al., 2007, p. 299-300, as cited by Thomas, 2015, p.118). Important aspects of fieldwork include design, appropriate preparation and skill development, staff supervision, direct and active student participation, post field trip debriefing, reflection linking theory to practice, learner centeredness, and facilitating the transition from participant to leader (Thomas, 2015).

Fieldwork has much to offer; its prominence in OAE indicates a preference for knowledge and theory that is practical and relevant. It forces students to engage by promoting visibility and increasing accountability as they work with the uncertainty that exists in the outdoor environment. Because learning objectives tend to focus on things like developing personal skills and knowledge base, and promoting understanding of self, others, and the natural world, fieldwork shows students that they are a key factor in and focus of the learning experience. Another advantage in fieldwork is that it helps define the skills that matter, and shows students how expertise, authority, and rank are defined and obtained (Thomas, 2015).

Fieldwork also encourages social interaction and self-reflection, promoting the development of groupwork skills and self-confidence, and engaging students with a deep approach to learning because of the way instructors and students work together to overcome problems and co-construct knowledge (Thomas, 2015).

1.3.2 Adventure Activities

Fieldwork comes to fruition in OAE's second key teaching strategy, adventure activities. OAE uses activities that are action packed, high energy, strenuous, and have tangible consequences. They require kinesthetic behaviors, and demand small group participation. Some examples of common OAE activities include: rock climbing, caving, ice climbing, white water boating, canyoneering, canoeing, wilderness trekking, ropes courses, climbing walls, bicycle touring, sea kayaking, mountaineering, snow sports, sailing, and horse packing (Ewert & Sibthorp, 2014). One of the advantages of these activities is that they provide many opportunities for practice. Participants are provided with multiple attempts to solve similar challenges which allows for active experimentation in order to apply newly learnt problem-solving skills and models (Lewis & Williams, 1994).

Additionally, OAE activities are well positioned to offer optimally engaging experiences. Engagement is a function of interest and goal direction. Intrinsic interest is a state of mind where the learner is naturally attracted to something because it is inherently engaging. In contrast to intrinsic interest is effortful attention, a state where the goal is extrinsic, and requires the direction of effortful attention (Sibthorp et al., 2015). In the ideal state, intrinsic interest and goal direction are aligned; the learner is working towards a goal, and the process is inherently interesting. OAE activities are well suited to afford optimally engaging experiences because many of the tasks participants engage in are immediately relevant to goals of the activity (Sibthorp et al., 2015).

1.3.3 Instructor

Another key characteristic of OAE programs is the instructor. Instructors serve multiple purposes: they facilitate experiences, manage risks, and minimize environmental impacts. Not only does the OAE instructor explain the activity to students, but they also teach and demonstrate the different skills involved, help coach students through the activity, and help unpack the activity afterwards (Ewert & Sibthorp, 2014; Lewis & Williams, 1994).

OAE teachers are tasked with finding a balance while managing a complex set of variables. Due to the uncertain nature and high degree of variability in programs, instructors are always adapting plans and making decisions to match the demands of the situation as it evolves (Ewert & Sibthorp, 2014).

1.3.4 Physical and Social Setting

The fourth teaching strategy used in OAE programs is the setting in which the program occurs. This is not only the physical setting, but also the social setting. What physical setting is chosen for a specific program depends largely on the activity being used; kayaking courses will use river and ocean settings, climbing courses will use mountain and cliff settings, and backpacking courses will use forested and alpine settings.

1.3.4.1.1 Uncertainty

What makes OAE physical settings powerful is their ability to provide uncertainty (Hattie, Marsh, Neil, Richards, 1997; Thomas, 2015), which lies in the environmental consequences that accompany the setting. These consequences are tangible and naturally implied. They hold potential to make participants experience physical discomfort, and incur naturally without being imposed by an authority figure, making them more likely to be accepted by students as fair game (Cooley, Burns & Cumming, 2014). By engaging with the uncertainty associated with these consequences, students are forced to step outside their comfort zone; they need to analyze decision making abilities, confront anxieties, and assess their physical, emotional, and leadership skills (Ewert & Sibthorp, 2014).

1.3.4.1.2 Risk and Risk Taking

Uncertainty ultimately forces students to take risks. "Risk is the potential of losing something of value" (Priest & Gass, 2005). Risks can be real or perceived, and often contain elements of both. Individuals perceive risks differently; a person's background will affect their views on an activity as more or less risky, which will in turn affect their willingness to engage with it. A balance exists between a participant's perceived risk and perceived capability to deal with it (Ewert & Sibthorp, 2014; Gilbertson, Bates, McLaughlin, Ewert, 2006).

To use risk, instructors needs to assess the group and find this balance. The challenge here is operating "in a safe manner without compromising the excitement, the uncertainty, and the achievement of genuine adventure experience" (Martin, Cashel, Wagstaff & Breunig, 2006, p.251). After determining the appropriate level of risk, instructors can facilitate an opportunity that requires perseverance, decision making, and skill acquisition without a guarantee of success (Ewert & Sibthorp, 2014).

As participants engage with risk, they experience a sequence of changes which can be described as moving through a collection of different zones. The first zone is the safety zone where the participant can see the risk, but they are not engaged with it. Next comes the anticipation zone. Here they have decided they will engage with the risk, and are perhaps engaging in the risk vicariously, viewing the experiences of others. Afterwards is the risk zone, where the participant is engaged with the risk. Finally comes the reflection zone,

9

where the participant thinks about the experience and its significance (Ewert &Sibthorp, 2014).

1.3.4.1.3 Stress and Fear

Using risk capitalizes on opportunities that are provided by stress and fear. Stress is experienced when a participant perceives demands to be greater than their skills or abilities. It is a condition that arouses anxiety and fear, along with other psychological and physiological symptoms (Ewert 1989; Ewert & Sibthorp, 2014).

There are two main purposes for using fear: teaching people about themselves and teaching people to overcome fear (Ewert, 1989). Fear impels the learner towards self-improvement and achievement, and fear-provoking activities are open to use in personal testing, self-imagery, stress coping, optimal arousal, sensation seeking, and learning. Following the Yerkes-Dodson law (Yerkes & Dodson; 1908), instructors and program coordinators need to be aware that although using fear is beneficial, too much fear can inhibit both learning and performance (Ewert, 1989, Ewert & Sibthorp, 2014).

To capitalize on fear, Rachman (1974) suggests using three techniques for modifying fearful situations: systematic desensitization, flooding, and modeling. In an OAE setting, Ewert (1989) adds a fourth technique: rehearsal. The first technique, systematic desensitization, involves gradual exposure to fear over a period of time. To use this method effectively, instructors should allow students to approach fearful situations slowly and incrementally to give them time to adjust. Rachman's second technique, flooding, involves exposing participants to a fearful situation for a prolonged period of time. When using this technique, it is important to provide students with coping mechanism, for prolonged exposure can lead to decreased performance and attention to safety. The third technique, is modeling. Modeling is the process of showing students coping strategies that can be used to deal with the fear experienced in a situation. Closely related to modelling is Ewert's (1989) additional strategy rehearsal. "Rehearsal provides the student with the direct experience necessary for effective learning," it involves practicing the coping strategies used in modeling in real situations under the supervision and guidance of the instructor (Ewert, 1989, p.78).

Fear modification strategies allow instructors to modify the level of fear experienced by participants (Rachman, 1974, Ewert, 1989). By capitalizing on risks presented in the unfamiliar situations inherent to the natural environment, OAE programs drive participants into uncertainty associated with risk and fear (Ewert, 1989), encouraging them to reachieve harmony in these situations by challenging the uncertainty and engaging with the risk (Walsh & Gollins, 1976).

1.3.4.2 Social Setting

Social setting is another important part of OAE programs. Social settings change from program to program, and are shaped collectively by individual members of the group, making them complex, dynamic, and interconnected systems (Sibthorp & Jostad, 2014). Each individual brings their personality, cultural beliefs, ideas of organization and structure, opinions, learning styles, and experiences to the course, collectively shaping the social setting of the program and making it unique (Ewert & Sibthorp, 2014; Sibthorp & Jostad, 2014).

Program remoteness leads participants to experience a sense of physical and physiological separation from the life at home. This separation allows them to practice meeting new people in a new environment united by the structural components of specific tasks like cooking, eating, and camping (Sibthorp, & Jostad, 2014).

Another factor in the social setting is the relationship between course goals and participant goals. As well as working together to achieve task-specific course goals, students also bring personal goals that guide their motivation and action for participating in the program. The alignment of group and individual goals guides group interaction (Sibthorp & Jostad, 2014).

Part of the instructor's role is to mediate the relationship between personal and group goals. To accomplish this, they must first build rapport with the group members. Trust in an instructor is influenced by student perceptions of the instructor's technical ability, interpersonal ability, benevolence, and personal integrity (Shooter, Paisley, & Sibthorp, 2012).

Once trust is established, the group can come together through authentic relationship development which is largely a function of time. Relationship forming is central in the OAE process, and is a necessary pre-requisite for many course outcomes like teamwork and individual development (Sibthorp & Jostad, 2014).

1.3.5 Reflection in OAE

A final teaching strategy critical to OAE programming is reflection. Reflection allows students to be actively involved in the construction of their own understandings, helping them prime what they have learned to be used in future situations (Thomas, 2015). This is one of the core principles of OAE; "to fully meet the goals of OAE, learning and meaning must also be useful to participants later in life. The importance of this transfer of meaning cannot be understated – it constitutes a major part of OAE philosophy" (Ewert & Sibthorp, 2014, p.37). Reflection is the vehicle helping students take learning insights from field experience, internalize them, and use them in the future (Thomas, 2015).

Reflection happens in many different ways. Traditionally, reflection takes place in the form of a post-course debrief, but there has been a movement to include other types of reflection as well. This can be facilitated by activities like journaling, down time, solo experiences, artwork, storytelling, poetry, and creative writing to help students tap into alternative ways of representing experiences (Ewert & Sibthorp, 2014; Thomas, 2015).

As well as coming in different forms, reflection can also come at different times. Often, reflection is thought of as something that happens after an experience, but really it is most desirable within (Ord & Leather, 2011). Given the excitement inherent to adventure activities, participants often converse and reflect on their actions throughout the day, facilitating cognitive processing without formal structure of any sort (Ewert & Sibthorp, 2014).

Even though reflection will happen for some automatically, for others it is a more deliberate process, highlighting that instructors should facilitate reflection whenever possible. This can be achieved by applying any of the strategies outlined above throughout the program to facilitate a cycle of action and reflection (Ord & Leather, 2011; Thomas, 2015).

These sections provide a general understanding of OAE program structure and commonly used teaching strategy. Programs use adventure experiences in outdoor settings to teach students outcomes that stretch into other parts of their lives. To facilitate OAE experiences programs engage in fieldwork involving challenging activities facilitated by an instructor in specific environmental and social settings. Reflection is a key part of this process and is used to help students internalize and understand their experiences and the value they hold in the future.

1.4 The Outward Bound Process

One example of a program model that combines all of these teaching strategies is the Outward Bound process (OBP). The OBP functions using a characteristic set of problemsolving tasks where a learner, guided by an instructor, is put into prescribed physical and social environments which impel the participant to master the tasks (Walsh & Gollins, 1976). Elements in this process are similar to those used in OAE; they consist of a learner, a prescribed physical environment, a prescribed social environment, a set of characteristic problem-solving tasks, and an instructor.

The first necessary part of the process is a learner. To take anything away from the program, the learner needs to be motivated, and motivations for joining the program will largely shape the outcomes that are produced. Consequentially, the learner must act as if there is something to be gained from participating in the program, or else the outcomes will be negligible. Instructors should use tasks that fit with learner motives for coming to the program (Walsh & Gollins, 1976).

The next step in the process is to select a physical environment that is unfamiliar to the participant. The more contrast between the participant's normal environment and the prescribed environment the better. This contrast is the first step towards moving the learner into a state of adaptive dissonance (Walsh & Gollins, 1976). Outdoor environments do well to facilitate this contrast, and are especially potent in their educational possibilities because they are highly stimulating, neutral in their arbitrary and consequential rules, and tasks performed in them tend to be straightforward (Walsh & Gollins, 1976).

The social environment used in the Outward Bound process is a ten-group, an interdependent peer group of anywhere from seven to fifteen people. The group is united by a collective goal important enough to allow for a collective consciousness between individuals. Ten groups are large enough to accommodate behavior types, while being small enough to prevent cliques from forming, and large enough to have conflict, while being small enough to solve it (Walsh & Gollins, 1976).

The next step in the OBP is to select a task for the group. Tasks need to meet certain criteria; they need to be organized, incremental, concrete, manageable, consequential, and

holistic. They are organized in that they are intended to be planned, programmed, and managed; incremental in that they should be introduced incrementally in terms of complexity and consequence; concrete in that they are recognizable as limited in space and time; manageable in that they can be solved with the use of common sense and the application of basic skills taught in the course; consequential in that they hold real consequences that are not vicariously ramified; and holistic in that their solutions require the fullest engagement of an individual's mental, emotional, and physical resources (Walsh & Gollins, 1976).

Being placed in these unfamiliar physical and social environments and run through a series of these tasks causes trepidation, moving the learner into a state of adaptive dissonance and motivating them to master the task to reachieve harmony (Walsh & Gollins, 1976).

