

# Psychological, Sociological, and Programmatic Recommendations for the Northwest Avalanche Center's Adolescent Winter Backcountry Safety Course

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## **Part I – Purpose of the Document,**

### **Locating NWAC’s Program in the Learning Literature & Executive Summary**

## Purpose of the Document

The goal of this document is to provide the client with research-based answers to three questions. The three questions are:

- 1) What are the recommendations from the current literature for delivering out-of-school learning for programs with hybrid (classroom and field) learning models?
- 2) What existing programs provide good models for hybrid winter backcountry education courses?
- 3) Based on #1 and #2 above, what are recommendations for how the program should move forward?

Before answering these questions, I offer some orientation for how winter backcountry winter recreation safety programs fit into the education literature broadly.

### Locating Winter Backcountry Safety Courses in the Learning Literature

Locating a program in the learning literature is useful for extracting guiding principles from more established bodies of work.

Winter backcountry safety (WBS) courses are located at the intersection of several kinds of education. Broadly speaking, WBS courses are non-formal, deliberate, outdoors education courses with a content and skills focus on recreational winter backcountry safety.

*Non-formal learning* is when people work voluntarily with a teacher to acquire skills for a self-determined area of interest and the learning activity takes place outside of a formal educational institution (Coombs & Ahmed, 1974; Livingstone, 2001, p. 2). The time spent with a teacher is usually just a few days but in rare occasion may be up to weeks (Gilbertson, Bates, Ewert, & McLaughlin, 2006).

*Deliberate learning* is when learners dedicate time and energy to consciously learn a skill (Eraut, 2000). Winter backcountry safety courses further conform to Livingstone's definition of non-formal learning because they are often part of an organized network of programs and associations that somewhat regulate a curriculum.

Classically defined, *outdoor education* is learning for, about, and in the outdoors (Donaldson & Donaldson, 1958). Scholarship since the 1950s has conceded that outdoor education can happen partly in the field and partly in formal learning settings, such as classrooms (Priest, 1986).

NWAC's course is further specified by the context in which it takes place and the modes of travel that backcountry users typically employ. It takes place in winter. The setting is typically mountainous terrain where certain objective winter hazards may exist (e.g., varying snow conditions, avalanches). The technical nature of snow science and the complexity of human decision-making in the backcountry demand a blend of learning in the outdoors (the applied context) and deliberate study of more abstract or theoretical knowledge in the classroom setting. The NWAC course is designed to improve the decision-making of young people in the winter backcountry. As a result, the NWAC course teaches skills and knowledge that are practical, applicable, and context-specific (e.g., Identifying objective and subjective hazards) but also with the hope that general decision making heuristics can be applied to new settings and sports (e.g., mountain biking, snow climbing).

A defining feature of the NWAC program is its focus on adolescents. This final point rounds out a fairly complete location of the NWAC program:

a non-formal, deliberate, outdoor education program focused on safety for adolescent backcountry winter recreationists.

In closing this section, I want to suggest one additional conceptual tool for designing and improving WBS courses. Structuring learning around the principle of *place-based* outdoor education might be useful because it ties the learning to relevant features of the specific region in which the winter backcountry skills and knowledge will be applied. Place, defined as a familiar geographic location, matters because geography influences snow quality, climate, and precipitation patterns, making one place different from another. Place matters because individuals tend to recreate in known and familiar backcountry zones, making them locally popular. Teaching about familiar places may help bridge the transfer<sup>1</sup> gap between learning and application, especially if the successful application of skills is thought to vary based on local environments. Lastly, place-based teaching will allow organizations that teach avalanche safety a way to adapt core WBS curriculum to local settings.

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<sup>1</sup> Transfer refers to the porting over of knowledge (i.e., snow science) from one learning context to another (i.e., regionally different snowpack).

## Executive Summary

Winter backcountry recreation is increasingly popular, but there is almost no attention paid to the increasing numbers of teen backcountry recreationists. Many of these young people are learning winter backcountry safety practices from family members or youth programs, and it is entirely unclear how effective or reliable this informal learning approach is.

An unfortunate finding of this literature review is that there is almost no research on winter backcountry education for adolescents. The few studies that exist have emerged in the last year or two. This necessitated a wider search into experimental psychology, social psychology, adolescent developmental science, and resort skiing. By way of this broader literature, it was possible for me to make recommendations for how the NWAC program should proceed in its development, learning, and contribution to ensuring adolescent safety in the winter backcountry.

A somewhat promising cousin-program to winter backcountry safety programs is the Wilderness First Aid course (WFA). These courses last about sixteen hours and teach a blend of practical skills and knowledge about wilderness medicine. Although the Boy Scouts of America teach WFA to adolescents, there is no evaluation information on the effectiveness of their adolescent instruction. From the literature, one can expect WFA participants to have rapid declines in skill performance following the end of the course but less so for knowledge. Winter backcountry education courses can expect that, in the absence of refresher courses or continued practice, participants will forget certain skills. This is an area of concern but also for innovation and improvement.

The recent psychological research suggests that youth can learn to intellectually understand and assess risk, but that behavior is difficult to change. There are several reasons why. The cognitive processes governing youth behavior have neurobiological underpinnings and their “reckless” behaviors may have an evolutionary design. Another reason is that programs targeting mid-adolescence (high school age) development have proceeded in ways that disrespect youth’s growing sense of autonomy, need for respect, and striving toward peer acceptance and status.

The focus away from adults and toward peers during adolescence - for reasons associated with peer status, social prestige, and mate seeking –creates an opportunity for intervention programs. If programs can generate a culture of safety consciousness in youth circles, safety practices can become self-reinforcing by the youth themselves.

The one study on adolescent winter backcountry behavior and attitudes suggests that adolescent motivation for backcountry skiing overlaps strongly with adults. Youth and adults pursue sensation seeking, the challenge of being in the wilderness, skill mastery, emotional regulation, and feelings of autonomy. Youth differ from adults in so far as they orient toward communities of friends for outings, have much less life experience to draw on, and may fall prey more often to the optimism bias.<sup>2</sup> They have experienced fewer deaths and near-misses, which are evidently important feedback systems for how adults learn to think about risk and mortality. Youth also tend to learn about backcountry safety practices from family members and ski clubs more than adults.

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<sup>2</sup> Optimism bias is when you believe that something is more likely to happen to other people than to you. The optimism is not built on any empirical evidence but rather a biased perception of danger, risk or differential outcomes.

