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Graduate Studies

Utilizing Adventure Education to Teach Social Skills to School-Aged Students with Autism Spectrum Disorder

A Critical Analysis Project Submitted in Partial Fulfillment of the Requirements for the Master of Science in Exercise and Sport Science-Physical Education Teaching Adapted Physical Education Teaching Concentration

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ADAPTED PHYSICAL EDUCATION
CRITICAL ANALYSIS PROJECT
FINAL APPROVAL FORM

Candidate: Hannah R. Zimmerman

We recommend acceptance of this Critical Analysis Project in partial fulfillment of the candidate's requirements for the degree:

Master of Science in Exercise and Sport Science-Physical Education Teaching: Adapted Physical Education Teaching Concentration

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ABSTRACT

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Children with autism spectrum disorder (ASD) have deficits in social communication and social interaction across multiple contexts. These deficits include social-emotional reciprocity, deficits in nonverbal communication, and deficits in developing and maintaining and understanding relationships. These factors can hinder a child's ability to express feelings, understand the feelings of others, and form meaningful relationships with their peers. Children with ASD can learn needed social skills through many interventions. Through properly planned adventure education (AE) instruction that is focused on the affective domain students, including those with ASD, can develop valuable social skills. AE aims to improve participant's interpersonal skills and build relationships using adventurous activities to provide the opportunity to grow individually and as a group from problem solving and challenge tasks. The purpose of this critical analysis project was to develop an instructional video to provide a comprehensive overview of practical teaching methods in AE that can be used to teach social skills to children with ASD. The video was developed for general and adapted physical education teachers, special education teachers, and AE professionals. Key components of the video and this document include: teaching social skills development through AE for school-aged children; benefits of AE for persons with disabilities; benefits of AE for students with ASD specific to social skills, and literature on teaching social skills to students with ASD.

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CHAPTER I

INTRODUCTION

Autism spectrum disorder (ASD) is categorized as persistent deficits in social communication and social interaction across multiple contexts currently or by history, as manifested by: deficits in social-emotional reciprocity, deficits in nonverbal communication, and deficits in developing and maintaining and understanding relationships (American Psychiatric Association [APA], 2013). Individuals with ASD tend to present these deficits by failing to maintain back and forth conversation, failure to initiate or respond to social interactions, lack of facial expressions, not maintaining eye contact, difficulties adjusting behavior to suit various situations, and difficulties making friends (APA, 2013). Additionally, ASD is characterized by repetitive patterns of behaviors, interest, or activities in two of the following: stereotyped repetitive motor movements, insistence on sameness, highly restricted fixated interests, or hyper- or hyporeactivity to sensory inputs. Individuals with ASD tend to present these patterns by lining up objects, difficulties with transitions, excessively pervasive interests, and excessive smelling or touching of objects. These symptoms are present from early childhood and limit or impair everyday functioning.

The prevalence of ASD across the U.S. is at about 1% of the population (APA, 2013). According to the Centers for Disease Control and Prevention (CDC), an estimated 1 in 59 children over 8 years old have been identified with ASD (CDC, 2018). The Autism and Developmental Disabilities Monitoring (ADDM) found that ASD prevalence estimates varied among geographic location within the U.S., sex, race/ethnicity, and socioeconomic status (CDC, 2018). Males were four times more likely than females to be

identified with ASD. The ADDM found that age was relatively consistent over time and the median age of earliest known ASD diagnosis has remained close to 53 months during 2000-2012. The latest finding from the ADDM Network provide evidence that the prevalence of ASD is higher than previously reported estimates. Throughout the U.S., the prevalence of ASD ranges from 13.1 to 29.3 per 1,000 children 8 years old. (CDC, 2018).