Instructors are instrumental in this process; their jobs include translating, initialing, training, maintaining, authorizing, guarding, and exampling for the learner. This role is best described by Walsh and Gollins (1976, pp.10-12): instructors

act as a translator, facilitating the connection between the OBP experience and the learner; an initiator, constructing situations conducive to the exploration of various alternatives to problems; a trainer, transmitting skills necessary to function in the prescribed environment; a maintainer, making moves towards resolution; an authority figure, holding the final word within the ten-group; a guardian, continually assessing the state of each individual; and an exemplar, demonstrating characteristics considered instrumental in enabling the students to employ alternatives to problems and transferring successful alternatives to future experiences.

A key step in this process is achieving mastery. In Outward Bound, mastery describes an experience where the learner finds it rewarding to solve reasonable and consequential problems within a supportive group and stimulating environment. Opportunities for mastery are not presented ordinarily, and through these experiences, the OBP facilitates an "enlarged and congruent perception of self," helping participants reorganize meaning and direction of their lives (Walsh & Gollins, p. 12). This results in benefits like self-preservation, self-actualization, perseverance, initiative, reflection and experimentivesness, and shows learners they can do things they have not done before, helping them build positive attitudes towards difficult problems in the future (Walsh & Gollins, 1976).

The Outward Bound process is an example of how fieldwork, adventure activities, instruction, setting, and reflection can come together in one program to provide transferable benefits to the learner. The process is widely used in OAE, particularly in Outward Bound schools around the world. The first school was established in Aberdovey, Wales in 1941, and was created to address the lack of a "will to live" among young British Sailors who "were mechanics, engineers, and technicians who seldom encountered the raw nature of the sea..., [and were thus] less capable of bearing the hardships associated with its power" (Martin et al., 2006, p.18-19). From the beginning, Outward Bound has been an education through outdoor pursuit rather than an education for outdoor pursuit, and has aimed to provide students with experience that benefits the individual beyond the context of learning and into other areas of life (Martin et al., 2006). Since conception in Aberdovey, Outward Bound has grown and now operates thousands of courses annually in over 30 different countries around the world (Outward Bound, 2017).

In addition to it's widespread use, support for the Outward Bound process is also present in OAE research literature. McKenzie (2003) found the aspects of the process with the most effect on participant outcomes are the physical and social environments, the instructors, the characteristics of individual learners, and the activities and tasks that serve as learning experiences. In another study, Martin and Leberman (2005) affirmed the importance of these different program qualities, highlighting in particular the role of activities and tasks assigned on course in helping participants remember skills and outcomes after the course.

Student outcomes in Outward Bound process are influenced by a combination of course components and the characteristics of the student (McKenzie, 2003). The process is an effective strategy for teaching students transferable outcomes that have a lasting effect on their lives and lead to future instances of success (Hattie et al., 1997). Some outcomes attributed to the Outward Bound process include providing participants with a sense of self regulation, a better understanding of leadership, increased awareness of personality, additional likelihood to take part in adventure, and ability to work with others in a team (Goldenberg, McAvoy, Klenosky, 2005; Hattie et al., 1997).

15

2 Learning Transfer

The next part of this project examines learning transfer, exploring what it is, and how it has evolved over time.

2.1 What is Learning Transfer?

Essentially, learning transfer is "the application of knowledge learned in one context to a new context" (Lobato, 2006, p.436). It is a generalization of learning understood as a combined influence of a learner's prior experience interacting with the context of a situation at hand (Lobato, 2006).

Learning transfer is an important phenomenon in education (Barnett & Ceci, 2002). One of the goals of education is "to provide learning experiences that are useful beyond the specific conditions of initial learning" (Lobato, 2006, p.431). Given that the context of learning often differs from the context of application, "the ends of education are not achieved unless transfer occurs" (Perkins & Salomon, 1992, p.3).

Transfer occurs "whenever previously learned knowledge and skills affect the way in which new knowledge and skills are learned and performed" (Simons, 1999, p. 577). Transfer is necessary for any learning to be drawn upon at a later time. "To say that learning has occurred means that the person can display that learning later. Even if the later situation is very similar, there will be some contrast – perhaps the time of day or the physical setting" (Perkins & Salomon, 1992, p.3).

Regarding the transfer process, "psychologists have widely adopted the view that transfer is the recruitment of previously known, structured symbolic representations in the service of understanding and making inferences about new, structurally similar cases" (Day & Goldstone, 2012, p.154). Generally, this process will happen in one of three ways: prior knowledge and skills can inform new learning, new knowledge and skills can inform new learning, and new knowledge and skills can be applied to work and daily life (Simons, 1990, as cited in Simons 1999).

For the most part, transfer literature tends to focus on the third instance; how we can build instructional and organizational environments that help facilitate transfer from one situation to another (Simons, 1999), this is also the focus in this document.

2.2 Types of Transfer

At this point, a working definition of learning transfer has been established as the generalization of learning from one context to be later used in another; however, there are more ways in which transfer can be classified: transfer can be positive or negative, near or far, and can make use of low road and high road strategies (Perkins & Salomon, 1992).

Positive and negative transfer describe the impact on performance. In positive transfer, learning in one context improves performance in another context. In negative transfer, learning negatively affects performance in a new context (Perkins & Salmon, 1992). Positive transfer is desired in educational contexts (Baldwin & Ford, 1988; Perkins & Salmon, 1992; Wexley & Baldwin, 1986).

In addition to positive and negative transfer, there are also near and far transfer. Near and far transfer describe the proximity of contexts from which the transferable skill originates and where it is applied. In near transfer, the two contexts are similar (Holladay & Quinones, 2003; Larsen-Freeman, 2013; Perkins & Salomon, 1992), thus the probability of transfer is much greater (Perkins & Salomon, 1992). In far transfer, the two contexts are widely separate (Brown, 2010; Holladay & Quinones, 2003; Larsen-Freeman, 2013; Salomon & Perkins, 1992). Far transfer requires recognition of the logical structure underlying an issue, and comparison to similar structures experienced in previous settings (Larsen-Freeman, 2013; Yorks, Lamm & O'Neil, 1999). The main issue with this type of transfer is that students have difficulty seeing connections between the two contexts (Larsen-Freeman, 2013).

Barnett and Ceci (2002) noted that the terms near and far have been used by different researchers to mean different things, and the meaning of the terms has become unclear. Following this observation, they develop a taxonomy for far transfer (*Figure 2*) that considers the dimensions of a transfer content and context, and places them along a continuum of near and far.

A Content: What transferred							
Learned skill	Procedure	Representation	Principle or heuristic				
Performance change	Speed	Accuracy	Approach				
Memory demands	Execute only	Recognize and execute	Recall, recognize, and execute				

B Context: When and where transferred from and to									
	Near ∢				→ Far				
Knowledge domain	Mouse vs. rat	Biology vs. botany	Biology vs. economics	Science vs. history	Science vs. art				
Physical context	Same room at school	Different room at school	School vs. research lab	School vs. home	School vs. the beach				
Temporal context	Same session	Next day	Weeks later	Months later	Years later				
Functional context	Both clearly academic	Both academic but one nonevaluative	Academic vs. filling in tax forms	Academic vs. informal questionnaire	Academic vs. at play				
Social context	Both individual	Individual vs. pair	Individual vs. small group	Individual vs. large group	Individual vs. society				
Modality	Both written, same format	Both written, multiple choice vs. essay	Book learning vs. oral exam	Lecture vs. wine tasting	Lecture vs. wood carving				

Figure 2. Barnett and Ceci's (2002) Taxonomy for Far Transfer. Reprinted from "When and where do we apply what we learn? A taxonomy for far transfer." S. Barnett & S. Ceci (2002) *Psychological Bulleting* 43 p.612.

In developing the taxonomy, the authors looked primarily at two factors: the content – what is being transferred, and the context – where the content is being transferred from and to. They determined that content tested in transfer experiences can be categorized as learned skills, performance changes, and memory demands, and placed along a continuum from specific to general. After classifying the skill, improvements in performance can be measured by looking at speed, accuracy, and procedure approach before testing the skill for desired recall, recognition, or prompted execution (Barnett & Ceci, 2002). As well as determining the near or far character of the content, Barnett and Ceci (2002) also developed a way of assessing the character of the context. For assessing context, they developed a model that uses six dimensions to evaluate the near or far character of context. The dimensions include knowledge domain, physical context, temporal context, functional context, social context, and modality, and places studies along a near-far continuum (Barnett & Ceci, 2002).

The taxonomy is useful for several reasons. It shows that concepts of near and far transfer are connected and better understood when positioned along scale ranging from near to far. It also demonstrates that much of the transfer research conducted to date is ambiguous in its classifications, needing further development to understand how near or far the dimensions of content and context are (Barnett & Ceci, 2002).

Learners need to do different things to facilitate near or far transfer. "A strategy for near transfer may be inappropriate or ineffective for far transfer and the other way around" (Simons, 1999, p.581). Low road and high road transfer describe how the transfer process is enacted; "sometimes the transfer process is stimulus driven... [and other times] transfer involves a high level of abstraction and challenges of initially detecting possible connections" (Perkins & Salomon, 1992, p.9).

Low road transfer involves well-practiced routines that are triggered by stimulus conditions similar to those in the learning context (Larsen-Freeman, 2013; Perkins & Salomon, 1992). It occurs "when a skill that has been practiced to the point of automaticity in one context is spontaneously elicited by a new context" (Cox, 1997, p.46). Low road transfer can trigger near or far transfer (Cox, 1997), but due to its reflexivity, low road transfer occurs most often in near transfer (Perkins & Salomon, 1992).

Where low road transfer relies on stimulus, high road transfer relies on abstraction and a search for connections (Cox, 1997; Larsen-Freeman, 2013; Perkins & Salomon, 1992). This method of transfer is not generally reflexive, and requires learners to ask questions about the structure of the situation: "What is the general pattern? What is needed? What principles might apply? What is known that might help?" (Perkins & Salomon, 1992, p.8). Due to the necessity of abstraction, high road transfer is best suited for instances of far transfer (Simons, 1999). The majority of learning situations do not encourage this kind of mental investment, and learners who are inclined to mindfulness and metacognition are more likely to find success using this approach (Perkins & Salomon, 1992, p.9).

In summary, transfer can be classified in several different ways; it can be positive or negative, near or far, and can make use of low road or high road approaches. In OAE, generally what practitioners are looking for is positive near and far transfer, making use of either the low road or high road approach depending on the skills. For example, near transfer is what practitioners are looking for when students are applying hard skills used in adventure activities to continued pursuit of these activities post-course. Given the surface similarities between contexts in for example a rock climbing course and a post-course rock climbing environment, learners can make use of a low road approach to bridge the differences between the two contexts. Here skills like belaying, anchor building, and climbing will transfer automatically because of similar conditions in the two environments and iterative performance of the skills following the mastery fostered in the course.

When contexts differ and surface similarities are not present, students will need to make use of far transfer and a high road approach. An example where this occurs is transferring teamwork skills learned in a backpacking course to an office environment. Although the skills are similar, the connection between the two environments are not obvious, requiring the participant to use a high road approach. By taking into account the structural similarities between the two situations, participants can apply the teamwork skills they used in the backpacking course in an office environment.

2.3 The Evolution of Learning Transfer

Theory underlying learning transfer has had a long history of change. Some of the major evolutionary steps include its conception as surface similarity, movements to include transfer by insight and cognitive understandings, incorporation of contextual factors, shifting to a learner driven process, and most recently rethinking transfer as transformation.

The original concept of learning transfer was put forth by Thorndike and Woodworth (1901) "as a challenge to the mental discipline theory" that asserted the mind could be improved generally by studying difficult subjects like Greek, Latin, and Geometry (as cited in Cox, 1997, p.42). The authors disagreed with this conception, believing that transfer was instead a function of identical stimulus across different tasks (Cox, 1997).

In a study examining the role of Latin in preparing people for better performance in other subject matters, Thorndike (1923) found no connection, a finding that has re-emerged in other investigations (Salomon & Perkins, 1992). He concluded transfer was instead a function of identical elements, and "is maximized to the degree that there are identical stimulus and response elements in the training and transfer settings" (Thorndike & Woodworth, 1901, as cited in Baldwin & Ford, 1988, p.66).

An early critic of Thorndike and Woodworth's approach was Judd (1908) who argued transfer occurs as a function of conceptual understanding of the original problem, and how it shares similarities with the structure of future problems (as cited in Carraher & Schliemann, 2002, p. 2). This criticism extends transfer beyond surface similarities between situations to include cognitive elements. Cognitive approaches to transfer were not widely accepted at the time, but gained popularity later on in the 1970s.

Gestalitists expanded conceptions of learning transfer in the 1940s with their notion of transfer by insight (Carraher & Schliemann, 2002; Cox, 1997). These ideas built on Thorndike and Woodworth's common elements approach, asserting there was cognitive baggage attached to stimulus elements affecting the way they were perceived across situations. This baggage came as a result of perceiving stimuli as wholes and perceiving the world in a holistic way (Cox, 1997).

During the cognitive revolution of the 1970s, the majority of transfer researchers converted to a cognitive understanding of transfer (Cox, 1997), and "as interest in cognition grew, researchers began to find evidence of how learners used previous knowledge to approach new situation[s]" (Carraher & Schliemann, 2002, p.4).