One pressing question from the client was what are best practices for hybrid class-field outdoor courses. While research does not offer recommendations for programming structure like that, I offer a decision framework for reasoning through which components of a course should be taught in the field and which should be taught in class. I provide a resource for collecting feedback from instructors to determine which parts of the course should be field or classroom based in addition to an integrated concept map that will help organize and analyze the feedback for the program.

In the final section of this report, I offer a set of recommendations for how the NWAC program can scale and develop using principles and practices outlined in the literature review. The focus should be on partnerships with adolescent-serving organizations, creating family programs, and offering youth trainings to avalanche education providers. Broadly, it should also direct NWAC to think of training youth, families, coaches, and others in the notion of identifying and teaching “practices.” Practices are units of skills and knowledge that are combined in dialog or action that bring risk assessment and decision making to the forefront. For example, one practice might be checking in with the group’s physical status at particular intervals during an outing. Another practice might be for a leader to solicit everyone’s assessment of how current weather conditions have impacted the travel plan. A third practice might be teaching young people to self-advocate among more dominant peers or within a family structure if they perceive a red flag situation on the horizon. Teaching these practices and skills will require time in the curriculum but this moves the NWAC curriculum from theory even further into practice.



## **Part II – Classroom-Field Education Models & Wilderness First Aid Courses**



## Best Practices in Delivering Outdoor Education for Hybrid Field and Classroom Models

Unfortunately, outdoor education is not organized by the structure of the program. They are not studied in this way even though many programs have blended classroom and field experiences. Outdoor education programs are usually studied for their learning outcomes (Hattie, Marsh, Neil, & Richards, 1997; McKenzie, 2000). For this reason, and at this time, it is impossible to provide an answer for the best practices for a blended field and classroom outdoor education program.

In place of a literature review, I offer one conceptual map (see Appendix A and B and the file attachments “Instructor Debrief Form” and the PowerPoint labeled “Conceptual Aid for Class-Field Decisions”) to guide decision making about which learning objectives should be taught in the classroom, field, or both. The guiding question is what kind of learning is best supported by an indoors, outdoors or blended setting. The decision is ultimately left to the program designers, but the conceptual map will make the program designers’ thinking transparent and, for future evaluations, the resulting conjectures will be open to hypothesis testing.

The conceptual maps should be completed by curriculum writers but there are components that are designed for the instructor staff to use for debriefing after the lesson is executed. It is my hope that collecting data in this way will be consistent with avalanche safety education culture and practices. There are four prompts called “Guiding Considerations.” The three at the bottom of the chart offer a set of discussion points that elicit instructor feedback on the instructors’ teaching, the student behavior, and the learning objective. The idea is that instructors use these guiding considerations to provide organized feedback in the form of a reflection for future sessions to improve the instruction. The “Guiding Consideration” box at the top right of the flowchart contains some considerations to assist in deciding the most ideal setting for teaching a particular learning objective. See attachments for the Concept Map and Instructor Debrief Feedback.

### Wilderness First Aid as an Example Program

In addition to the obvious candidate, AIARE courses, Wilderness First Aid (WFA) programs present a potential model from which NWAC’s adolescent winter backcountry safety course could borrow ideas, approaches, and experiences.

WFA is a type of introductory medical course taught for outdoor and wilderness leaders as well as non-medical professional laypersons who plan to travel into the backcountry (Schumann, Schimelpfenig, Sibthrop, & Collins, 2012). It is a hybrid classroom-field course, where there is a pronounced emphasis on hands-on learning. The course is designed for wilderness leaders and recreationists who lead trips away from trailheads, who will use improvised medical techniques, and where evacuation scenarios include walking out or using a litter. They typically address sixteen core topics and up to five elective topics (Bennett, 2012). They teach to medical scenarios that are likely to occur in a wilderness setting when professional medical help is hours away (Sward & Bennett, 2014).



WFA courses exist in a relatively underdeveloped policy context. There are no specific governing body of standards, oversight organization or set of state-level mandates for WFA training (Welch, Clement, & Berman, 2009). These courses operate in a free-market system where high levels of competition give rise to course diversity, curricula, price differences, and quality of instruction (Pope, 2010). The lack of regulation of these courses may exist in part because, relative to the chances of a car accident en route to the trailhead, accidents in the wilderness settings tend to be infrequent and minor (Johnson et al., 2013). This situation is somewhat analogous to the low number of avalanche or shark attack deaths that occur annually. Nonetheless, important outdoor leadership organizations such as N.O.L.S., Boy Scouts of America, American Red Cross endorse, innovate on, and provide these courses. They are a standard course for many outdoor organizations that lead trips, especially with youth (Bennett, 2012). When a person completes a WFA, he or she receives a certification.

A few studies have evaluated the retention of knowledge and skills from WFA courses after participation. Schumann and colleagues (2012), found that as time elapsed after the end of a WFA course, participant saw declines in their knowledge and skills while maintaining an inflated belief in their abilities to apply WFA to patients. Furthermore, participants scored higher on written exams and this knowledge was *not* positively associated with (not indicative of) skill retention or belief in ability to apply WFA. A more recent evaluation examined first aid skill retention across a wide variety of professionals (Rhue & VanDeveer, 2018). The researchers found signs of skill deterioration in CPR and other critical skills following trainings across Wilderness First Aid participants, Wilderness First Responders, medical students, nurses, and even emergency medical technicians. Parents of newborns who were trained in child CPR until they demonstrated 100% proficiency also had significant declines in skill recall at six months after leaving the hospital.

### **Parallels Between WFA and NWAC's Backcountry Winter Safety Course**

In addition to adults, WFA is taught to adolescents and possibly even younger children. Because there is no available literature, it is unclear how successfully this material is taught to children. One can imagine that retention and learning are worse for children than adults, especially if few instructional adaptations are applied. WFA for the Boy Scouts of America's WFA courses are likely in a very similar situation to NWAC's adolescent winter backcountry safety course.

#### **Wilderness First Aid – Program Overview**

**Description** – Refers to a diverse group of wilderness medicine courses that vary by content and length but comply with a set of core principles and content instruction.

**Type** – Hands-on medical training for wilderness setting; non-formal, deliberate, outdoors, first aid, wilderness setting.

**Certification** – Connected to several certifying bodies and complies with requirements for many outdoors programs (e.g., Boy Scouts of America, OSHA). Can receive one college credit.