There are three severity levels of ASD. Level one requires the least amount of support but does present deficits in social communication that cause noticeable impairments and inflexible behavior that causes significant interference with functioning (APA, 2013). Individuals in level one can speak in full sentences but their attempts to communicate with others are odd and typically unsuccessful. Level two requires substantial support and is marked by deficits in verbal and nonverbal social communication. These deficits cause noticeable impairments and inflexibility of behavior and difficulty coping with change even with support (APA, 2013). Individuals at level two speak in simple sentences and are limited to narrow specific interest. Level three requires very substantial support and is marked by severe deficits in verbal and nonverbal communication, minimal reciprocal reactions with others, inflexibility of behaviors, and great distress when changing focus or action (APA, 2013). Individuals at level three have few words of intelligible speech and only respond to very direct social approaches. Additionally, individuals at level three have great distress/difficulty changing focus or action.

Social skills are specific behaviors used in everyday life to produce positive social interactions between people (Lynch & Simpson, 2010). Social skills include actions such

as smiling, making eye contact, and initiating or reciprocating in conversations. It is important for children to establish social skills early during the preschool years. In preschool, children learn and practice the skills they need to foster social, cognitive, communicative, and emotional development (Guralnick, Neville, Hammond, & Connor, 2007). Through learned social skills, children create friendships that help them form a sense of belonging and security (Geisthardt, Brotherson, & Cook, 2002).

Social skills are important determiners of developing friendships. The development of friendships typically includes complicated verbal and nonverbal communication requiring an individual to perceive social cues and self-regulate (DeGeorge, 1998). Students with autism often lack the social skills needed to communicate effectively to form meaningful relationships with others and tend to have poor friendships as compared to their typically developing peers (Kasari, Locke, & Gulsrud, 2011). Making friends tends to be one of the biggest challenges and frustrations for children with ASD (Church, Alisanski, & Amanullah, 2000). Children that do not develop meaningful friendships tend to feel alienated and have an increased potential of getting in trouble (Rao, Beidel, & Murray, 2008)

The prevalence of ASD makes it very likely that every physical education teacher will regularly interact with students with ASD in their classes (Sayers-Menear & Smith, 2011). Physical education can often present an overwhelming amount of stimulation from sensory input for children with ASD (Menear & Meumeier, 2015). Children with ASD may have difficulties expressing their interests or dislikes, communicating their needs to peers, and portraying or understanding signals or signs associated with games or activities (Lee & Vargo, 2017). Deficits in social-communicative behaviors may result in

children with ASD avoiding or not actively participating in physical education. When children do not participate in physical education, they spend less time with their peers improving social skills and have little opportunity to improve physical skills thus resulting in motor skill delays. Delays in motor skills may result in challenges related to future physical activity participation, low motivation, poor gait/posture, and lack of coordination (Provost, Lopez, & Heirmerl, 2007). Research has reported that 79% of children with ASD show movement impairments (Green, Charman, Pickles, Chandler, Loucas, & Simonoff, 2009). It is important for children with ASD to develop motor skills with their peers. Fundamental motor skills have been shown to positively correlate with children's self-concept and motivation (Gallahue, Ozmun, & Goodway, 2012).

The deficits that children with ASD display can also impact their participation outside of physical education. Parents of children with ASD have reported lower rates of participation in fewer types of physical activities than their typically developing peers (Bandini, Gleason, & Curtin, 2013). Lower participation in physical activity contributes to a higher rate of overweight/obesity. Higher rates of overweight/obesity have been reported in children with ASD as compared to their typically developing peers (Covery, Menear, Preskitt, Goldfarb, & Menachemi, 2015). Additional studies have suggested the increased rate of obesity is due to children with ASD engaging in sedentary behaviors more frequently. The possible cause of this increased obesity rate is students with ASD tend to lack social skills, have sensory challenges, and typically have secondary conditions and medication causing weight gain (Curtin, Jojic, & Bandini, 2014).

Physical activity is highly beneficial for children with ASD because it increases integration into age-appropriate peer social activities and improves health behaviors and

movement skills (Lee & Vargo, 2017). Research supports physical education for health and social benefits (Fernhall, Borghi-Silva, & Babu, 2015). When appropriate strategies are in place that meet the student's specific physical, cognitive, emotional, and sensory needs, physical education can be very beneficial for students with ASD. Teachers need to adapt the class structure and activities to best support the student's individual needs. There are many teaching strategies and curriculum models that have proven beneficial for students with ASD in physical education.