The cognitive approach sees knowledge represented in terms of systems of discrete symbols, corresponding to meaningful concepts. To represent a situation, the symbols are organized in a structural syntax that defines relationships between concepts in the situation (Day & Goldstone, 2012). By removing the symbols from the syntax, the learner is left with a framework that represents the situation. The cognitive approach believes that by filling this framework with the symbols of a new situation, learning transfer can occur (Day & Goldstone, 2012).

To transfer these frameworks, abstract conceptualization is a necessary prerequisite; researchers suggested learners familiarize with multiple situations that employ similar frameworks to construct an abstract representation that spans them (Lobato, 2006).

The next advancement in understanding learning transfer came at the end of the 1980s. Theoretically, the cognitive approach is strong, but in research theorists were unable to find evidence supporting the theory. On the contrary, research showed successful instances of transfer were frequently attributed to surface similarities between contexts (Carraher & Schliemann, 2002; Day & Goldstone, 2012). Some research did support the cognitive approach, but as Lave (1988) pointed out in his book *Cognition in Practice: Mind, Mathematics, and Culture in Everyday Life* much of that research was flawed in its methodology (as cited in Carraher & Schliemann, 2002, p.3).

In his book, Lave advocated for a situational approach, where learning and thinking take place in specific contexts, which are essential to what is learned and thought (as cited in Carraher & Schliemann, 2002, p.3). He asserted all knowledge is a by-product of a particular context, and is closely tied to the situation and place in which it originates. Lave's (1988) viewpoint asserts that transfer is not possible because every situation is different (as cited in Day and Goldstone, 2012, p.164). He held a strong position for the importance of local knowledge (as cited in Perkins & Salomon, 1992), predicting

little far transfer under any conditions because knowledge in one context would not be very relevant to others. However, contemporary research on expertise does not really force such as position: the importance of local knowledge does not imply the unimportance of rather general knowledge that works together with local knowledge (Perkins & Salomon, 1992, p.6).

For transfer to be successful, the learner needs to combine general and local knowledge (Carraher & Schliemann, 2002).

Moving into the 21st century, learning transfer continues to evolve. A shortcoming of transfer theory to this point is a failure to account for the perceptions of the individual engaged in transfer, and the mediating factors by which individuals activate and apply prior learning (Larsen-Freemen, 2013).

Constructivism is useful here; "from the constructivist view... the learner's perspective must be considered first" (Simons, 1999, p.578). Constructivism asserts that

learners create their own understandings, facilitating a comprehension of learning transfer from an actor-oriented position where individuals form personal similarities across situations (Lobato 2003).

A constructivist approach accounts for general knowledge and local knowledge in the situation. After taking local knowledge into account, learners need to scrutinize the situation to determine whether or not previously encountered general knowledge can be applied in the new situation (Lobato, 2006; Larsen-Freeman, 2013). Within this approach, "the environment and individual are no longer strictly separate, but dependent, with [personal] context and meaning forming an integral part of learning" (Cox, 1997, p.49).

Transfer has come a long way in the past hundred years; however, researchers are not much farther in developing the concept than they were at the turn of the twentieth century (Barnett & Ceci, 2002). Thorndike and Woodworth's elementarianism approach has "become progressively more adaptive and subjective, but even though the units are larger, the [primary] elements [of a learner and context] remain" the focus (Cox, 1997, p.49).

Some assumptions underlying the transfer metaphor have recently come under fire. Carraher and Schliemann (2002)

believe that the metaphor underlying transfer – namely of transporting knowledge form one concrete situation to another – is fundamentally flawed, and leads to an impoverished caricature of how learning actually works. Situations and contexts cannot be treated exclusively as 'givens' because to a large extent they are mental constructions (p.22).

These criticisms give light to the current views of transfer. Transfer is not a matter of exporting an intact bit of knowledge from within the classroom to beyond or even of students "reusing: what they have been taught, but rather of students transforming what they have learned" (Larsen-Freemen, 2013, p.108).

Transformation is an optimizing process that can be explained using Jean Piaget's theories of human development. As humans develop, information systems are organized, adapted, assimilated, and accommodated. As new information is absorbed, it is organized into frameworks that are later adapted to fit different environments (as cited in Priest & Gass, 2005). When a learner tries to adapt this framework to a new context, they are

transferring using the transportation metaphor, failing to consider the new available information and difference in context.

These situational differences are remediated in the assimilation and accommodation phases. In the assimilation phase, both local and general knowledge are added into the framework. General knowledge is used whenever possible, and local knowledge fills the gaps to prepare the framework for application. Inevitably, the framework will not fit the new context because no two situations are exactly alike. At this point, the learner moves into the accommodation stage where the framework is altered to fit the parameters of the current situation (Priest & Gass, 2005). By reframing our understanding of transfer as transformation, learners can build on frameworks developed in training to fit the constraints of the present situation (Larsen-Freeman, 2013).

Despite extensive development in understanding learning transfer, there remains little agreement in the scholarly community regarding the nature of transfer, and the extent to which it occurs (Barnett & Ceci, 2002; Brown, 2010; Larsen-Freeman, 2013). Part of this stems from how transfer is perceived. Some authors willingly accept transfer as a fundamental prerequisite for education, while others assert that it is "not an uncontested fact but rather a theoretical approach to learning" (Carraher & Schliemann, 2002, p.1).

Another factor in this disagreement is that "researcher progress in understanding and supporting the generalization of learning has been limited due to methodological and theoretical problems with the transfer construct" (Lobato, 2006, p.431). A paradox that researchers face is that on one hand, obtaining consistent "evidence of transfer from laboratory and school-based studies remains largely elusive; [while] on the other hand, nearly all learning theories presume that as people learn, they are continually using prior knowledge" (Lobato, 2006, p.435).

Despite these criticisms and learning transfers complex evolution, the concept remains salvageable (Barnett & Ceci, 2002), and is an underlying assumption across many streams of education.

3 Learning Transfer in OAE

This section of the project will examine learning transfer in OAE. Specifically, it will examine the importance of transfer, difficulties with transfer, and transferable outcomes.

Transfer is a fundamental assumption in OAE (Sibthorp et al., 2011). "Adventure programs emphasize an immediate quality of experience" and aim "to have these immediate experiences impact later experiences" (Hattie et al., 1997, p.74). The positive effects that programs have on an individual's future underlie the credibility of adventure programs (Gass, 1985). Transfer has "become the mechanism that legitimates the use of challenging outdoor experience as it serves to integrate learning from the adventure program into the participant's real life" (Brown, 2010). "Not only is transfer important for adventure education programs, it also has been identified as critical for the support, continuation, and/or livelihood of such programs" (Gass, 1990, p.199).

Despite the importance of transfer to OAE livelihood, it is not without criticism. For the most part, OAE relies on theoretical research from psychology and education, and mechanism research from HRD. This has caused OAE to often omit negative findings and focus strictly on the positive (Hattie et al., 1997).

Brown (2010), writes from an OAE perspective, echoing criticisms of transfer researchers; he believes that OAE should not use transfer metaphors at all because the research is ambiguous and fails to take into account the situational nature of knowing and acting. Brown's critique highlights a major challenge experienced in OAE; creating change in an environment that is very different from the one in which it teaches (Gass, 1985). Perhaps instead of applying the transfer metaphor, practitioners should use Larsen-Freeman's (2013) transformation metaphor in order to address differences between contexts. A shift to seeing transfer as transformation addresses Brown's (2010) criticism, taking into account the situational nature of knowledge creation and the accommodation that must occur to transform knowledge to fit the new context. By shifting conceptions from transfer to transformation, OAE can address the differences between contexts where knowledge and skills are developed and where they are later applied.

3.1 Transferable Outcomes

Despite criticism of the role of transfer in OAE, research has found an abundance of outcomes transfer from OAE programs to situations at work, in outdoor recreation, at home, and in other activities (Holman & McAvoy, 2005). What participants take away from an OAE program depends on what the program provides and what the participant chooses to process and learn. Ultimately, the individual's motivation, experience, and disposition

determine what they will take away (Ewert & Sibthorp, 2014). Generally, transferable outcomes can be categorized as either interpersonal or intrapersonal.

3.1.1 Interpersonal Development

Interpersonal development involves changes in how a person interacts with others. OAE programs foster this type of development because of properties like remoteness, instructor presence, group setting, shared goals, and small group expeditionary program design (Ewert & Sibthorp, 2014). These properties interact to create a powerful medium for interpersonal development. Remoteness forces participants to interact, and working together towards a common goal allows teamwork to come naturally. In many OAE models, groups stay together. This necessitates that the group maintains a minimum level of functionality, and forces the groups to enter and resolve conflict. Communication skills are honed in this environment, and the relationship between individuals and the group becomes bidirectional; what happens to the group affects the individual and vice versa (Ewert & Sibthorp, 2014). Transferable interpersonal outcomes can be broken down into three subcategories; group outcomes, group-dependent outcomes, and intact group outcomes.

3.1.1.1 Group Outcomes

Group outcomes from this process include group cohesions, sense of community, and collective efficacy (Breunig et al., 2008; Ewert & Sibtrhop, 2014; Glass & Benshoff, 2002). Group cohesion relates to task and socially related factors keeping the group together. These help to foster group performance, intergroup communication, and group goal achievement, and are in part caused by both the remote nature of the program and the time that individuals spend together (Ewert & Sibthorp, 2014). Additionally, group work teaches students to develop positive attitudes towards group work in the future, and helps students feel more confident in groups (Cooley, Burns & Cumming, 2014).

A sense of community helps foster a sense of belonging, mattering to others, and mutual commitment among course participants. This develops over time as the program unfolds, and prepares individuals for future instances of bonding together, developing increased mutual understanding, and forming cohesive groups or teams (McMillan & Chavis, 1986).

Collective efficacy is another group outcome and is an aggregate of group member's individual belief in the group's ability to perform a specific task or in a certain domain. OAE

improves collective efficacy within pre-established groups as well (Wells, Widmer & McCoy, 2004).

3.1.1.2 Group-Dependent Outcomes

As well as facilitating group outcomes, OAE can also facilitate group-dependent outcomes. Individuals reap the benefits of group-dependent outcomes, but a group setting is needed for their development. Two group-dependent outcomes learned in OAE are leadership (ACA, 2005,) and social competence (Ewert & Sibthorp, 2014).

Leadership is an inherent skill to OAE, and development opportunities are provided in leader of the day exercises, emergent leader situations, and in learning to support and work with a leader (Sibthorp et al., 2011). Some specific transferable skills developed through leadership are communication skills, charisma, conscientiousness, decision making, teamwork, organizational ability, time management, values, and goals (Ewert & Sibthorp, 2014; Hattie et al., 1997).

Other group dependent outcomes are developed through engaging in the OAE social setting. Practicing interacting with others allows participants to develop social skills, social competences, social self-efficacy, cooperation, and interpersonal communication skills (ACA, 2005; Hattie et al., 1997; Holman & McAvoy, 2005; Kellert, 1998).

3.1.1.3 Intact Group

Although usually involving a group of strangers, OAE programs offer benefits for intact groups as well. These groups bring with them preexisting relationships and dynamics, and have the opportunity to develop interpersonal relationships that accompany the group beyond the course setting (Ewert & Sibthorp, 2014). Intact groups can benefit from support teambuilding and increased feelings of integration (Cooley, Burns & Cumming, 2014).

3.1.2 Intrapersonal Development

As well as providing interpersonal benefits, OAE can also be useful for teaching participants transferable intrapersonal skill. These outcomes can be divided into self-constructs, skill-building, and mental/emotional states (Ewert & Sibthorp, 2014).

3.1.2.1 Self-Constructs

OAE is well positioned to develop participant ideas of self. Participants commonly note changes in self-confidence (ACA, 2005; Hattie et al., 1997; Holman & McAvoy, 2005;

Kellert, 1998; Sibthorp, 2011), self-perception (ACA, 2005; Kellert, 1998), and self-efficacy (Kellert, 1998).

OAE also promotes the development of self-regulatory skills, including a person's ability to modify and adjust his/her motivational, affective, cognitive, and behavioral strategies while working towards a goal. Self-regulatory skills are inherent to OAE programs where goals and planning are necessary to successfully travel and live in the backcountry (Ewert & Sibthorp, 2014).

Hattie et al. (1997) also support the notion of personal development through OAE. They indicated OAE programs can foster development of self in areas like physical ability, peer relations, general self, physical appearance, academics, confidence, self-efficacy, family, self-understanding, and well-being, as well as facilitating development of personality traits like assertiveness, reduction in aggression, achievement motivation, emotional stability, femininity, internal locus of control, maturity, neurosis reduction, and masculinity.

In addition to these outcomes, OAE can also help facilitate other transferable selfconstructs like a sense of autonomy (Kellert, 1998), independence (ACA, 2005; Kellert, 1998), self-awareness (Holman & McAvoy, 2005; Sibthorp et al., 2011), self-understanding (Holman & McAvoy, 2005), flexibility, and reassessment of coping strategies (Hattie et al., 1997).

3.1.2.2 Skill Building

As well as developing ideas of self, OAE is also useful for developing specific transferable skills. Some skills commonly developed in OAE include problem solving and decision making (Kellert, 1998), resilience, and outdoor skills.