**Instruction format** – Classroom and field; scenario and hands-on learning.

**Length** – Approx. 16 hours; commonly done over a weekend.

**Ages** – 14 and above.

**Tuition** - \$200 to \$300

**Course level** – Introductory, beginner.

Another likely similarity is that, without supplemental practice, knowledge retention will outlive skill acquisition. That is, NWAC course participants may be less likely to apply the skills than recall what they were taught. Skill deterioration appears to be an entrenched feature of WFA courses for laypersons and medical professional alike. The WFA literature is virtually silent on what causes this situation and offers no guidance. From my reading, there are four potential hypotheses:

- It is a feature of human learning that unpracticed skills become forgotten
- The skills are brand new to participants and they never learn them well
- The skills are not taught very well (do not use good feedback mechanism for learning)
- The courses cover too much material and too many skills (breadth vs. depth)

The bottom three can be mitigated while the top two is simply a question of constant practice, much like riding a bike or tying one's shoes.

Because their intended goal is to enable laypersons to respond to wilderness emergencies, WFA classes focus on active teaching techniques. Although typically without any research-based justification, the WFA tends to employ the following teaching strategies: lecture, responding to simulated scenarios, hands-on skill practice, and case study scenarios. This type of education seems appropriate and my evaluation of the NWAC curriculum showed similar pedagogical approaches. These pedagogies have an intuitive appeal because they center practice and application. However, the few skill and knowledge retention studies show that people forget the skills anyways. An opportunity for sharpening these teaching techniques exist for skill acquisition exists.

The last consideration from the WFA literature is how the courses are organized. They tend to have an underlying dual structure: for prevention and for accident response. Part of the WFA courses teach how to prevent or predict issues before they arise (e.g., heat exhaustion, sufficient caloric intake, cleanliness). The other half of the course is how to diagnose and provide care (e.g., deal with trauma, close wounds). Avalanche education courses use a similar structure but often include a debriefing session that have functions like experience processing, learning, and sharing.

In sum, there are at least two important points for the NWAC program designers. The first is that skills are harder to teach than knowledge and should command more time for practice. Skill acquisition will benefit from regular expert feedback and probably less exploratory or discovery learning. Second, WFA courses struggle to teach a huge corpus of skills and knowledge in a sixteen-hour course. NWAC should be cautious not to slip into this trap of cramming too much material into a weekend course. The skills to be taught should be clearly outlined and appropriate pedagogies carefully selected. Like AIARE courses, it is okay to note the instructional boundaries of courses and to develop a tiered system of courses that allow interested individuals to deepen their skills.

**Part III – Adolescent Psychology of Risk-Taking, Prevention Model  
Recommendations & Adolescent Risk Assessment and Management in  
Backcountry Skiing**

## Psychology of Adolescent Risk Taking in Experimental Psychology and High-Risk Wilderness Sports

In this section, I review literature on how youth assess risk in their lives. First, I define risk taking. Second, I briefly examine youth risk taking for sexual behavior, alcohol, and drug usage. Lastly, I turn to youth risk assessment in high risk sporting activities such as wilderness sports (e.g., downhill skiing). There are two reasons for this wide literature review. First, programs and interventions require a more comprehensive approach to helping youth that most research is able to address. That is, while researchers can specialize in an approach or theory or methodology, practitioners contend with devising programs that deal with messy, real-world problems. Second, the literature on adolescent behavior and risk taking psychology in the winter backcountry is extremely thin.

Because this section is about adolescent psychology, it is important to say something about the human mind. I view the human mind as product of natural selection over evolutionary time. Under normal developmental conditions, emotions, sensations, thinking, and our reactions to events help guide human beings to survival and reproduction. The brain itself has evolved and integrated over time such that some parts of the brain took form early in human evolutionary history and were later integrated with more recent parts. The brain develops over the human lifespan with some parts of the brain developing earlier or later than others in a single lifetime.

Jonathan Haidt (2006) describes the mind as a series of integrated parts that are in conversation and, at times, in conflict with each other. The different parts of the brain evolved over time to solve problems across the human lifespan. For example, the anterior pre-frontal cortex is more developed in human beings than in primates and is theorized to assist in holding primary and secondary goals in mind. The strong development of this part of the brain is required for cognitive processes like planning and reasoning (Koechlin, Basso, Pietrini, Panzer, & Grafman, 1999). On the other hand, in adolescence the brain readily releases more dopamine which is associated with the reward and pleasure centers of the human brain, triggering differential attention to environmental stimuli for youth compared to adults. This stage of brain development leads to teens being highly exploratory and experiential but also less able to self-regulate behavior, at least according to specific impulse control experiments (Steinberg et al., 2018). As a product of evolution, this adolescent stage of brain development may push them to learn about their physical capacities, seek new sensations and experiences, and set out on their own for territorial expansion and mating reasons (ibid). Adolescent risk-taking holds potential danger but also opportunity for growth and skill development (for risk taking benefits, see Spear, 2000, p. 421-423).

### Defining Risk Taking

Risk taking – *Act or fact of doing something that involves risk or danger to achieve a goal.*

- Webster-Merriam Online Dictionary

There are numerous definitions of risk taking and it is probably best to define risk taking according to a context. In the case of winter backcountry recreation, I define risk taking as:

Conscious or unconscious exposure of oneself to winter-specific dangers (avalanches, snow bridge crossings) such that the likelihood of negative outcomes (injury, death) is increased. Risk taking is typically goal oriented even if the goals may vary widely across individuals.

The purpose of winter backcountry education and safety training is to help individuals assess and manage risks so that their likelihood of injury or death is decreased.

### Youth Risk Taking in Sexual Behavior, Alcohol, and Drug Use

Adolescence marks a time period of increased exposure to new and risky behaviors including sexual behaviors and substance abuse. Youth risk taking, especially among young males, in driving accidents is well documented (Rhodes & Pivok, 2011). Adolescence is also a period of the gradually developing ability to self-regulate emotions and control behaviors (Holmes et al., 2020). Four major hypotheses have been raised to explain why adolescents engage in risky behaviors (Cohn, McFarlane, Yanez, & Imai, 1995).

On the one hand, theorists posit that young people are prone to feeling invincible and do not feel that their actions will result in death or injury. This view has been largely discredited as naïve.

A second theory argues that adolescents cannot effectively evaluate the risk of some actions due to their developing brains. Recent neuroscientific understanding of adolescent brain development suggests that the reward center of the brain develops prior to the pre-frontal cortex, which leads youths to seek sensations, thrill, and new experiences at the expense of evaluating long-term consequences (Gray & Squeglia, 2018).