Adventure education (AE) is one curriculum model used in physical education. Adventure activities are incorporated into the SHAPE America middle and high school grade level outcomes for physical education (SHAPE, 2013). Adventure education is a structured sequence of physical activities and opportunities for reflection which aim to promote personal and social development (Cosgriff, 2000). One of the main goals of AE is to improve participant's interpersonal skills and build relationships using adventurous activities to provide participants the opportunity to grow individually and as a group from problem solving and challenge tasks (Miles & Priest 1990). The ability to interact with others in this unique environment allows individuals to gain social competence that might not otherwise be possible (Allison & Von Wald, 2010; Tucker, 2009). Through AE, participants are taught a variety of life skills including how to set realistic goals, build trust in themselves and others, how to have fun, improve physical mobility, enhance problem solving skills, and gain self-confidence (Bartley, 1997).

Multiple research studies have found that AE programs can positively impact an individual's behaviors, attitudes, and feelings. Participation in AE improves individual's behavior and self-concept while learning valuable skills that promote success in

education (Forgan & Jones 2002). There are many benefits of AE specifically for participants with disabilities including: a reduction in tension and anxiety levels, increased levels self-efficacy, general attitudes, interpersonal relationships, confidence levels, willingness to take risks, ability set goals, and tolerance of stress (Farnham & Mutrie, 1997; McAvoy, Shulatz, Stutz, Scjleien, & Lais, 1989). Additionally, individual's negative behaviors such as loud and aggressive behavior, have been shown to decrease as their communication skills improved as result of AE (Farnham & Mutrie, 1997). The better an individual's self-concept is, the better able that person is to have a sense of self-fulfillment and cope with the demands of life (Fitts, 1971).

There are also many documented benefits of AE specifically for students with ASD. Adventure education impacts a participant's interpersonal and intrapersonal development (Priest & Glass, 1997), and has been shown to be a positive method for fostering the development of self and social relationships (Scrutton, 2015; Stott & Hall, 2003; Hattie, Marsh, Neill, & Richards, 1997). Social impairment is a central challenge facing children with ASD, especially in engaging with and interacting with peers (APA, 2013). Through social skills interventions, school-aged children can develop the social skills required for daily living. There have been minimal studies that have researched the social skills benefits through AE specific to school-aged children with ASD. The few studies conducted have obtained positive results for acquisition of desired social behaviors after participant's exposure to AE interventions (Allison & Von Wald, 2010; Tucker, 2009).

The degree of these changed behaviors is dependent on the quality and intensity of the program provided. There have been many resources developed to guide adventure

educators in providing useful, appropriate, and meaningful content to participants that can be adapted for school-aged children with ASD with an emphasis on social skills.

According to Bisson (1989), AE should be taught through the seven stages of adventure. The stages make up the AE process: acquaintance activities, icebreakers/deinhibiters, communication, problem solving, trust, low ropes, and high ropes elements (Bisson, 1998). The seven stages are designed to teach new skills at each stage and progressively build off of those skills in the next stage. Social communication is a key component of each stage. Activities in each stage can be planned and adapted to enhance social skills development in school-aged children with ASD while meeting cognitive, emotional, and sensory needs. The implementation of each stage needs to be well planned out and developmentally appropriate for the participants.

Social impairment is a central challenge facing children with ASD, especially in engaging with and interacting with peers. Social skills interventions help to support an individual's lifelong development. Development of interpersonal and intrapersonal skills is a key component of AE (Priest & Glass, 1997), and has been shown to be a positive method for fostering the development of self and social relationships (Scrutton, 2015; Stott & Hall, 2003; Hattie, et. al, 1997).