Problem solving and decision making are developed by presenting individuals with problems that have no correct solution. These kinds of problems require students to weigh the different options and select a course of action based on the circumstances and desired outcome. Since there is no correct solution, many solutions exist and participants must apply judgement to obtain their desired solution (Ewert & Sibthorp, 2014).

Another transferable skill developed in OAE is resilience. Problems in OAE typically allow for multiple attempts, allowing participants to succeed through perseverance, and gain the ability to function under difficult circumstances (Sibthorp et al., 2011). Given the

challenging conditions faced by program participants, there are plenty of opportunities to develop this skill (Ewert & Yoshino, 2011; Neill & Dias, 2001; Sibthorp et al., 2011).

OAE is also well suited to teach participant transferable outdoor skills (Hattie et al., 1997; Holman & McAvoy, 2005; Sibthorp et al., 2011). Technical outdoor skill development is fundamental in OAE, as well as providing a vehicle for adventure activities. These skills provide an outcome in their own right. After completing programs, participants can use their outdoor skills to further experience the outdoors and enjoy physical recreation (Ewert & Sibthorp, 2014).

3.1.2.3 Mental States/Perspective

The final category of transferable intrapersonal skills is change in perspective and mental state. OAE has been linked to the ability to reduce negative moods, increase incidents of flow, and produce increased frequencies of optimal engagement (Ewert & Sibthorp, 2014). Spiritual development is another outcome that has been attributed to OAE programs, especially in courses where participants are immersed in nature (Heintzman, 2010; Stringer & McAvoy, 1992). Although negative outcomes from OAE go largely unreported, some students have reported longing for the outdoors as a negative outcome (Sibthorp et al., 2011).

Other changes in perspective and mental state include an increased interest in participation in outdoor activities (Kellert, 1998), an increased appreciation for nature (Hattie et al., 1997; Holman & McAvoy, 2005; Kellert, 1998; Sibthorp et al., 2011), a newfound sense of spirituality (ACA, 2005; Kellert, 1998; Stringer & McAvoy, 1992), and a change in life perspective (Sibthorp et al., 2015).

3.1.3 Long-Term Outcomes

Although much of the transfer research in OAE fails to specify duration of transfer, some research indicates that outcomes can be long lasting. Long term outcomes include challenging assumptions of self and others (Gass, Garvey & Sugarman, 2003), improved relationship skills, self-awareness, enjoyment of life, sense of accomplishment, self-esteem, self-confidence, self-fulfillment (Goldenberg, Russell, Soule, 2011), and ability to work in a group (Cooley, Burns & Cumming, 2014).

In summary, learning transfer is a fundamental assumption in OAE. Despite some criticisms, research has indicated that OAE programs have effectively instilled many

transferable interpersonal and intrapersonal skills among participants, some of which have been reported to transfer to other domains of life for long periods of time.

3.2 A Proposed Model for Integrating OAE and Learning Transfer

Following is a proposed model for integrating OAE and learning transfer. The model draws on constructivism, experiential learning, and learning transfer to explain how skills are developed in the Outward Bound process model. Given that the model concerns transfer, the first course of action is to determine where the transfer comes from. Baldwin and Ford (1988) offer insight here in the form of three transfer inputs, the learner, the program design and delivery, and the work environment, collectively making up the transfer process (explored later in *figure 3*) and representing all of the factors governing transfer. In OAE, where skills are applied is outside the scope of what can be directly affected by the program, so the interaction between the learner and the program is what produces new transferable skills.



In the proposed model, the learner arrives to the OAE program as defined by their past life experience. The learner possesses a set of organized mental schema which are representative of their experiences, and are ready to be adapted and used in future experiences. For the learner to achieve successful transfer, they need to be motivated in program participation and towards the possibility of transfer.

The program setting is characterized by a prescribed physical environment that is unfamiliar to the student and a prescribed social environment of a ten group. Within this setting, the instructor assigns students a set of organized, incremental, concrete, manageable, consequential, and holistic tasks, where they must work together to solve problems and achieve success. This part of the process capitalizes on the Vygotsky's (1978) zone of proximal development; learners are able to draw from not only their past experiences, but also those of the rest of the group. During the tasks, participants experience stress and fear associated with the possibility of failure, leading them to experience trepidation and motivating them into a state of adaptive dissonance.

In attempting to re-achieve harmony within the tasks, students move through Kolb's experiential learning cycle. They attempt the task using the mental schema they have developed in their previous life experiences, reflect on the attempt, conceptualize a future attempt by assimilating contextual factors and accommodating the schema to fit the situation, and finally experiment with the newly accommodated schema. Harmony is achieved when the skill is mastered, and mastery experiences teach students that they can master other difficult challenges in their lives through cycles of practice and reflection.

Within the experience, the learner's primary focus is mastering the task and achieving harmony, but in coping with the physical and social environment where the task occurs, learners pick up a wide range of transferable skills, which are internalized through the practice, feedback, and reflection that accompany the process. This highlights that the primary benefits of the Outward Bound process are the skills acquired through the process and not in mastery of the specific task prescribed by the instructor.

4 Optimizing for Transfer

The research literature on transfer in inconclusive. On one hand, there is an abundance of research supporting the occurrence of transfer; on the other hand, research questions the idea of transfer. "Positive findings of transfer, near and far, suggest that whether transfer occurs is too bald a question. It can, but often does not. One needs to ask under what conditions transfer appears" (Perkins & Salomon, 1992, p.6). This requires an investigation into program design (Simons, 1999) for "closer examination of the conditions under which transfer does and does not occur, and the mechanisms at work" (Perkins & Salomon, 1992, p.10).

Facilitating transfer requires specific strategies that work before, during, and after the training experience (Wexley & Baldwin, 1986). In human resource development (HRD), "transfer requires the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training both on and off the job" (Broad & Newstrom, 1996, p.6, as cited in Lim & Morris, 2006, p.91). In OAE, skills are hoped to transfer beyond the job to other life contexts, but the same effective and continuing application is critical.

Research in OAE has suggested that by designing programs according to certain guidelines, practitioners can help students achieve the ability to transfer their learning to other domains of life. To increase transfer Gass (1985) believed that the selection and design of appropriate learning activities and teaching methodologies was of utmost importance. He criticized OAE for often lacking planning in these areas, and supported emphasizing connections to future learning environments during the initial training as a way to facilitate transfer of skills.

The majority of research in OAE focuses on the outcomes that transfer instead of the processes and strategies that foster transfer. Although OAE programs are fertile environments for fostering transferable learning, little is known about how adventure educators might intentionally facilitate transfer (Sibthorp et al. 2011). Some research on the subject does exist; Gass (1985) provides a list of ten techniques for enhancing transfer. He recommends:

- 1. Designing conditions for transfer before the program begins by creating learning objectives for individual students, and having students establish a commitment to change, set goals for the experience, and put plans and goals in writing.
- 2. Creating elements in the learning program similar to elements that will be found in the future. This involves getting to know the individual and obtaining insight into

their day to day life in order to establish where skills can transfer in the life of that individual.

- 3. Providing students with the opportunities to practice the transfer of learning while still in the program.
- 4. Having consequences of learning be natural and not artificial by allowing the outdoor environment to provide students with feedback regarding their development, helping students develop a reliance on situational/environmental feedback instead of looking to an authority figure for guidance.
- 5. Providing the means for students to internalize their own learning using reflection.
- 6. Including past successful alumni in the adventure program, and encouraging them to share strategies that have facilitated successful skill transfer to other contexts of their lives.
- Including significant others (peers, parents, counselors, social workers, and/or teachers) in the learning process to develop a supportive climate for skill transfer upon return to the home environment.
- 8. When possible, place more responsibility for learning with the student by including students in the planning and operations of the experience in order to increase their motivational levels.
- 9. Developing focused processing techniques that facilitate the transfer of learning.
 - a. Present processing sessions based on the student/client ability to contribute personally meaningful responses.
 - b. Focus on linking the experiences from the present and future learning environments together during the processing session.
 - c. Debrief throughout the learning experience and not just at the end of it, allowing the students to continually focus on the future applicability of present learning.
- 10. Provide follow-up experiences that aid in the application of transfer.

These recommendations provide a foundation for research on OAE program optimization; some of Gass's recommendations are explicit, but others can be further developed. Gass's third recommendation, providing students with opportunities to transfer while still in the program, operates within the program context, but could also consider future context. Elaborating on this recommendation, Gass describes facilitating opportunities to help students achieve skill mastery, an effective strategy for low road approaches and near transfer, but not one that help students achieve far transfer. Far transfer is necessary if these skills are to be used in other life contexts, and is difficult for students to practice while engaged in the program. One potential strategy for simulating far transfer is to provide students with hypothetical situations in debriefing sessions and have them think about how new skills can be applied in situations they often face in their lives.

In recommendation five, Gass suggests providing opportunities for internalization facilitated by reflection through students verbalizing their learning outcomes and subconsciously developing their own transfer metaphors. In addition to these strategies, instructors can also encourage other forms of student reflection. Some students may not be comfortable voicing the outcomes they are taking away, and may experience more success in less structured reflective activities like writing poetry, drawing, or journaling (Thomas, 2015). As well as debriefing post course, it is important for instructors to encourage students to reflect throughout the program; this often occurs naturally within OAE settings between participants, but can also be facilitated by conversation prompts by an instructor (Ord & Leather, 2011). Students may not respond verbally to prompts, but the goal is to facilitate reflection and subsequent internalization so skills can be transferred later on.

Another one of Gass's recommendations that could be further developed is number ten, providing follow up experiences that aid in the application of transfer. Here Gass describes strategies for fostering transfer within the program like having students reflect on their experiences and providing instructor feedback on decisions and processes, but the recommendation fails to address transfer beyond the program. Instructors can help facilitate transfer after the program by performing post-course check-ins and encouraging participants to buddy up and maintain contact for post-course reflection. These strategies provide opportunities for students to reflect on how they have or have not applied new skills in their lives, and can also be useful for showing students new opportunities for skill development.

In addition to Gass's recommendations, other disciplines also provide guidelines for optimizing transfer. In HRD, optimizing learning transfer from training to job contexts has been a high priority because often, trainees do not transfer the concepts they learn in training to the job (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Grossman & Salas, 2011; Lim & Morris, 2006).

To optimize programs for transfer, Baldwin and Ford (1988) developed a model of the transfer process (*figure 3*), which identifies several different factors that need to be considered.



Training Outputs

Conditions of Transfer



Figure 3. Baldwin and Ford's (1988) Model of the Transfer Process Reprinted from "Transfer of training: A review and directions for future research." T. Baldwin & K. Ford (1988) *Personnel Psychology* 41 p.63.

Baldwin and Ford's (1988) model explains the learning transfer process in three phases: training inputs, training outputs, and conditions for transfer. Variables in the first phase, training input, include program design, trainee characteristics, and the work environment, and can be used to categorize different mechanism in the transfer process. The third variable here, the work environment, reflects the desired transfer context for the training. In OAE, the desired transfer context extends beyond the job, so the work environment should instead be looked at as the environment of application. The second phase, training outputs, describes the amount of original learning and retention that occur during the program, and is a function of training input factors. The third phase, conditions for transfer, describes how learning outputs are generalized and maintained after the program to be drawn upon at a later time.

Within Baldwin and Ford's (1988) process, the three training inputs are the source of training outputs and conditions for transfer, and therefore govern the transfer process. In order to optimize programs, instructors need to devote their attention to these three inputs. Some of these inputs are easier to influence than others, and HRD professionals have identified strategies used in the training delivery and design and the environment of application as the most effective ways to influence transfer (Burke & Hutchins, 2008).

To optimize these transfer inputs, practitioners can apply specific transfer mechanisms, "variables that can affect the amount of transference that learners realize" (Sibthorp et al., 2011, p111). Some mechanisms that increase transfer in HRD include supervisory support, opportunity to practice new skills, measuring the success of transfer to the work environment, coaching, and making training relevant to the transfer environment (Burke & Hutchins, 2008).

HRD is better positioned to facilitate transfer than OAE because the work environment can be readily adapted to fit the needs of the new skill being transferred. OAE practitioners do not have the same luxury, and the environment of application is considered outside the scope of OAE's direct influence (Sibthorp et al., 2011). In order to maximize transfer in OAE, instructors need to address all three transfer inputs during the time students spend on course. This involves getting to know the characteristics of each student in the beginning of the course, and tailoring program delivery and design to match the needs of each student. Since it is difficult for OAE to affect the environment of application directly, students need to be prepared for re-entry into their other life contexts while still enrolled in the program.

Another discipline that has conducted research on program optimization is psychology. For the most part, psychologists are concerned with transfer as a phenomenon,

and have shaped conceptions of what transfer is. Some recommendations for optimizing programs do exist; Simons (1990, as cited in Simons, 1999, p.585, 586) provides recommendations for facilitating near and far transfer respectively. In order to facilitate near transfer, he recommends:

- 1. Formulating learning goals that aim for near transfer;
- Establishing goals with a needs assessment and relating goals to the intended transfer environment;
- 3. Making goals as concrete as possible;
- 4. Accommodating goals for different learner experience levels;
- 5. Giving participants information about the goals and the contents at the beginning of the course in order to correct incorrect expectations;
- 6. Choosing learning contents that connect to concrete or simulated work situations;
- 7. Clarifying judgement criteria with learners; and
- 8. Evaluating and testing learning performance regularly to facilitate opportunities for feedback and realistic self-assessment.