Combining their risk assessment challenges with their developmental desire to experiment with sensation seeking produces a situation ripe for injury, poor health choices, and poor decision making (Hale, Fitzgerald-Yau, & Viner, 2014; Paglia & Room, 1999).

The third perspective takes an evolutionary view of the features of adolescent development and interprets them as adaptations for lifespan learning (Silva, Shulman, Chein, & Steinberg, 2016; Speer, 2000). The thesis is that the adolescent brain is “programmed” to seek new experiences and perceive lower risks to enhance opportunities to learn and, in ancestral times, to help youth feel comfortable with the risk of leaving the family unit to strike out on their own. This perspective is compatible with recent neuroscience, but it provides an evolutionary understanding for the utility of adolescent brains stages and avoids suggesting that youth take risks for no reason. Furthermore, some risk-taking behaviors, in turn, may generate effective and rapid learning, especially when supported by peers. Risky behaviors can be understood as exploratory or trial and error experiential learning. The problem is that the cost of some kinds of learning by experience may result in death and injury (Steinberg, 2008).

The final perspective argues that the reward/risk framework common to the neurobiological and evolutionary approaches is too narrow (Frühau, Zenzmaier, & Kopp, 2020). Risk taking in sports can be understood as a healthy outlet for beneficial youth and adult development (Dahl et al., 2018). The risk/reward framework misses several important reasons that participants report for undertaking risk in sports (Frühau, Zenzmaier, & Kopp, 2020). Individuals that engage in risk taking sports are diverse in their age and gender and are not restricted to adolescents. These sports





require a heavy investment in effort and skill building, thus questioning adolescent impulsivity. There are a wide variety of extreme sports and they vary dramatically in their exposure to risk. Lastly, participants report a wide variety of mental and physical health benefits from participating, such as disconnection from the stresses of life and enjoying becoming competent at-risk management.

It is challenging to discern which of these theoretical positions is more useful because each has benefits. The neurobiological approach explains how the developing brain may lead to higher risk taking. However, the psychological-experiential approach of Fruhauf and colleagues (2020) is better suited to understanding youth risk taking activity from their own perspectives and thus increasing the practitioner's capacity to empathize with the adolescent situation. For instance, when speaking with adolescents, invoking neurological explanations for their behavior maybe dismissed or viewed merely as interesting information. On the other hand, they may be more receptive to suggestions for risk management if their needs and motivations are taken seriously (Yeager, Dahl, & Dweck, 2018).

In what follows, I briefly review youth risk taking in terms of sexual activity, substance abuse, and intervention programs.

#### RISK TAKING IN SEXUAL ACTIVITY AND FOR SUBSTANCE ABUSE

Although not exactly overlapping with risk-taking in sports, youth take health-related risks. From a sociological perspective, research suggests that family and peer norms and the connectedness that a youth feels towards family and peers have a significant influence over the kind of sexual activity they engage in (Kirby, 2001). That is, youth are likely to engage in similar behaviors to what their close friends do, follow the sexual-behavioral norms of their sexual partners, and somewhat mimic what they observe in their home lives. Youth are less likely to engage in early sexual behavior if they are strongly connected to family, institutions or other groups that express clear views against early sexual behavior.

One reason health practitioners are concerned about adolescent substance use is that it can have adverse long-term effects on their cognitive and social development (Gray & Squeglia, 2018). Sexual behavior differs from substance abuse (e.g., alcohol, marijuana, illicit drugs) because the latter has a strong social, public component (Paglia & Room, 1999). For youth, substance abuse can bestow a feeling of autonomy, symbolic freedom, and a perceived sense of early adulthood (Jessor, 1992). Programs seeking to limit substance abuse among adolescents may be misinterpreted by youth as trying to take away their ability to seek autonomy, freedom, and adult-like experiences.

#### SUCCESSFUL INTERVENTION PROGRAMS

It is easier to alter the way youth think and talk about risk than it is to change their behavior (Paglia & Room, 1999; Steinberg, 2007). Programs that successfully reduce sexual risk and substance abuse among youth have clear behavioral messages and use strategies informed by adolescent psychology. Paglia and Room (1999) recommended presenting youth with the immediate social consequences of their actions (e.g., stigma, visible impacts on body). The authors also stated that effective approaches use informational strategies to counter youth misconceptions about the prevalence of youth substance abuse *and* provide youth with realistic strategies to avoid or resist substance use. They also note that youth will often self-select into peer groups that experiment with drugs or alcohol, so the negative peer influence may not be an "external" force in their lives.

The purpose of reviewing some literature on youth risk-taking behavior for sexual behavior and substance use is to gain some background knowledge that is applicable to the context of winter backcountry risk-taking for youth. While there are major differences between wilderness risk, risky sexual activity, and substance abuse, there are some considerations worth transferring across settings:

- Youth behavior is influenced by their peer groups. Youth who self-select into risk-taking peer groups may take more risks because of peer reinforcement of exploratory behavior. These youth may be vying for peer status and experimenting with the boundaries of their physical capacity.
- While youth may cognitively register dangers and risks, they may underestimate the consequences of their actions.
- Youth who are strongly connected to groups or clubs that reinforce safety-conscious cultural norms may be more likely to behave according to those norms.
- If expected to go against risky decision making, youth may require training in how to resist peer influence, remove themselves from a risky group or publicly raise valid safety concerns in a way they feel comfortable.

### **Youth Risk Taking in Skiing**

In this section, I review literature on adolescent risk taking in extreme, wilderness, and nature sports, with an emphasis on skiing. Extreme sports may be defined as “as recreational physical activities that carry a risk of serious physical injury or even death” (Hetland et al., 2018, p. 2). Unfortunately, very little research has been conducted on adolescent participation in backcountry skiing. Most research on adolescent and child skiers focuses on in-bounds resort skiing accidents and fatalities. I will briefly review some of that work and then present the most relevant research to adolescent backcountry skiing, which comes from European scholars.

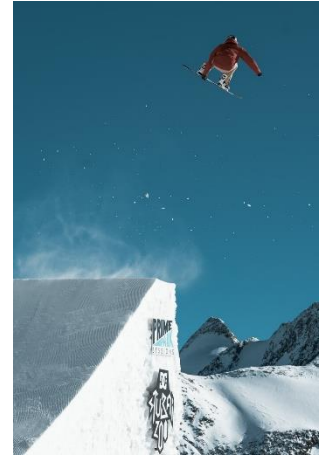
Wilderness or nature sports represent an ideal activity-environment setting to study risk taking because the possibilities and challenges are limited only by advances in equipment, training, and the human imagination. At least in the industrialized world, recreation and risk taking in these environments has been increasingly supported by media coverage of Youth Olympic Games, documentaries of extreme athletes, and extreme sporting events as well as an expanding infrastructure for recreation (Caine & Provance, 2018). The dual systems of adolescent brain development, the rapidly forming pleasure/reward system and the more gradually forming self-regulation system (Steinberg, 2007), predict that young people will engage in risk-taking behaviors in wilderness sports as well.