Social skills are often an identifying deficit of individuals with ASD. Lacking social skills can negatively impact a child's development physically, cognitively, and emotionally. These delays can cause difficulties for students in and outside of school. Adventure education has shown positive benefits for fostering social skills for children with and without disabilities (Scrutton, 2015) along with improved self-concept, identity, and self-satisfaction (Stott & Hall, 2003; Hazelworth & Wilson, 1990). There has been

little to no research done regarding teaching AE to children with ASD. Additional resources need to be made available for including school aged children with ASD in AE for the purpose of social skills development. Therefore, the purpose of this project was to examine the benefits of utilizing AE to assist with the development of social skills among students with ASD. An instructional video was developed for teachers and other education professionals to use as a resource to adapt AE units and games for students with ASD with the goal of social skills acquisition.

Need for the Project

Autism is the fastest growing developmental disability (CDC, 2016). Despite the benefits of teaching social skills through AE to students with ASD, there are minimal opportunities for these children to participate in AE and other physical activities (Menear & Neumeier, 2015). Furthermore, teachers are not adequately trained to teach AE as a social skills intervention especially for students with disabilities. Teachers need to know how to plan and facilitate quality AE units in their physical education curriculum that foster social skill development. Despite all of the benefits, there are very few programs to model or replicate AE as a social skills intervention in the PK-12 schools.

Purpose of the Project

The purpose of this project was to develop an instructional video that provides an in-depth overview of teaching social skills to students with ASD through AE content. The amount of resources available for teaching AE as a social skills intervention is minimal. Although, research has found social skill benefits for students with ASD after participating in an AE program.

Many audiences will benefit from this project including general and adapted physical education teachers, adventure educators, special education teachers, physical education teacher education faculty, undergraduate and graduate students, and parents. This project includes information regarding teaching considerations for students with ASD, social skills development, and a practical framework for general and adapted physical education professionals for delivering AE. Additionally, the development of the affective domain in AE is evaluated and the need for the teaching of social skills for students with ASD is discussed.

Definition of Terms

The following terms are used throughout the project. This section defines these terms.

Adventure Education (AE): An experiential process that takes place in challenging outdoor and indoor settings where the primary purpose is to build and strengthen inter- and interpersonal relationships, personal health, leaderships skills, and environmental understanding (Havens, 1992).

Autism Spectrum Disorder (ASD): Persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behavior, interests, or activities, currently or by history (APA, 2013).

Social Skills: Behaviors that promote positive interaction with others and the environment. Some of these skills include showing empathy, participation in group activities, generosity, helpfulness, communicating with others, negotiating, and problem solving (Lynch & Simpson, 2010).

Stages of Adventure: The steps that a facilitator follows to ensure that participants have positive experiences in the adventure setting. The stages are: acquaintance activities, ice breakers, dehumanizers, communications, problem solving, trustworthiness, low elements, and high elements (Bisson, 1998).

Summary

Adventure education is a technique for fostering social skills for students with ASD. Along with many life skills, AE teaches interpersonal and intrapersonal skills beneficial to an individual's development. General and adapted physical educators can use this instructional video, this document, and additional resources from the project as references for implementing and facilitating an AE unit in the physical education curriculum. The activities included can be adapted for children at all levels of ASD. The information, strategies, activities, and modifications will help educators facilitate the development of social skills among students with ASD in the AE environment.

CHAPTER II

REVIEW OF RELATED LITERATURE

INTRODUCTION

This chapter reviews research conducted on adventure education (AE) and teaching social skills to students with autism spectrum disorder (ASD). Much research has been conducted on teaching social skills to students with ASD. There has also been research conducted on AE, but there has be minimal research on the benefits of utilizing AE to teach social skills to students with ASD. This chapter reviews research on social skills development through AE for school-aged children, benefits of AE for persons with disabilities, the benefits of AE for students with ASD specific to social skills, and literature regarding teaching social skills to students with ASD**.**

Social Skills Development Through AE for School Aged-Children

Adventure education is a structured sequence of physical activities and opportunities for reflection which aim to promote personal and social development (Cosgriff, 2000). One of the main goals of AE is to improve participant's interpersonal skills and build relationships using adventurous activities to provide the opportunity to grow individually and as a group through problem solving and challenge tasks (Miles & Priest, 1990). The ability to interact with others in this unique environment allows individuals to gain social competence that might not otherwise be possible (Allison & Von Wald, 2010; Tucker, 2009).