Optimizing for far transfer differs markedly from optimizing for near transfer. It is a question of "improving the accessibility of memory representations" (Simons, 1999, p.585). Recommendations from Simons (1990, as cited in Simons, 1999, p585) include:

- Increasing the connectedness of the memory representation by making the relationships between concepts obvious and by focusing on concepts that are central to the desired transfer outcome;
- Helping each person come to their own individual understanding of the concept by explaining the training's utility, or by having students identify how the training will be useful to them as individuals;
- 3. Using multiple dissimilar examples to help students improve the conceptual understanding of the skill/knowledge and avoid grounding it in a single context;
- 4. Increasing the metacognitive skills of workers by teaching them directly or by creating learning environments that call upon these kinds of skills;
- 5. Broadening the generality of knowledge and skills by providing opportunities for ongoing reflection or by offering various opportunities and kinds of practice; and
- 6. Organizing an affective climate directed at transfer.

By following recommendations outlined by Gass (1985) and Simons (1990, as cited in Simons, 1999), OAE programmers can begin to develop a roster of mechanisms to optimize programs for learning transfer.

Discussion

5 Optimization

The focus of the present study is to summarize mechanisms influencing learning transfer from different disciplines in order to develop a set of recommendations for curriculum design that will encourage students to transfer the skills they learn from OAE to other life contexts. Mechanisms have been pulled from research literature in psychology, education, OAE, and HRD, and are organized according to Baldwin and Ford's (1988) transfer processes three input factors: learner characteristics, training delivery and design, and environment of application.

Several articles compiling research in transfer optimization mechanisms were used as main sources for this component of my research. These articles are *Transfer Training: An Integrated Literature Review* (Burke & Hutchins, 2007), *Transfer of Training: Review and Direction for Future Research* (Baldwin & Ford, 1988), and *Mechanisms of Learning Transfer in Adventure Education: Qualitative Results from the NOLS Transfer Survey* (Sibthorp et al., 2011). The following mechanisms, extracted from the above literature, show support for the occurrence of transfer and are evaluated according to their potential application in OAE.

5.1 Learner Characteristics

Learner characteristics, one of Baldwin and Ford's (1988) transfer input factors, play a powerful role in the transfer of training (Grossman & Salas, 2011). In OAE, it is impossible to influence who a participant is before they enroll in the program; however, once enrolled, courses can help participants develop cognitive ability and personality factors that will promote transfer in the future to other domains of their life. Knowing what characteristics are predictive to transfer helps instructors determine which students will be likely to achieve transfer independently and which students will need more support.

5.1.1.1 Cognitive Ability

Cognitive factors affecting learning transfer include general intelligence and prior knowledge. Research has linked high general intelligence to an increase in transfer (Burke & Hutchins, 2007; Sibthorp et al., 2011), and learners with higher general intelligence have more success processing, retaining, and generalizing trained skills, facilitating an increased ability to achieve far transfer (Bruke & Hutchins, 2007; Grossman & Salas, 2011). Cognitive skills could be strengthened during participation in OAE programs by intentionally planning activities that facilitate information processing and retaining. To encourage processing, instructors should provide participants with opportunities to reflect on skills and plan subsequent activities that will make use of the same skills. For example, students on a seakayaking trip can reflect in debriefing on how staying close together and operating as a team helped them successfully navigate through tidal rapids, teaching the group the importance of group management. Providing a subsequent opportunity for students to solve another similar activity like crossing a busy harbour encourages students to reflect on how these skills helped them solve the previous challenge and encourages them to apply the skills in the new experience. By encouraging the processing, retention, and generalization of skills learned in one setting and later applying them in another, instructors help students understand that new problems can be solved using strategies learned in previous experiences.

Another cognitive factor affecting transfer is prior knowledge. Several lines of research have established that an individual's existing knowledge can provide a significant advantage in his or her ability to recognize and take advantage of deep structural content, facilitating far transfer (Day & Goldstone, 2012). One example of this is in how participants deal with challenge. There is no doubt that before entering an OAE program, students have faced challenges in other parts of their lives. According to their past experience, students will have internalized a strategy for dealing with challenges that they will naturally be inclined to draw on when dealing with challenges in the future. The strategy could be something like brainstorming to produce an action plan, following the instinctual course of action, engaging in a cycle of attempt and feedback, or simply avoiding the challenge.

Once a learner has identified that their prior knowledge is relevant in a situation, they need to decide whether or not to use it. The issue here is that as well as having prior knowledge that will help students attain success, students also carry with them incorrect prior knowledge, which they will be just as likely to draw upon in the new transfer setting (Simons, 1999). The natural, personal, real, and unpleasant consequences of OAE activities encourages participants to reflect on prior knowledge prior to its application. For example, if a participant usually addresses challenge through succeeding in a cycle of attempt and feedback they may be hesitant to apply this kind of strategy to an activity like rappelling where the consequences of an error could be fatal. This facilitates an assessment of prior knowledge that encourages participants to evaluate the strategy they plan to use before engaging in the challenge at hand.

5.1.2 Personality Factors

As well as being affected by cognitive factors, learning transfer is also affected by personality factors (Sibthorp et al., 2011). Personality factors that can positively influence transfer include positivity, openness to experience, extroversion, and conscientiousness (Burke & Hutchins, 2007). Personality factors that can negatively affect transfer include negativity (Burke & Hutchins, 2007), low self-esteem, and poor interpersonal skills (Lim & Morris, 2006). Two personality factors that are particularly useful in predicting transfer are self-efficacy and motivation.

5.1.2.1 Self-Efficacy

"Self efficacy [is] one's belief that one can perform specific tasks and behaviors" (Gaudine & Saks, 2004, p.59). It has three principal dimensions: level, strength, and generality. Level is the depth of efficacy perception regarding a particular domain of functioning, strength is the perception of one's confidence, and generality is the breadth of the domain (Ewert & Sibthorp, 2014). Holladay & Quinones (2003) found that students with high scores in all three of these dimensions were more likely to attempt and succeed at variations of a task that had not been previously taught in training.

There is abundant research supporting the importance of self-efficacy in learning transfer. It has been linked to successful transfer generalization and maintenance of skills (Burke & Hutchins, 2007; Chiaburu & Marinova, 2005; Gaudine & Saks, 2004), likeliness to apply trained and complex tasks to the job (Ford, Quinones, Sego & Sorra, 1992), and higher confidence in ability to learn and apply trained competencies, resulting in increasing persistence in transfer situations (Grossman & Salas, 2011). Overwhelming support for self-

efficacy as an important variable in transfer led Gaudine and Saks (2004) to conclude that self-efficacy plays a central role in a student's ability to transfer.

To help students develop self-efficacy, Bandura (1982) suggests using three strategies: mastery experiences, vicarious experiences, and social persuasion. In a mastery experience, the completion of a task, is considered the most influential source of selfefficacy development (Ewert & Sibthorp, 2014). OAE is well suited to facilitate skill mastery because it allows for multiple instances of practice and feedback, and provides problems that can be solved using relatively simple skills.

Another way of developing self-efficacy is through vicarious experiences. In a vicarious experience self-efficacy is increased by watching others successfully complete a task (Ewert & Sibthorp, 2014). OAE provides vicarious experiences by engaging participants with risk individually. For example, in a river swimming exercise, participants are able to first watch the instructor and then others partake in the experience prior to doing so themselves. This allows them to assess and define success and failure in the exercise prior to engaging with the environment, and think about how they can achieve success in the task.

A third way of influencing self-efficacy is through social persuasion. Social persuasion is external encouragement provided by another person in an attempt to convince someone that he or she can accomplish a task (Ewert & Sibthorp, 2014). In OAE, social persuasion is provided by both the instructor and other students. Given the small group nature of programs, individuals work together to overcome challenges and often develop relationships faster than they would otherwise. This added element of relationship gives participants the leverage and motivation to convince each other they can accomplish a task.

As well as providing strategies for building self-efficacy, Bandura (1982) mentions that emotional anxiety and physiological discomfort can reduce levels of efficacy, depending on how the individual interprets the emotion. This is important for OAE practitioners to note because programs use risk and fear as teaching tools which can cause anxiety and psychological discomfort in participants. To teach with risk and fear safely, teachers should use these tools in moderation to find a compromise where the participant is engaged without creating a traumatic experience. In the event of an unpleasant experience, instructors can debrief students in order to help them see the learning experience in favorable light and abstain from reducing efficacy levels.

5.1.2.2 Motivation

Another learner trait useful for predicting transfer is motivation. "Training motivation refers to the intensity and persistence of efforts that trainees apply in learning-oriented improvement activities, before, during, and after training (Burke & Hutchins, 2007, p.267). Several studies have shown support for the importance of motivation levels prior to training (Burke & Hutchins, 2007; Chiaburu & Marinova, 2005), while others have highlighted that "transfer is facilitated when trainees are motivated to learn and transfer throughout the training process" (Grossman & Salas, 2011, p.107).

Research supports transfers connection to both extrinsic and intrinsic motivations (Burke & Hutchins, 2007; Taylor, Russ-Eft, & Chan, 2005), and other research has shown that trainees who are motivated by achievement and possess an internal locus of control are likely to apply new knowledge gained in training to work settings (Baldwin & Ford, 1988). As well as supporting short term transfer, motivation has also been linked to long term transfer (Burke & Hutchins, 2007).

Baldwin and Ford (1988) suggest that motivation levels can be increased when students set goals for transfer and receive feedback on their goals. Setting transfer goals can be facilitated in OAE both by reflecting on how material in the program relates to life at home, and by setting goals in post-program debriefing sessions. It is difficult for OAE programs to provide trainees with ongoing feedback regarding their transfer goals after program completion, but instructors could use check in strategies like e-mails, or face to face video conversations. Another suggestion is that trainees could pair up before the course has finished and the two participants could check in with each other following the course to provide each other with feedback regarding how concepts are transferring and how other concepts could be transferred. Part of this could involve role playing in hypothetical situations that the students create for each other in order to develop a broader application of transferable OAE skills. This second strategy capitalizes on the relationships that are developed during OAE.

In summary, learner characteristics are a useful predictor of transfer and can be fostered by instructors by using strategies that encourage development of self-efficacy and motivation. Learners join programs with certain cognitive ability, set of prior knowledge, and personality that is pre-determined by their lives leading up to that point in time. By getting to know who students are in the first part of a program, instructors can provide individuals with personalized learning opportunities for developing skills that foster transfer later on in the course. Although OAE cannot influence these traits prior to a learners engagement, by providing opportunities to develop self-efficacy through mastery experiences, vicarious experiences, and social persuasion, and having students set goals associated with the transfer of skills, OAE programs can be optimized to help learners develop these skills, enabling future instances of transfer.

5.2 Training Design and Delivery

The second category of input factors, training design and delivery, "refers to the instructor's plan or blueprint for the learning intervention" (Burke & Hutchins, 2008, p.112). HRD researchers report this is the most malleable aspect of Baldwin and Ford's (1988) transfer construct, and also the most influential on transfer of learning (Grossman & Salas, 2011; Lim & Morris, 2006). Authors in OAE echo HRD's claim to program influence, and there is much potential for optimizing this part of OAE programs (Sibthorp et al., 2011). Within training, mechanisms for transfer can be grouped into two categories: the learner and instructional techniques.

5.2.1 The Learner

Transfer remains a learner driven process, and what the learner will take from the program is largely a function of what they put in. Learner driven transfer mechanisms in training design and delivery include utility perceptions, focus phenomena, and initial learning.

5.2.1.1 Perceived Utility/Value

Ultimately, students will decide whether they transfer what they learn from the program, and to be motivated for transfer, the learner must perceive program outcomes as valuable (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Grossman & Salas, 2011; Lim & Morris, 2006; Ruona, Leimbach, Holton, & Bates, 2002). This perception is a function of the credibility of the new skill for improving performance, recognition of a need for improved performance, belief that applying the new skill will improve performance, and ease of transfer (Ruona et al., 2002; Burke & Hutchins, 2007).

By helping students make connections between training and the environment of application, perceptions of training utility can be increased (Grossman & Salas, 2011). In OAE, this can be facilitated by a needs assessment at the beginning of the course discussing what participants want to get out of their forthcoming experience.

To obtain desired outcomes and maximize transfer, learners need to understand what new knowledge and skills will improve relevant aspects of their performance and recognize how the new skills can be applied (Baldwin & Ford, 1988; Burke & Hutchins, 2007). One way of facilitating this is by creating a link between the context of learning and the context of application. When training and practice environments resemble the environment of application, the likelihood that new training will transfer is increased (Grossman & Salas, 2011; Lim & Morris, 2006).

In OAE this can be difficult to facilitate since the learning environment is so different from the environment in which new skills will be applied. One strategy for connecting the two environments is to use a metaphor to explain how the current situation is isomorphic to another situation in the desired context of application. By drawing similarities and connections between contexts, instructors can increase student perception of similarity between the program and their life.