#### **RESORT SKIING**

Children and youth represent nearly a quarter of all skiers globally (Provance, Daoud, Tagawa, & Rhodes, 2018). The most prevalent risks for youth skiing injuries and death depends highly on if youth are resort or backcountry skiing. For instance, avalanche dangers pose a more serious risk for backcountry rather than resort skiers and resort skiers most commonly suffer lower-limb injuries and head trauma from collisions and falls (Meyers, Laurent, Higgins, & Skelly, 2007). Unfortunately, most studies are epidemiological and document the nature and location of skier injuries.



Most epidemiological studies of youth skiing accidents have examined alpine downhill skiing in resort settings. Several studies have cohered around a set of risk factors that apply to adolescent injury and death in resort skiing accidents: new snowfall, icy slope conditions, frequent use of terrain parks, poor visibility, fatigue, chronological age, and gendered behavior patterns (Caine and Provance, 2018; Heggie and Küpper, 2018; Meyers, Laurent, Higgins, & Skelly, 2007; Provance, Daoud, Tagawa, & Rhodes, 2018). When examining Colorado resort skiing fatalities by age, Xiang, Stallones, and Smith (2004) found a significant increase in fatalities from ages 18 to 29 and that adult males (defined as over 18 years old) died much more often than female skiers.



One of the most dangerous skiing activities is the use of resort terrain parks for jumping. In one study of resorts in the state of Washington, the researchers compared injuries between slope riders and terrain park users (Brooks, Evan, & Rivara, 2010). They found that persons injured in terrain parks tended to be male, ages 13-24, self-identify as an expert, and use snowboards. Warda and colleagues (2012) confirmed a set of risk factors for skiing and snowboarding injuries that included being a child or adolescent, being male, using improperly fitted equipment, and, in contrast to Brooks and colleagues (2010), most injuries occurred with beginner skiers on their first day (from wrist injuries, collisions, falls, and poorly fitted equipment).

The risks inherent in and the skills required for backcountry skiing are very different from resort skiing or taking laps in resort terrain parks. The main risks shift from collisions and wrist injuries to avalanches and full-scale disorientation in the backcountry. Fortunately, some recent work out of Europe has offered a glimpse into adolescent behavior in the winter backcountry.

#### ADOLESCENTS AND BACKCOUNTRY SKIING

Based on my literature searches, Anika Frühauf and her colleagues are conducting some of the most interesting work in the adolescent and adult space on high-risk sports, including resort skiing, backcountry skiing, and mountain biking.<sup>3</sup> They conduct qualitative and quantitative research and demonstrate a much more considerate and deep understanding of the sports that they study, especially when compared to the epidemiological studies of resort skier injuries.

In one study (Frühauf, Anewanter, Hagenauer, Marterer, & Kopp, 2019), compared the motivations for skiing between resort skiers and backcountry or “freeride” skiers. They looked at relationship among three psychological constructs: sensation seeking, sense of agency, and emotional regulation. The reason they examined these three constructs is because additional research across extreme sports showed that motivational profiles differ across sports (Hetland et al., 2018). Hetland and colleagues reported that skydivers are motivated by sensation seeking and mountain climbers by autonomy and emotional regulation.

Frühauf’s findings were illuminating. First, they noted that men more commonly backcountry ski than women. Second, backcountry skiers experience more “close calls” than resort skiers. Third, and perhaps expectedly for those familiar with these activities, backcountry skiers have a higher motivation for thrill seeking than resort skiers. More surprisingly, backcountry skiers report more

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<sup>3</sup> See her list of publications here: [https://www.researchgate.net/profile/Anika\\_Fruehauf](https://www.researchgate.net/profile/Anika_Fruehauf)

transfer of agency and emotional regulation from their backcountry experiences to their normal lives. This last finding suggests one of the reasons people may be attracted to backcountry skiing over resort skiing: the additional challenges require technical equipment and knowledge but also more psychological control and mental exertion in assessing and managing risk.

In one of the few studies on adolescent backcountry skiing, Frühauf, Zenzmaier, and Kopp (2020) conducted interviews with adolescent and adult backcountry skiers to learn about their motivations and sense of risk. They found tremendous similarities between youth and adult skiers. Adolescents and adults were motivated by rigorous challenges, the experience of mastery and growth, and how skiing created distance from everyday worries. Adults and youth differed, however, on the role of friendship. Adults spoke about deepening friendships with trusted friends. Youth described wanting to be part of a community of individuals with similar interests with whom to share these experiences.



Frühauf, Zenzmaier, and Kopp (2020) reported on youth perceptions of risk assessment and management. Adolescents learned about winter backcountry safety from two sources: parents and ski clubs. Youth also spoke about risk in terms of being able to completely eliminate it, while adults spoke about minimizing risk. Adults were also much more detailed in how they managed backcountry risk while some youth noted that they preferred not to think about it because the dangers were overwhelming to consider. Adults also learned from direct experience, having had more friends who had close calls or died in avalanches. It was rare that youth had these experiences to draw on. Youth also appear to fall prey to the idea that risky choices are likely to result bad for others but not themselves. This is known as the optimism bias (Haidt, 2006).

Frühauf, Zenzmaier, and Kopp (2020) conclude their article with implications for education and intervention. They raise the dilemma that the attractive features of backcountry skiing (e.g., problem solving, sense of autonomy, reward of navigating challenges) comes part and parcel with the high risk of dying in avalanches or due to adverse weather. They strongly support education interventions for adolescents to increase their diversity of learning sources from family and clubs to include formal educational programs. They recommend trying to embed a culture of safety into youth peer groups to support good practices and create momentum for positive peer pressure.

## **Part IV – Recommendations for Program Growth and Refinement**

## Recommendations for Growing the NWAC Program

In this final section, I offer direction for the NWAC adolescent winter backcountry safety program. Many of the recommendations will follow from the literature review and program evaluation completed in spring of 2020 (Deliverable 2). Recommendations 1 – 5 are for program improvement. Recommendations 6 – 9 are for scaling and expanding the program. Recommendation 10 is for evaluation.