A study done by Scrutton (2015) implemented an outdoor AE program and found positive benefits for participant's personal and social development. Participants in the

study were children, ages 10-12 years, who participated in a week long outdoor adventure residential experience. The study utilized a quantitative research method to measure the participant's perception of their change in personal and social development. A self-questionnaire was administered before and after the course, then again 2 or 3 months later to determine the sustained improvements.

Results of the study indicated that the experimental group showed a small to medium, but statistically significant, benefit in social skills acquisition between the pre and posttest. The control group showed no statistically significant benefit over the 2 week period (Scrutton, 2015). Unfortunately, the increase in social skills was not sustained, likely due to the relatively short term of the intervention. Despite the low number of subjects, the findings help support the hypothesis of the benefits of social skills development through AE for school-aged children.

A similar study lasting for six weeks found complementary results. The aim of the study by Stott and Hall (2003) was to determine students self-reported changes in personal, social, and technical skills after participating in a wilderness adventure trip. The participants in the study included 60 young adults, 16 to 20 years old. A pre and postquestionnaire was developed to measure three areas: personal skills, social skills, and technical skills. In regards of social skills, the results showed that participants reported a change in 20 of the 49 selected items. Of the 20 items in which improvements were noticeable, 6 had statistically significant changes including: participant's ability to control their emotions, motivate others, organize others, deal with crowded circumstances, and maintain personal hygiene (Stott & Hall, 2003). Additionally, after the trial period, participants showed a stronger ability to avoid depression, avoid

loneliness, set priorities, achieve goals, solve problems efficiently, be confident and enthusiastic, and set goals. The results of this study indicate the important benefits a wilderness adventure program can have on school-aged student's social skills and overall self-concept.

Self-concept was the focus of another study conducted by Hazelworth and Wilson (1990). The aim was to determine the effects on self-concept among teenage participants after partaking in an adventure camp experience. The study described self-concept as, "the perception an individual has of themself." Nine areas of self-concept were evaluated including: physical, moral ethical, personal, family, social, identity, self-satisfaction, behavior, and self-criticism. The study took place over 4 separate sessions of a 9-day outdoor adventure camp. The first 6 days of the course were focused on skill development and preparation, while the final 3 days were an adventure outing. Participants were evaluated on the first and sixth day of the camp using the Tennessee Self-Concept Scale.

The result of the first session revealed no statistical significant changes in self-concept. The second session showed a positive change in self-concept related to their attitudes towards family. The third session indicated significant positive change in self-concept in terms of general attitudes. The final session indicated a significant positive change in self-concept in both the moral-ethical and social categories. Overall in the four sessions, the most significant change in participant's self-concept was in the moral ethical category. There were also positive changes in the categories of identity and self-satisfaction (Hazelworth & Wilson, 1990). Self-concept is important to social skills because the lenses that individuals see themselves though can impact how they choose to

interact with those around them. This could be displayed as choosing to isolate one's self or engaging with others.

The findings of Hazelwoth and Wilson coincide with a meta-analysis by Hattie, et al., (1997). The meta-analysis examined the effects of adventure programs on participant's self-concept, locus of control, and leadership. The meta-analysis included 96 studies of Outward Bound AE experiences with an effect size of 1,728. Outward Bound includes backpacking trips, mountaineering trips, whitewater rafting trips, canoeing trips, dog sledding expeditions, and sailing. The goal of these trips is to prepare students of all ages and circumstances with the strength of character and determination they need to thrive in their day to day lives.

Results of the meta-analysis indicated that across all interpersonal dimensions there was a positive increase in social skills as a result of the AE intervention. This was most evident in the subcategories of social competence, cooperation, and interpersonal communication. Additionally, the study also found positive outcomes in participant's leadership, independence, confidence, self-efficacy, self-understanding, assertiveness, reduction of aggression, emotional stability, and internal locus of control (Hattie, et al., 1997). The increase in self-efficacy is particularly important because self-efficacy is defined as an individual's level of confidence related to his or her ability to engage in the tasks necessary to initiate and maintain interpersonal relationships (Smith & Betz, 2002). Therefore, the results directly point to the positive affects AE programs can have on an individual's social skills along with many other inter and intrapersonal skills.