Another strategy is to engage students in reflection. Both personal and group reflections can be effective, and different types of reflection will be more effective for different students. Some may prefer personal reflection like journaling, writing poetry, or drawing, while others may prefer to speak about their experiences out loud. A benefit to group reflection is that students are able to hear about the experiences of others and perhaps make connections that they would not have otherwise found.

5.2.1.2 Focus Phenomena

Another transfer mechanism in the program affecting learners are focus phenomena. Focus phenomena are stimulus present in the teaching environment that regularly direct student's attention towards certain properties or patterns when a variety of features compete for student attention. Focus phenomena arise from instructor actions, features of curricular materials, use of artifacts, and language, and suggest that it is not what the instructor teaches that makes the difference in transfer, it is where the student devotes his or her attention (Lobato, 2006). In OAE programs, focus phenomena can work both for and against the success of the program. Given the highly stimulating nature of the outdoor environment, participants can easily become distracted during instructional periods, resulting in their inattention to some of the directions for the activity. Fortunately, the majority of learning in these programs takes place when the participant is engaged with the environment, focused on the task at hand because of its real consequences. These kinds of active learning techniques are thought to facilitate transfer because the maintain student attention more than passive forms of instruction (Burke & Hutchins, 2007; Cox, 1997; Sibthorp et al., 2011).

Here's an example: students are on a wilderness camping trip and the instructor is demonstrating how to set up a tarp. Some students are paying attention, but others are distracted by a nearby creek. Later on the students who were not paying attention wake up in the middle of the night because a storm has come in and blown the tarp off their tent. It is raining and they are now soaking wet. The students did not know how to set up the tarp properly because they weren't paying attention to the instructor, but after experiencing the consequences of poor tarp set up, they are motivated to learn to properly set up a tarp for the following night and remainder of the trip. As well as learning the physical skill of setting up a tarp, the students are also learning the benefit of being well prepared, a skill that will serve them well in other aspects of their lives.

5.2.1.3 Initial Learning

Another student oriented transfer mechanism is initial learning. In order for students to transfer skills, they need to have an initial understanding of the procedure, principle, or theory, enough to apply it later (Lobato, 2006). Following this, success in early stages of training has been an effective predictor in whether transfer will occur later on (Baldwin & Ford, 1988). OAE is well positioned to facilitate effective initial learning among participants. Many of the skills taught in OAE are simple to achieve in the beginning, facilitating transfer later on. Additionally, OAE programs introduce skills incrementally, allowing students to first get a grasp on concepts before making them more complicated.

5.2.2 Teaching Strategies

Instructional methods employed during the training experience can help maximize participant transfer later on (Garavaglia, 1993). Instructors are the vehicle that guides students through the majority of OAE programming, and play a key role in helping students transfer outcomes. OAE instructors help students learn outdoor skills, appreciate nature, function under difficult circumstances, work as a team member, and act as a leader (Sbthorp et al., 2011). Instructor driven transfer mechanisms include abstraction of concepts, goal setting, example and behavioral modeling, practice and feedback, and overlearning and skill maintenance.

5.2.2.1 Abstraction of Concepts

A cognitive understanding of knowledge transfer assumes learning in one situation is abstracted so it can be applied in other situations. This assumes that knowledge is separable from the context in which is it developed (Lobato, 2006), and if knowledge is too tightly bound the potential for transfer will be reduced significantly (Bjorn & Richardson-Klavehn, 1989).

The dilemma here is that to teach with concrete examples binds learners to context, but to teach in total abstraction risks impairing the learner's ability to learn the material at all. To solve the dilemma, an approach is needed that combines concreteness and abstraction (Day & Goldstone, 2012). Research suggests using one of multiple strategies to achieve abstraction; use of multiple dissimilar examples, removal of seductive details (Day & Goldstone, 2012), or use metaphors (Gass & Priest, 2006).

The first strategy is using multiple dissimilar examples. Within an OAE setting, there may be several different opportunities to apply a skill. For example, in a backpacking program, students can learn about the importance of teamwork and how it can make less work for everyone. This can be experienced in activities like cooking, collecting water, setting up camp, navigating, carrying equipment, and crossing rivers. By working together and sharing duties students can learn about the benefits of teamwork, without tying concepts exclusively to one activity.

Another strategy for facilitating abstraction is removing what Day and Goldstone (2012) refer to as seductive details. They recommend deemphasizing the context specific aspects of the situation by reducing their presence in training. This tactic is based on the premise that context specific details will interfere with a learner's ability to transfer knowledge. This strategy would be difficult to use in OAE. OAE programs are centered on full immersion experiences where participants learn by doing. The details and context of

specific aspects in these experiences are what make them powerful, so to remove these would take away from program outcomes.

A third strategy for abstraction is to use metaphors. A metaphor is "an idea, object or description used in place of another different idea, object, or description to denote comparative likeness or similarity between the two" (Gass & Priest, 2006, p.79). Using metaphors can facilitate transfer because participants must apply what they know in one situation, assess similarities and differences between two situations, and make the cognitive link to bring what they know into the new situation (Sibthorp et al., 2011).

OAE activities are often structured to develop metaphors that have meaning beyond the OAE context (Brown, 2010), and "metaphoric transfer opportunities may be the most beneficial ones since coping strategies useful in adventure, may also be applied with equal success to the participant's daily life at work, home, or play" (Priest & Naismith, 1993, p.20). In OAE, facilitators can co-create personalized metaphoric connections with students that tie course concepts to the context of application. A metaphoric style that teaches concepts as isomorphs to situations at home and makes use of metaphoric debriefing is most effective (Gass & Priest, 2006).

One example of a metaphor is to equate the challenges of a program to the challenges that a student will face at home. In a hiking program, long days with a heavy pack are physically demanding and require determination and discipline in order to reach the desired end location. Instructors can help students equate the challenge of the hike to achieving other goals like buying property, where they can use the same determination and discipline to make and stick to a financial plan that will allow them to save the necessary money.

The process of abstraction is a necessary prerequisite for far transfer; it is a technique that instructors should seek to apply in all elements of their programming in order to teach students transferable skills that extend beyond the context where they are learned.

5.2.2.2 Goal Setting

Another teaching strategy for increasing learning transfer is goal setting. Using goals to increase training transfer has received much support in literature (Burke & Hutchins, 2007; Taylor et al., 2005; Wexley & Baldwin, 1986). Goal setting helps students regulate behavior necessary for transfer (Burke & Hutchins, 2007), increase trainee motivation (Grossman & Salas, 2011; Wexley & Baldwin, 1986), and has been linked to maintained

behavioral change over a period of time (Wexley & Bladwin, 1986). "Challenging and specific goals direct attention and effort, and thus the participant is more aware and keen for feedback related to attaining these goals...Adventure programs set difficult and specific goals and structure tasks so that participants can attain these goals." (Hattie et al., 1997, p.74, 75). When goal setting is combined with appropriate feedback, goals are more likely to be attained (Hattie et al., 1997). Different styles goal setting have been linked to transfer including prescribed goals, trainee set goals, and actionable goals.

Having instructors communicate prescribed goals with students facilitates a clear understanding of what knowledge and behaviors are being developed in training (Burke & Hutchins, 2007), provides objectives that help learners maximize transfer (Burke & Hutchins, 2007), and facilitates better retention of learning material (Wexley & Bladwin, 1986). In OAE, outcomes are produced by learner insights, so instructors must be clear on what the goals are in order for participants to accomplish them (Lewis & Williams, 1994). Repeating goals several times increases student retention, so instructors should highlight desired outcomes at the beginning of the program, before activities where a certain skill can be developed, and again after activities in reflective sessions.

As well as communicating goals, another technique that facilitates transfer is having learners set their own goals (Sibthorp et al., 2011; Taylor, Russ-Eft, & Chan, 2005; Wexley & Bladwin, 1986). To maximize transfer, prior to starting the program learners should set short and long term goals (Sibthorp et al., 2011; Yorks, Lamm, & O'Neil, 1999) that are specific but challenging (Burke & Hutchins, 2007; Wexley & Bladwin, 1986) and involve engaging in self-regulatory behaviors (Burke & Hutchins, 2007). Additionally, having trainees tailor goals to be specifically applicable to life beyond the training will increase transfer (Taylor, Russ-Eft, & Chan, 2005)

In order to benefit from both instructor communicated prescribed goals and trainee set goals, instructors can lay out parameters and have trainees set goals within them that link to desired outcomes. This will allow students to benefit from instructor insight and a feeling of connectedness to desired outcomes.

To further increase transfer, goals should also be actionable. Lim and Morris (2006) identify actions plans as key to maximizing student transfer (Burke & Hutchins, 2007). Action plans can be used to identify how goals can be achieved and what variables might

compromise their attainment (Sibthorp et al., 2011). In OAE, action plans can be constructed formally or informally between students and instructors in reflective sessions.

Regardless of how goals are constructed, receiving feedback on goals has been demonstrated to increase transfer (Wexley & Baldwin, 1986; Yorks, Lamm & O'Neil, 1999). In OAE, extrinsic feedback is provided by the instructor or the environment, and intrinsic feedback is provided by the student during reflection. Although program settings offer many opportunities for feedback, it becomes difficult for the instructor to provide feedback for students after they return home. Feedback in these settings can be achieved by using a transfer check list that poses a series of questions, asking students whether they managed to transfer their new skills and helping them determine why it did or did not happen.

5.2.2.3 Example & Behavioral Modeling

Another teaching strategy that can be used to facilitate transfer is example. Far transfer is enhanced by developing a variety of examples to avoid the problem of training becoming attached to a single type of situation (Baldwin & Ford, 1988; Lee & Kahnweiler, 2000). Providing variety in examples serves to strengthen understanding of how training can be applied widely to different situations (Baldwin & Ford, 1988), fostering innovative and generalizable skills (Baldwin & Ford, 1988).

In OAE, one way of providing examples is behavioral modeling, the process of demonstrating an intended behavior (Sibthotp et al., 2011). "Behavioral modeling has become one of the most widely used, well-research, and highly regarded psychologically based training interventions" (Taylor, Russ-Eft, & Chan, 2005, p.692). The most potent transfer results are achieved when effective and ineffective behaviors are demonstrated (Burke & Hutchins, 2007; Grossman & Salas, 2011; Lee & Kahnweiler, 2000; Sibthorp et al., 2011; Taylor et al., 2005). Typical characteristics of behavioral modeling training (BMT) design are learning points, models, behavioral rehearsals, and hours of training (Taylor et al., 2005).

Learning points are essentially goals, and should be specifically communicated to trainees to clarify program expectations. To help students retain information, learning points should be communicated visually and presented as rules instead of desired outcomes (Taylor et al., 2005).

As well as communicating points and providing visuals, BMT is most effective when a mixture of negative and positive examples are modelled; however, when a skill has only one correct method of execution, negative examples are not appropriate (Taylor et al., 2005). In OAE, some skills are critical to participant safety, and in these circumstances should not be improperly modelled.

5.2.2.4 Practice & Feedback

As participants hone their new skills, they need ample practice and feedback to develop mastery and enhance long-term application and maintenance of skills (Burke & Hutchins, 2007). To achieve this, programs should facilitate numerous cycles of action and reflection (Yorks, Lamm, & O'Neil, 1999). In OAE, these cycles occur naturally; the unpredictable nature of a backcountry classroom provides abundant opportunities for skill development, frequently requiring participants to use similar skills in different situations.

5.2.2.4.1 Practice

Effective practice, can lead to successful transfer (Burke & Hutchins, 2007; Larsen-Freeman, 2013). Taylor et al. (2005) and Cox (1997) recommend encouraging mental visualization prior to attempting a skill to help participants achieve successful internalization. Another useful strategy is to provide multiple dissimilar situations for practice (Perkins & Salomon, 1992). Haskell (2001) writes that teaching for transfer "involves returning again and again to an idea or procedure on different levels and in different contexts, with what appears to be different examples. But from a transfer perspective 'different examples' are but variations on a single idea or concept" (p.214).

Generally, practice is either massed or distributed. Massed practice involves a lot of practice at one time, and distributed practice allows for small amounts of practice at multiple different times (Bladwin & Ford 1988). Distributed practice has been shown to effectively facilitate transfer (Holladay & Quinones, 2003; Yorks, Lamm & O'Neil, 1999) because it allows students to become intimately familiar with behavior as it adapts to different situations (Yorks, Lamm & O'Neil, 1999).

Higher performance has been linked to mass amounts of practice initially, followed by instances of distributed practice (Baldwin & Ford, 1988). This is often how OAE programs teach hard skills. Skills are introduced and practiced to the point of initial competency, and subsequently skills are used throughout the activity. To maximize transfer, Taylor, Russ-Eft, and Chan (2005) recommend having students generate their own scenarios for practice.

5.2.2.4.2 Feedback

In addition to providing opportunities for practice, training needs to provide feedback (Burke & Hutchins, 2007; Lee & Kahnweiler, 2000; Sibthorp et al., 2011; Simons, 1999; Yorks, Lamm & O'Neil, 1999). Feedback is "information provided to trainees about their performance. Evidence shows that feedback is a critical element in achieving learning and that timing and specificity are critical variables in determining its effects" (Baldwin & Ford, 1988, p.67). OAE programs

increase the amount and quality of feedback that is vital to the experiential learning process... [They] increase the opportunities for giving feedback as there is more potential to give feedback when the goals are difficult, where class sizes are small, when there is cooperative planning and peer tutoring, and when there is challenging problem solving (Hattie et al., 1997, p.75).