### 30,000-foot View of the Recommended Direction for the Program

The direction of the program should be steered by a deep understanding of the problem. Adolescents may be wired biologically to take risks in an effort to develop competencies, gain skills and experience, and prepare for adulthood. In young people, the reward/risk dual brain systems are tilted heavily toward reward and less toward risk assessment. Young people learn through experience and they are inclined to want to seek new experiences. This is problematic in high risk activities like driving vehicles and backcountry skiing. In backcountry skiing the winter setting is unfamiliar and the hazards are not obvious to the observer. Well-structured avalanche education and decision-making interventions are more better options than young people learning from experience under high consequence conditions.

If learning by experience in the winter backcountry is not a viable route, how else? Research shows that young people learn about the dangers of the backcountry from family members and clubs. It is reasonable to conjecture that youth also learn from peers, who may have original ideas or are re-voicing ideas from parents or club coaches or mentors. The quality of these sources of information is entirely unclear from the research. At best parent and peer advice and instruction will be highly variable with some offering better advice than others.

NWAC's staff offer a different solution: non-formal quality education program. Their approach to education will be research-based, evaluated, thoughtful, and provide a more consistent message to the adolescents they reach.

One critical insight should guide NWAC moving forward. **Simply stated, focus on the social unit.** Adolescents are enmeshed in a complex social web and leveraging their social networks may be an important part of the wider solution to keeping youth safe. Youth travel into the backcountry with family and peers. The degree to which NWAC's toolkit and instruction are supported and reinforced among more members of these groups is the degree to which the education intervention will be more successful. Imagine families practicing safety protocols each time they go out. Imagine youth leaders offering lucid analyses of objective and subjective hazards to their peers as they head out into the backcountry.

As it did in its pilot program, NWAC **should continue to recruit participants from families, adolescent groups, and ski/mountaineering/outdoors clubs who travel into the winter backcountry.** Ideally, the skills and knowledge taught by NWAC will become established practices for these groups. To accomplish this, however, will require teaching young people not only to identify hazards and evaluate options but also to advocate for their analyses and decisions with family members and peers. Again, these may be life and death decisions so teaching trained youth to speak up may be a critical component of keeping them safe in the backcountry.

This social unit approach presents another potential challenge and opportunity. The skills, insights, and knowledge that constitute NWAC’s curriculum ought to be translated into set of practices that can be applied at somewhat specific points in time. The obvious organizing principle for these practices is the entire backcountry outing itself. What should youth be thinking about and doing at each stage of the outing and how can they be trained or empowered to make thorough analyses and speak up? (see Table 1 for a hypothetical dialog). This is precisely where the notion of “practices”, “the social unit”, and “outing” come into contact. Teaching families and peer groups a set of practices for identifying subjective hazards and changing weather conditions within the context of an outing will be invaluable. This will also require teaching youth to advocate for themselves and their decisions under authentic, real-world circumstances. How do young people bring up a concern when the group seems to be driving toward a poorly considered consensus? What practice or activity can be taught to families to increasingly ensure that they are making good group-level decisions and avoiding heuristic traps? NWAC is on the right track currently with its curriculum design but even more attention should be paid to specific dialog and analysis practices that can be taught to see through heuristic traps and other potentially dangerous decisions.

**Table 1.** Hypothetical dialog between two youths on an outing. The left column is a hypothetical discussion based on youth without training. The right column shows Person 2 with developed questioning skills who demonstrates persistence in establishing a baseline of safety or danger for the decision.

Hypothetical dialog without training	Hypothetical dialog with advocacy training
Person 1 – “How’s it going back there?”	Person 1 – “How’s it going back there?”
Person 2 – “Ok. Do you think it’s safe to cross this slope?”	Person 2 – “Ok. Do you think it’s safe to cross this slope?”
Person 1 – “I think so. I did it last weekend and it gets way mellower once we get through this part. But we should move fast. The snow is already covering our track.”	Person 1 – “I think so. I did it last weekend and it gets mellower once we get through this part. But we should move fast. The snow is already covering our track.”
Person 2 – “Alright. I’ll follow you.”	Person 2 – “Right. But it’s snowed a foot since last weekend and we haven’t even measured this slope to see if it could slip.”
	Person 1 – “We’re literally halfway through it. Don’t worry. It’s fine.”
	Person 2 – “Come on. If we cross it once, we’ll have to cross it again. I really think we need to gather a few measurements to figure out how dangerous this might be. A foot of new wet snow is a major red flag.”

If the goal is to move toward targeting the education initiative at a social unit (e.g., peer groups, youth mountaineering clubs, families), then a further question needs to be explored: How can NWAC best establish its training in a wide youth population? This question is well outside of the evaluator’s expertise. However, there are a few ways to begin thinking about this process. Youth in a particular geographic area (Seattle area, Denver metro) can be targeted to increase the density of youth who have access to the educational initiative. At the conclusion of each course, youth can be given a patch or badge that they can put on their packs that publicly shows that they were trained by NWAC and that they are knowledgeable on the BEGS and WANTO protocol. This would help promote the visibility of the program but also help young people identify others who have similar training. Lastly, as discussed earlier, targeting pre-existing networks or social units (families, friend groups) may enhance the ongoing use of the safety protocols.

The NWAC program is still in a stage of research and development. To date, it has not been run through even once in its intended form. It was run once with a population of students that belonged to a mountaineering club, a group that already had a culture of safety. Unfortunately, the program component that involved the youth participants planning a winter outing with their families was cut short because of Covid-19 precautions. This effectively means that there is no information to assess or evaluate how that aspect of the program would have functioned. Running the program with other youth groups could produce different outcomes. For these reasons, **another strong recommendation** is to run the program on several complete cycles (2 or 3 full program cycles) during the winter 2020/2021. Information from exit tickets, student responses, and instructor feedback should be collected at the end of each cycle and used to improve or modify the program for the following cycle. This same information should be pooled and examined over the spring and summer to identify positive and problematic patterns in learning and skill development. In this way, it is more likely that a strong program tested across different youth populations will be ready for wider dissemination in the winter of 2021/2022.

With careful work and patience, the NWAC program could become a unique and effective model for adolescent backcountry winter education across North America, Europe, and Asia.