As well as instructor feedback, OAE programs also facilitate feedback from environment. This feedback is readily accepted by participants because it is naturally implicit and needs not be imposed.

5.2.2.5 Overlearning & Skill Mastery

By facilitating extensive opportunities for practice and feedback, programs are facilitating overlearning (Cox, 1997) and skill mastery. Overlearning is the process of providing trainees with continued practice beyond the point where the task is performed successfully. Research indicates that the greater the amount of overlearning, the greater the subsequent retention of training material (Baldwin & Ford, 1988). The usefulness of overlearning to facilitate transfer is well supported in the transfer literature (Burke & Hutchins, 2007; Lee & Kahnweiler, 2000; Sibthorp et al., 2011; Taylor, Russ-Eft & Chan, 2005; Wexley & Baldwin, 1986).

Overlearning leads to skill mastery, a state where "knowledge will sometimes come into action without awareness or even influence on the part of the learner. Once a situation is recognized or defined as one in which a certain set of routines or automatized procedures is relevant, the transfer process runs on its own" (Simons, 1999, p.580). Although not as extensively supported in the literature, skill mastery also supports the occurrence of transfer (Lee & Kahnweiler, 2000).

As well as engaging in cycles of action and reflection, students need to possess selfefficacy that supports their ability to achieve a high level of competence (Burke & Hutchins, 2007; Holladay & Quinones, 2003). OAE can help students develop self-efficacy, but upon entry, a learner self-efficacy is beyond OAE's control.

The second input factor, training design and delivery, shows the greatest potential for optimization in OAE. By capitalizing on different techniques, practitioners can facilitate abstraction, goal setting, example and behavioral modeling, practice and feedback, and overlearning and skill mastery to help learners achieve successful transfer.

5.3 Environment of Application

The third transfer input is environment of application. This is where students aim to transfer their new skills, and factors within this environment can influence whether and to what extent transfer occurs (Grossman & Salas, 2011). In OAE, the environment of application is outside of a programs direct influence (Sibthorp et al., 2011). Although OAE programs cannot directly affect the environment of application, some transfer mechanisms can be capitalized on to encourage transfer. Environmental mechanisms include transfer climate, reminding, and maintenance of skills.

5.3.1 Transfer Climate

What guides transfer in the environment of application is transfer climate, a holistic system-wide atmosphere that either encourages or discourages students to use the skills they have learned (Burke & Hutchins, 2007; Holton, Bates & Ruona, 2002; Sibthorp et al., 2011; Taylor, 1992). Transfer climate is shaped by situational cues and consequences that regulate whether learned competencies can be applied beyond training (Grossman & Salas, 2011), and influences transfer outcomes directly (Burke & Hutchins, 2007; Lim & Morris, 2006) and indirectly (Burke & Hutchins, 2007).

Transfer climates can be positive or negative, and a positive transfer climate is important for transfer (Gaudine & Saks, 2004); it promotes and rewards correct use of skills, remediates misuse, and provides social support from peers and supervisors (Baldwin & Ford, 1988; Burke & Hutchins, 2007). A positive transfer climate is also characterised by the alignment of using new skills and achieving personal goals (Yorks, Lamm & O'Neil, 1999). In a job setting, HRD has identified numerous factors in the transfer climate that encourage transfer. Factors include peer support, management support, perceived validity of content, open communication climate, a change supportive climate, organizational commitment to training and training transfer, the opportunity to use training, an appropriate pace and work flow, a match between training and department goals, and the availability of tools to apply training (Lim & Morris, 2006; Yorks, Lamm & O'Neil, 1999).

In addition to these factors, the ability to transfer new skills is also affected by the social reaction present in the transfer climate. Favorable reactions create positive transfer, while unfavorable reactions prohibit transfer (Yorks, Lamm & O'Neil, 1999). Other support for the influence of the social environment highlights that greater transfer is achieved by moving from independent problem solving to group based methods of assessment (Lobato 2006), and that transfer is not usually something that happens in isolation, but rather depends on human interaction (Larsen-Freeman, 2013; e.g. Nasir 2000). This view of transfer sees the social and cultural interaction as a critical part of situated learning – learners learn what they do by participating in a community of practice (Lave & Wenger, 1991).

All of these factors contribute to a positive transfer climate. In OAE, instructors have little control over what kind of environment learners are trying to apply their skills in; however, instructors can help students perceive similarities between program setting and environment of application.

5.3.1.1 Similar Conditions

The more similar the training environment is to the transfer environment, the more likely a skill is to transfer (Baldwin & Ford, 1988; Day & Goldstone, 2012; Lim & Morris, 2006). This follows identical elements theory: transfer is a product of learning and applications events that share the same or similar stimuli, and therefore, the more similar the context of learning and application, the more likely knowledge or skill will transfer (Larsen-Freeman, 2013; Lee & Kahnweiler, 2000; Wexley & Baldwin, 1986). Lobato (2006) adds that as well as surface features, tasks that share structural features have shown higher rates of transfer. To create this similarity between training and application, programs need to be designed accordingly (Lim & Morris, 2006). One way to do this is to tailor programs to match structural and surface conditions found in the desired environment of application.

In OAE surface connections are hard to create, but structural similarities are abundant. To maximize structural similarity between conditions, it is critical that instructors point them out to students to help individuals connect the two environments. In order to accomplish this, it is first necessary for instructors to get to know students and find out what potential environments they could transfer skills to. Once the instructor and student have identified a potential environment of application, metaphors can be used to show the student similarities between the two environments. For example, if a student has trouble getting along with their family at home, the instructor can show the student how strategies they are using to function in the OAE group setting can also be applied in the home environment. Given the novelty of the OAE social environment, participants are often inclined to try out new strategies for getting along with others because in this setting there are no pre-conceived notions of who the participant is (Sibthorp & Jostad, 2014). The instructor can help students draw the connection to the home environment and help them see how similar strategies can be used to get along better with family members at home. This provides a connection to the home environment, and allows the student to see how their newfound group work skills can be applied beyond the current context.

5.3.1.2 Opportunity to Perform

Another key piece of a positive transfer climate is opportunity to use new skills in the transfer context (Burke & Hutchins, 2007; Gaudine & Saks, 2004; Grossman & Salas, 2011; Lim & Morris, 2006; Sibthorp, et al. 2011). In addition to transfer, these opportunities increase retention and development of skills (Taylor, Russ-Eft & Chan, 2005), helping to maintain skills for future use. To maximize transfer, opportunities in the environment of application need to be proximal to the time of training (Taylor, Russ-Eft & Chan, 2005).

5.3.2 Reminding

One of the main issues for learners is that "they often times do not and cannot know when and where they should and will use what they have learned" (Simons, 1999, p581). This highlights the lack of spontaneity noted in many transfer studies; when transfer does not occur during training, students can be reminded by instructors, but in the environment of application there is nobody to remind the student (Barnett & Ceci, 2002). In order to facilitate reminding in later application, instructors need to highlight that the training students "are currently doing is a part of a larger intellectual conversation that extends across time" (Larsen-Freeman, 2013, p.457). A potential way for OAE to remind students to transfer is to provide students with a list that asks them questions regarding whether they used new skills in the program, to what extent their use was effective, and if and how they could apply those skills outside the OAE program.

5.3.2.1 Maintenance

In addition to the issue of reminding, there are also issues with skill maintenance. When there is not enough opportunity to use skill, or instances of use are infrequent, students may need to maintain their skills in other ways. Maintenance of skills is an integral part of transfer (Gaudine & Saks, 2004; Grossman & Salas, 2011), and a lack of this maintenance results in a decrease in transfer (Gass & Priest, 2006).

5.3.2.1.1 Facilitating Support

One way of providing maintenance is through support. In HRD, the presence of peer and supervisor support can effect transfer (Grossman & Salas, 2011). The influence of supervisor support is well documented (Burke & Hutchins, 2007), but there are mixed findings regarding whether or not this influence is positive (Burke & Hutchins, 2007; Chiaburu & Marinova, 2005). Peer support on the other hand, provides more consistent positive influence for trainee support (Burke & Hutchins, 2007).

In OAE, the desired transfer environment extends outside of the work context, and even within a job setting managers and peers are often unfamiliar with the training that an individual has received, thus making it more difficult for them to support transfer. Regardless, OAE can provide support using techniques like mentorship, discussing new learning with supervisors and peers, networking, and reflection.

One technique for supporting maintenance is mentorship (Richey, 1990). Mentorship allows for ongoing development of skills by watching someone of higher proficiency perform them. Mentorship is traditionally facilitated by an individual, but in the case of OAE mentorship could be facilitated by a group of peers or club with similar training.

Another technique for mentoring skills is to discuss new training with supervisors and peers within the transfer environment (Burke & Hutchins, 2007). This could be useful for helping OAE participants transfer skills to job settings. It would require a transfer climate that is fairly open to change, but through discussing the applicability of new skills to the job with other staff and peers, participants may be able to build a supportive network for their skills.

Networking has also been linked to promoting transfer several months after the completion of initial training (Burke & Hutchins, 2007). In programs, students often do not maintain contact with one another after programs have finished, but by sharing contact information and staying in touch, they can check in and monitor the successes and failures of applying new skills in their lives.

Post-course reflection activities can also be used to help maintain transfer (Sibthorp et al., 2011). For OAE participants, these activities could involve participants revisiting reflective journals and transfer goals, or contacting other course participants to revisit course memories and outcomes.

In OAE, the environment of application remains a transfer input that cannot be directly affected by practitioners. It is governed by transfer climate, a product of many things outside of the influence of program designers and instructors. Although the environment cannot be directly affected, there are some strategies that can be implemented to help participants achieve transfer. By teaching participants techniques that help them perceive contextual similarities, see opportunities to perform new skills, remember to transfer, and maintain their skills, teachers can prepare students to maximize transfer in whatever environment of application they encounter.

6 Recommendations for Program Optimization

Upon review of optimization mechanisms in the transfer literature, evidence suggests that OAE programs can be fertile grounds for fostering transferable outcomes if they are designed to do so. Although training design and delivery is the most malleable of the transfer processes' input factors, various strategies can be applied to maximize transfer in all three input factors.

Learner characteristics are largely beyond the influence of OAE; what individuals bring to experiences is a combination of their past experiences and personality. Although OAE cannot influence who the learner is coming into the situation, programs can help students develop self-efficacy and motivation that will foster transferable learning later in their lives. In order to facilitate this, trainers should:

- 1. Provide opportunities for self-efficacy development through mastery experiences, vicarious experiences, and verbal persuasion; and
- 2. Encourage trainees to set goals to increase motivation levels.

Training design and delivery is the most malleable aspect of OAE programming, and is thus where the majority of program optimization can occur. To optimize transfer design and delivery of programs should:

- 1. Help participants perceive connections between the program and desired environment of application using metaphor and reflection;
- 2. Capitalize on intrinsically interesting focus phenomena inherent to the outdoor environment;
- Ensure that students understand initial learning concepts before moving on to more complex concepts;
- 4. Facilitate abstraction of learning concepts by providing multiple dissimilar examples and using metaphors.
- 5. Have students set actionable goals within parameters established by the instructor.
 - a. Short term and long term goals should be reinforced and refined throughout the program with opportunities for feedback;
- 6. Have instructors demonstrate intended behavior, showing both correct and incorrect strategies unless incorrect behavior would cause undue harm; and
- Provide extensive opportunities for practice and feedback to create opportunities for skill mastery;
 - a. Practice should include multiple dissimilar situations, ideally starting with massed practice and moving to distributed practice.
 - b. Feedback should be ongoing and high quality.

By implementing these recommendations, OAE program designers and instructors can facilitate training that capitalizes on opportunities for transfer. These strategies will prepare students to successfully transfer skills within the desired environment of application

Factors within the environment of application are beyond the scope of OAE programs. Although programs cannot affect the transfer environment directly, indirect

strategies like creating connections and encouraging seeking support can be applied in programs to help learners transfer their skills. To facilitate these strategies instructors should:

- 1. Help learners perceive similarities between training and application environments by creating connections; and
- Encourage learners to seek support for skill transfer in the environment through mentorship, discussion with co-workers and peers, and reflecting on skills gained in the program.

By applying these techniques, instructors can help students transfer their learning to the environment of application.

Of the three transfer inputs identified, training design and delivery holds the most potential for optimization to produce learning transfer. Learner characteristics and the environment of application can also be optimized; however, they are farther from the scope of what OAE programs can hope to change, and techniques for optimizing these areas are applied within the training program. These recommendations add to the literature on program optimization outlined by Gass (1985) and Simons (1990 as cited in Simons, 1999). By implementing these different strategies into training, OAE practitioners can increase the amount of transferable skills that students take from courses and bring to other contexts.

These recommendations provide additional guidelines for optimizing OAE programs to help participants achieve transferable outcomes. Given that these recommendations have been produced entirely through secondary research, primary research is needed to test their feasibility and effectiveness.

Conclusion

In conclusion, this document has compiled research that outlines OAE, learning transfer, and program optimization, suggesting that OAE is well positioned to teach transferable skills if programs are designed to do so. Transfer mechanisms from different disciplines have been organized and evaluated in relation to OAE, to provide recommendations for future program optimization. These recommendations contribute to those set out by Gass (1985) and Simons (1990 as cited in Simons, 1999), and collectively can be used by practitioners to optimize OAE programs for transfer.