### **Recommendation 1 – Clarify the program’s mission statement.**

Develop or revise a clear mission statement and set of goals for the NWAC adolescent program. Let the statement set the tone and the fundamental purpose of the program and let it be informed by some of the insights from this report. An example mission statement might read:

Through education initiatives, to reduce adolescents’ exposure to winter backcountry risk and danger; to transform the winter backcountry into an environment full of relatively safe developmental opportunities for adolescents by igniting a widespread youth culture around safety.

This mission statement maintains the core purpose of an education program by focusing on risk assessment and management. However, it has a degree of positivity and notes that winter backcountry activities provide excellent developmental opportunities for young people, thus honoring on of their and their family’s motivation for this form of recreation. Lastly, it targets an important aspect of adolescent development, namely their peers. The mission statement stays true to some but, of course, not all worthwhile features of adolescent development. For example, it omits the importance of good decision making in NWAC’s curriculum.

### **Recommendation 2 – Define and operationalize adolescence**

As simple as this seems, scholars of adolescent development argue endlessly about defining the upper and lower age boundaries of adolescence. Such an exercise can help sharpen the full target audience of the NWAC program. For instance, if adolescence includes the ongoing brain development into the mid 20’s, then college recreational facilities can become potential sites for program expansion.

### **Recommendation 3 – Identify qualities of good instructors**

Adolescence is a period of marked change. Children begin to orient toward peers, they become hyper-sensitive to being treated like children, and they go through identity experimentation. Not everyone is cut out for working with youth.

Pope (2010) discussed the ideal qualities of a WFA instructor and this article is worth reviewing to gain a sense of how to organize instructor qualities. From the literature review in this report, instructors of an adolescent winter backcountry safe course should have a few qualities:

- They should have winter backcountry field experience.
- They should be trained sufficiently in avalanche safety and how to teach it.
- They should have sufficient safety training (e.g., WFA) for taking youth into the field.
- They should be sensitive to the developmental needs of youth: respect from adults, acknowledgement of their motivations for their choices, taking care not to threaten their social status, and not treating them like children.
- They should be interested in speaking with and persistently soliciting the ideas of young people to gather information about their conceptions of safety in the winter backcountry.

At least three important points can begin to frame a short training program for instructors interested in working with youth. First, youth have less life experience than adults to draw on. Education should form a part of how they learn to be safe. Second, youth, like adults, suffer from optimism bias. They are likely to think that accidents and typical misjudgments (e.g., heuristic biases) are more likely to occur to someone other than themselves. Third, youth may think in terms of risk elimination rather than risk management or minimization.

One suggestion is to use case studies of youth who have died or had close calls. Research supports that youth and adults can change their minds when they experience close calls or deaths of people they know. This type of experiential learning is more available to adult recreationists because of age and expanded social networks.

Youth (just like adults) likely already have ideas about backcountry avalanche safety that may be linked to high trust sources like family members or ski club mentors. Their pre-existing knowledge will be compared and contrasted with whatever new information is presented during the course. It is worthwhile to get youth to discuss their ideas aloud among peers and seasoned instructors.

Levels of risk taking appear to be gendered with males taking more risks and accounting for more fatalities. This suggests an important and (maybe) novel component for avalanche safety: breaking youth into groups to have explicit gender discussions. Males and females may need different advice.

#### **Recommendation 4 – Replace direct adolescent brain instruction with advocacy skills**

One worry with presenting brain research to youth is that young people may interpret it as adults suggesting that there is something incomplete or pathological about being an adolescent. While more nuanced evolutionary perspectives see adolescent risk taking as ancestrally important for territory expansion and rapid learning from experience, young people may be turned off by this kind of discussion because it does not address their felt needs or motivations.

Furthermore, the adolescent development literature notes that young people orient toward their peer groups. While the adolescent brain research is not silent on this issue, a brain-based approach will usually not address problems like how a young person should or could raise safety concerns to a group without seeming awkward, out-of-place, going against the flow of the day, or not “cool”.



One thing young people will need to survive in the backcountry is their ability to identify and then raise concerns to the group about red flag situations. Many youths will not feel empowered to raise concerns or know how to address adults or more dominant peers because they have limited experience in leadership positions and their age typically lowers their social status. Building in course time for teaching youth to *authentically* (as defined from the adolescent point of view) deal with raising concerns will be a valuable and actionable skill.

#### **Recommendation 5 – Clearly identify the skills being taught and teach them carefully**

One consistent problem identified in the First Aid Wilderness literature is that skills are forgotten long before knowledge. This is troubling because the skills are fundamental to applying what is learned during classes to actual settings. As I wrote in the section on “Wilderness First Aid”, it is unclear what drives the loss of skills, but there is definitely room for improved teaching. One approach is to examine the targeted skills carefully, break them down, and see if they can be taught more effectively. Provide young people and family members with time to practice these skills.

#### **Recommendation 6 – Decide between a direct course delivery model, selling the program model to avalanche safety providers, or a hybrid approach**

This is a core question that will decide how the program develops afterwards. Direct delivery is when a program delivers the program itself to the target audience (e.g., adolescents, families). Selling the program model pushes the direct instruction out to avalanche education providers on the hope that there is a market for this kind of program. NWAC would operate like a support training, consulting group or curriculum provider. Under this model, NWAC would consider distributing materials, curriculum modules, as well as training the trainers. The hybrid approach consists of a little bit of both.

The answer will depend on motivation, resources, and the potential for identifying a clear market for an adolescent winter backcountry safety program.

#### **Recommendation 7 – Adopting a set of flexible design principles**

This recommendation addresses how programs can be adopted and adapted by instructors and organizations that might pick this program up. The central question is if organizations will be required to teach the program in a lock-step manner or if they can adapt the program for their population and climate conditions.

A design principle approach can be contrasted with a program fidelity approach. Program fidelity refers to how closely a program follows the model or the ideal delivery of the program. Using design principles allows *certain aspects* of the program to vary across populations or settings. In this way, program providers or purchasers can make the program “their own” to some degree. This seems very important for backcountry winter programs because local conditions in snowpack, ski season length, and the common modes of backcountry travel vary geographically across the country.

Some design principles were identified in the NWAC course’s theory of change in the program evaluation (Deliverable 2). In part I of this document I suggested using “place” as design principle because place accounts for climate and the use of local and familiar ski areas as examples.



## Recommendation 8 – Target audiences

Because the NWAC program might be a unique program, it has the potential to open up innovative markets and audiences. I want to encourage NWAC to think big and feel confident that a solution to young risk taking in the backcountry will take a wider impact than at the individual level. Embedding safety protocols and norms in youth culture can be achieved through families, out-of-school clubs, and in-school ski clubs. These will be great sites for reaching young people and inspiring a youth safety culture, which the literature suggests can be a potent way to redirect status and prestige acquisition toward prosocial behavior.

Different kinds of trainings can target youths, youth leaders, families, ski clubs, ski club staff, and even private companies that provide avalanche education (once they see the potential to teach to youth and families). These different audiences will require different approaches, such as direct instruction to recipients (youth) or train the trainer models (ski club staff). It will also require the production of curriculum and materials for different audiences. Let me explore a few:

- For emphasis on training the social unit –
  - Families – Weekend programs can be designed for families to instill common language, common use of safety protocols or toolkits, and norms around avalanche safety. Recall that it is very common for youth to learn from their families anyways and to backcountry ski with them. This approach has the advantage of reinforcing safety culture within families.
  - Out-of-school adventure and ski programs – Youth and parents can be recruited for programs through different community programs that have a vested interest in training young people to be safe in the backcountry. It is also possible that programs like Boy Scouts of America, Girls Scouts, and Sierra Club Inspiring Connections Outdoors (ICO) that exist in mountainous terrain could be outreach options for winter backcountry safety courses.
- For the wide expansion of the program -
  - Staff of ski or mountaineering out-of-school programs – NWAC has already explored this kind of partnership when they recruited youth for their pilot program in the winter of 2020. This focus, however, is teaching staff how to teach young people about winter backcountry safety using NWAC’s tools and research. This will be like a train-the-trainer program.
  - Private avalanche education providers – Related to the previous point, avalanche education programs may be interested in learning how to teach adolescent backcountry skiers and operate family programs. Traditional avalanche education does not target family or youth so they may discover a need for training and family or adolescent-specific materials and approaches.
  - In-school ski programs – I do not intend to suggest that NWAC go into schools during the regular school day, which would probably look like a motivational, one-hour pitch for avalanche safety. Schools in mountainous states typically operate ski programs and these might be nice sites for direct instruction or training their staff on adolescent winter backcountry safety.
- Booster programs – The literature on health interventions has shown the effectiveness of “booster” programs. These are follow-up sessions that may occur annually or otherwise. The

goal is to offer a refresher course that last a day or a few hours to families and youth participants. Booster programs can also dive deeper in specific topics or offer updates on new approaches to avalanche safety. It can also help participants identify where skill and knowledge deterioration have occurred.

- Flexible model for other types of adolescent winter backcountry modes of travel – While more market research may be needed to confirm how many youths participate in these other activities, snowshoeing and snowmobile recreation may be increasing in popularity. If so, adolescents likely participate in these activities, too. One complication to expanding into this market, in contrast backcountry skiing, is that there may be limited awareness of the need of safety courses or education.

### **Recommendation 9 – A paid or voluntary internship for an adolescent leadership group**

An internship for adolescent backcountry safety leaders is a bold innovation. The idea is that a core group of youth will be trained to participate in and lead aspects of the trainings, especially for family and adolescent-centered programs. I can imagine at least four points of merit for this approach. First, the youth leaders will become well-versed in avalanche safety and become relative experts. Second, older adolescents may be excellent role models for younger adolescents and middle school students and increase the plausibility of the program for youth. Third, it shows a deep programmatic commitment to empowering youth. Fourth, youth leaders can contribute to program improvement by providing formative feedback on the program itself. That is, they may be equipped to interpret the misinterpretations and misunderstanding of adolescent participants in a way that can be useful for editing curriculum and lesson plans.

### **Recommendation 10 – Evaluate participant outcomes**

If NWAC decides to run a few program cycles during the winter of 2020/2021, there will be an opportunity to evaluate skills, knowledge, and self-efficacy (confidence) as participant learning outcomes of the program. There are few kinds of evaluation that seem promising.

- 1) Learning outcomes for each course - At the beginning and end of each course, participants can be surveyed to assess growth and learning as a result of the course.
- 2) Longitudinal study – From the studies on First Aid and CPR, participants appear to experience severe decay in their skills over time. A study overtime can help NWAC discover if this a problem for its training both during a single season and across seasons.
- 3) Formative feedback for course improvement – From each course cycle, information can be gathered from participants and instructors to fine-tune the program for each subsequent course cycle during a single season and across seasons.

## Temporal Recommendations

This set of recommendations help provide a sense of how to move the NWAC program forward in chronological order. These recommendations are broader and include insights from other work conducted for the NWAC program (e.g., Deliverables 1 and 2).

### Summer 2020

- Review and integrate the information from Deliverables 1, 2, and 3.
- Edit curriculum materials to differentiate lesson plans for the students and lesson plan explanations for instructors (i.e., teacher manuals vs. instructor work).
- Edit the toolkit and other materials according to the findings from Deliverable 2.
- Make a formal decision between keeping or replacing the lesson on adolescent brain development.
  - If replacing, decide what replaces it (my recommendation is the youth advocacy piece).
- Consider how skills and knowledge can be blended into specific “practices” that youth and families can be taught within the context of an outing. Practices are like packages of activity or dialog that will help young people make and voice important decisions. For example, how might a teenager dispute a poor choice to travel into the backcountry on a given day and instead advocate for an in-bounds resort day?

### Fall 2020

- Planning and recruitment. Run a weekend-length program for adolescent participants two or three times over the winter to iron out kinks and use the formative feedback sheets provided in this report to improve the program.
- Experiment with the formative feedback sheet (“Instructor Debrief Form”) provided as a file attachment to collect data for program improvement.
- Run courses in a format that will function for the long-term. It is difficult to say what that will look like, but a weekend course with a split classroom and field component is a starting option. Formative feedback from course instructors and students can help make changes to the course.

### Winter 2020/21

- Continue running courses and collecting data from participants and instructors.
- Evaluate learning and skill gains for participants.

### Spring 2021

- Make changes to the course as per the data collection and feedback from instructors.
- Finalize a decision if this program will be taught directly or marketed out to providers or be a hybrid model (see recommendation #6).
- Create a marketing plan for outreach and program expansion (see recommendation #8)

### Summer 2021

- Conduct outreach and create additional required materials.

## Appendix A.

### **Conceptual Map for Deciding to teach a topic in-class, in the field, or both.**

See attached PowerPoint slides labeled “Conceptual Aid for Class-Field Decisions.”

## **Appendix B.**

### **Instructor Debriefing Form**

See .pdf attachment labeled “Instructor Debrief Form”

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