References

- American Camp Association. (2005). *Directions: Youth development outcomes of the camp experience*.
- Baldwin, T. T., & Ford, K. J. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, 41(1), 63–105.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122–147.
- Barnett, S. M., & Ceci, S. J. (2002). When and where do we apply what we learn? A taxonomy for far transfer. Psychological Bulletin, 128(4), 612–637. https://doi.org/10.1037/0033-2909.128.4.612
- Breunig, M., O'Connell, T., Todd, S., Young, A., Anderson, L., & Anderson, D. (2008). Psychological Sense of Community and Group Cohesion on Wilderness Trips. *Journal* of Experiential Education, 30(3), 258–261. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=32060715&site=eho st-live
- Brown, M. (2010). Transfer: Outdoor adventure education's Achilles heel? Changing participation as a viable option. *Australian Journal of Outdoor Education*, 14(1), 13–22.
- Burke, L. a., & Hutchins, H. M. (2008). A Study of Best Practices in Training Transfer and Proposed Model of Transfer. *Human Resource Development Quarterly*, 19(2), 107– 128.
- Burke, L. a., & Hutchins, H. M. (2007). Training Transfer: An Integrative Literature Review. *Human Resource Development Review*, 6(3), 263–296. https://doi.org/10.1177/1534484307303035
- Carraher, D., & Schliemann, A. D. (2002). The Transfer Dilemma. *The Journal of the Learning Sciences*, 11(1), 1–24. Retrieved from http://www.jstor.org/stable/1466719
- Chiaburu, D. S., & Marinova, S. V. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports. *International Journal of Training & Development*, 9(2), 110–123. https://doi.org/10.1111/j.1468-2419.2005.00225.x

- Cooley, S. J., Burns, V. E., & Cumming, J. (2014). The role of outdoor adventure education in facilitating groupwork in higher education. *Higher Education*, 69, 567–582. https://doi.org/10.1007/s10734-014-9791-4
- Cormier, S. M., & Hagman, J. (1987). *Transfer of learning: Contemporary research and applications*. San Diego, CA: Academic Press.
- Cox, B. (1997). The rediscovery of the active learner in adaptive contexts: A developmentalhistorical analysis of transfer of training. *Educational Psychologist*, 32(1), 41–55.
- Day, S. B., & Goldstone, R. L. (2012). The Import of Knowledge Export: Connecting Findings and Theories of Transfer of Learning. *Educational Psychologist*, 47(3), 153– 176. https://doi.org/10.1080/00461520.2012.696438
- Dewey, J. (1916). Democracy and Education. Chicago: University of Chicago Press.
- Dewey, J. (1938). Experience and education. New York: Touchstone.
- Dyment, J. E., & Potter, T. G. (2015). Is outdoor education a discipline? Provocations and possibilities. *Journal of Adventure Education and Outdoor Learning*, *15*(3), 193–208. https://doi.org/10.1080/14729679.2014.949808
- Ewert, A. (1989). Outdoor adventure pursuits: Foundations, models, and theories. Columbus, Ohio: Publishing Horizons Inc.
- Ewert, A., & Yoshino, A. (2011). The influence of short-term adventure-based experiences on levels of resilience. *Journal of Adventure Education and Outdoor Learning*, *11*(1), 35–50.
- Ewert, A., & Sibthorp, J. (2014). *Outdoor Adventure Education: Foundations, Theory, and Research*. Windsor, ON: Human Kinetics.
- Ford, J. K., Quinones, M. A., Sego, D. J., & Sorra, J. S. (1992). Factors affecting the opportunity to perform trained tasks on the job. *Personnel Psychology*, 45(3), 511–527.
- Garavaglia, P. L. (1993). How to ensure transfer of training. Training & Development.
- Gass, M. A. (1985). Programming the transfer of learning in adventure education. *Journal of Experiential Education*, 8(3), 18–24.
- Gass, M., Garvey, D., & Sugarman, D. (2003). The Long Term Effects of a First Year Student Wilderness Orientation Program. *Journal of Experiential Education*, 26(1), 34–40.

- Gaudine, A. P., & Saks, A. M. (2004). A Longitudinal Quasi-Experiment on the Effects of Posttraining Transfer Interventions. *Human Resource Development Quarterly*, 15(1), 57–76. https://doi.org/10.1002/hrdq.1087
- Gilbertson, K., Bates, T., McLaughlin, T., & Ewert, A. (2006). *Outdoor education methods and strategies*. Champaign, IL: Human Kinetics.
- Glass, J. S., & Benshoff, J. M. (2002). Facilitating group cohesion in adolescents through challenge course experiences. *Journal of Experiential Education*, 25(2), 268–277.
- Goldenberg, M., McAvoy, L., & Klenosky, D. B. (2005). Outcomes from the Components of an Outward Bound Experience. *Journal of Experiential Education*, 28(2), 123–146. https://doi.org/10.1177/105382590502800206
- Grossman, R., & Salas, E. (2011). The transfer of training: What really matters. *International Journal of Training and Development*, *15*(2), 103–120. https://doi.org/10.1111/j.1468-2419.2011.00373.x
- Haskell, R. (2001). Transfer of learning: Cognition, instruction, and reasoning. San Diego, CA: Academic Press.
- Hattie, J., Marsh, H. W., Neill, J. T., & Richards, G. E. (1997). Adventure Education and Outward Bound: Out-of-Class Experiences That Make a Lasting Difference. *Review of Educational Research*, 67(1), 43–87. https://doi.org/10.3102/00346543067001043
- Heintzman, P. (2010). Leisure Studies and Spirituality: A Christian Critique. *Journal of the Christian Society for Kinesiology and Leisure Studies*, *1*(1), 19–31.
- Holladay, C. L., & Quiñones, M. a. (2003). Practice variability and transfer of training: the role of self-efficacy generality. *The Journal of Applied Psychology*, 88(6), 1094–1103. https://doi.org/10.1037/0021-9010.88.6.1094
- Holman, T., & McAvoy, L. H. (2005). Transferring Benefits of Participation in an Integrated Wilderness Adventure Program to Daily Life. *Journal of Experiential Education*, 27(3), 322–325. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=19918924&site=eho st-live
- Holton, E. F., Bates, R., & Ruona, W. E. (2000). Development of a Generalized Learning Transfer System Inventory. *Human Resource Development Quarterly*, *11*(4), 333–360. https://doi.org/10.1002/1532-1096(200024)11:4<333::AID-HRDQ2>3.0.CO;2-P
- Kellert, S. (1998). A national study of outdoor wilderness experience.
- Larsen-Freeman, D. (2013). Transfer of Learning Transformed. *Language Learning*, 63(SUPPL. 1), 107–129. https://doi.org/10.1111/j.1467-9922.2012.00740.x

- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate preipheral participation*. Cambridge University Press.
- Lee, C. D., & Kahnweiler, W. M. (2000). The Effect of a Mastery Learning Technique on the Performance of a Transfer of Training Task. *Performance Improvement Quarterly*, *13*(3), 125–139. https://doi.org/10.1111/j.1937-8327.2000.tb00179.x
- Levitt, E. E. (1980). The psychology of anxiety. Lawrence Elrbaum Assoc Inc.
- Lewis, L., & Williams, C. (1994). Experiential Learning: Past and Present. *New Direction* for Adult and Continuing Education, 62, 5–16.
- Lim, D., & Morris, M. (2006). Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer. *Human Resource Development Quarterly*, 17(1), 85–115.
- Lobato, J. (2003). How Design Experiments Can Inform a Rethinking of Transfer and Vice Versa. *Educational Researcher*, 32(1), 17–20. https://doi.org/10.3102/0013189X032001017
- Lobato, J. (2006). Alternative perspectives on the transfer of learning: History, issues, and challenges for future research. *Journal of Learning Sciences*, *15*(4), 431–449. https://doi.org/10.1207/s15327809jls15041
- Martin, B., Cashel, C., Wagstaff, M., & Breunig, M. (2006). *Outdoor leadership: theory and practice*. Champaign, IL: Human Kinetics.
- Martin, A. J., & Leberman, S. I. (2005). Personal learning or prescribed educational outcomes: A case study of the Outward Bound experience. *Journal of Experiential Education*, 28(1), 44–59. https://doi.org/10.1177/105382590502800106
- Marton, F. (2006). Sameness and Difference in Transfer. *The Journal of The Learning Sciences*, *15*(4), 499–535. https://doi.org/10.1207/s15327809jls1504_3
- McKenzie, M. (2003). Rethinking Student Learning. *The Journal of Experiential Education*, 26(1), 8–23.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1), 6–23.
- Nasir, N. S. (2000). Points Ain't Everything: Emergent Goals and Average and Percent Understandings in the Play of Basketball among African American Students. *Anthropology & Education Quarterly*, *31*(3), 283–305.
- Neill, J. T., & Dias, K. L. (2001). Adventure education and resilience: The double-edged sword. *Journal of Adventure Education & Outdoor Learning*, 1(2), 35–42.

- Outward Bound. (2017). About. Retrieved March 24, 2017, from http://www.outwardbound.org/
- Perkins, D. N., & Salomon, G. (1992). Transfer of Learning. International Encyclopedia of Education, 6452–6457. https://doi.org/10.1016/j.dr.2010.03.001
- Perry, W. G. (1999). Forms of Ethical and Intellectual Development in the College Years. San Francisco: Jossey-Bass Publishers.
- Piaget, J. (1968). *Six Psychological Studies*. Anita Tenzer (Trans.), New York: Vintage Books.
- Priest, S., & Gass, M. A. (2005). *Effective Leadership in Adventure Programming*. Windsor, ON: Human Kinetics.
- Priest, S., & Naismith, M. (1993). A Model for Debriefing Experiences. *Journal of* Adventure Education and Outdoor Leadership, 10(3), 20–22.
- Rachman, S. (1974). *The meanings of fear*. Baltimore, MD: Penguin Books.
- Wells, S. M., Widmer, M., & McCoy, K. J. (2004). Grubs and grasshoppers: Challengebased recreation and the collective efficacy of families with at-risk youth. *Family Relations*, 53(3), 326–333.
- Shooter, W., Sibthorp, J., & Paisley, K. (2012). Outdoor leadership skills: A program perspective. *Journal of Experiential Education*, 35(1), 1–13.
- Shooter, W., Paisley, K., & Sibthorp, J. (2012). Fostering Trust in Outdoor Leaders: The Role of Personal Attributes. *Journal of Experiential Education*, 35(1), 222–237. https://doi.org/10.5193/JEE35.1.222
- Sibthorp, J., Collins, R., Rathunde, K., Paisley, K., Schumann, S., Pohja, M., ... Baynes, S. (2015). Fostering Experiential Self-Regulation Through Outdoor Adventure Education. *Journal of Experiential Education*, 38(1), 26–40. https://doi.org/10.1177/1053825913516735
- Sibthorp, J., Furman, N., Paisley, K., Gookin, J., & Schumann, S. (2011). Mechanisms of Learning Transfer in Adventure Education: Qualitative Results From the NOLS Transfer Survey. *Journal of Experiential Education*, 34(2), 109–126. Retrieved from http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=69cbe051-d2ad-4432-8b74-326cd95473eb@sessionmgr4003&vid=1&hid=4207
- Sibthorp, J., & Jostad, J. (2014). The social system in outdoor adventure education programs. *Journal of Experiential Education*, *37*(1), 60–74. https://doi.org/10.1177/1053825913518897

- Simons, P. R. J. (1999). Transfer of learning: Paradoxes for learners. International Journal of Educational Research, 31, 577–589. https://doi.org/10.1016/S0883-0355(99)00025-7
- Stringer, L. A., & McAvoy, L. H. (1992). The need for something different: Spirituality and wilderness adventure. *Journal of Experiential Education*, 15(1), 13–20.
- Taylor, P. J., Russ-Eft, D. F., & Chan, D. W. L. (2005). A Meta-Analytic Review of Behavior Modeling Training. *Journal of Applied Psychology*, 90(4), 692–709. https://doi.org/10.1037/0021-9010.90.4.692
- Thomas, G. (2015). Signature pedagogies in outdoor education, 6(2), 113–126.
- Thorndike, E. L. (1923). The influence of first-year Latin upon ability to read English. In *School and Society*.
- Thorndike, E. L., & Woodworth, R. S. (1901). The Influence of Improvements in one Mental Function Upon the Efficiency of Other Functions. In D. Wayne (Ed.), *Readings in the History of Psychology*. Appleton Century Crofts.
- Vygotsky, L. (1978). Mind in Society. London: Harvard University Press.
- Walsh, V., & Gollins, G. (1976). The Exploration of the Outward Bound Process.
- Wexley, K. N., & Baldwin, T. T. (1986). Posttraining Strategies for Facilitating Positive Transfer: an Empirical Exploration. Academy of Management Journal, 29(3), 503–520. https://doi.org/10.2307/256221
- Yerkes, R. M., & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology*, 18(5), 459–482.
- Yorks, L., Lamm, S., & O'Neill, J. (1999). Transfer of learning from action learning programs to the organizational setting. *Advances in Developing Human Resources*, *1*(2), 56–74.