The findings of Haitte et al. were also supported in a study by Stuhr, Sutherland, Ressler, and Ortiz-Stuhr (2015) that focused on student's perceptions of relationship

skills during an adventure-based learning unit within physical education. The purpose of the study was to investigate middle schooler's perceptions of change in their intrapersonal skills and interpersonal relationship skills while participating in a 15 lesson AE unit during physical education. The AE intervention included four learning outcomes represented in stages: connecting to the adventure based learning, valuing intrapersonal and interpersonal relationship skills, developing those intrapersonal and interpersonal relationship skills in physical education, and transferring them outside the classroom. The results indicated that participants in the study were able to connect with, value, develop, and even transfer the desired intrapersonal and interpersonal relationship skills that they learned through the AE intervention (Stuhr et al., 2015). The learning outcomes of the AE intervention in the study reflect the positive outcomes of both social and emotional learning in school-aged children.

Students understanding and value of social skills was also identified in a study by Sibthorp (2003). The study sought to identify the learning of transferable skills through AE. The context of the study was a commercial AE program for teenagers, ages 13-18. The subjects included 18 teenagers who participated in a 3 week sailing and diving AE program. Throughout the course the participants learned how to sail, live aboard a boat, experience island culture, hike, and scuba dive. The objective of the course was to develop leadership, enhance personal awareness, and build self-confidence. The data for the study were collected through a semi-structured interview format including questions such as: What was learned, how was it learned, and how the learning might be used at home. The interviews took place immediately after the program ending.

Results of the study indicated that the participants did not only learn physical skills but also life skills. The participants reported learning life skills such as: interpersonal skills, conflict resolution, tolerance for others, and leadership skills, that they could apply in many areas of their lives. Additionally, students reported that the life skills they learned, not the physical skills, would be the ones they would transfer home.

Adventure education research has revealed many positive benefits for social skills in school-aged children including interpersonal and intrapersonal skills (Stott & Hall, 2003; Scrutton, 2015; Stuhr et al., 2015). Studies have reported that social skills are maintained by students after AE interventions (Sibthorp, 2003). Adventure education has the possibility of being a highly valuable social skills intervention model particularly for student with ASD. More research needs to be done on the long-term effectiveness of AE as a social skills intervention.

Benefits of AE for Persons with Disabilities

In addition to social skills, AE has been shown beneficial for teaching a variety of life skills including how to set realistic goals, build trust in oneself and others, how to have fun, improve physical mobility, enhance problem solving skills, and gain self-confidence (Bartley, 1997). It is crucial that these self-growth opportunities are available to all individuals including those with disabilities. Not offering AE opportunities to individuals with disabilities can contribute to social isolation, decreased self-esteem, decreased physical fitness, and decrease quality of life (Havens, 1992).

Participation in adventure activities improve individual behaviors and self-concept while learning valuable skills that promote success in general education (Forgan,

& Jones 2002). A study investigated the effectiveness of an outdoor AE program on self-concept. The study by Luckner (1989) described self-concept as how an individual sees themselves and what they believe about themselves. The study included individuals with hearing impairments and had experimental and control groups. Both groups included 10 participants and were matched for age, sex, ethnicity, and degree of hearing loss. Subjects in the experimental group participated in an adventure program for 10 days while the control group participated in their regularly scheduled classes. The study utilized pre, post, and follow-up questionnaires to evaluate the outcomes.

The results revealed that the experimental group showed a significant improvement on the participant's self-concept. The improvements recorded were also maintained throughout the 2-month follow-up period (Luckner, 1989). The study was limited by the small number of participants and specific disability group that all the participants were a part of, but does point to the positive effect that AE can have on an individual's self-concept. The stronger an individual's self-concept, the better able that person is to have sense of self-fulfillment and cope with the demands of life (Fitts, 1971).

Because individuals that participate in AE have a higher self-concept, it is not surprising that participation in AE has been linked to lower occurrence of depressive symptoms. Wilson and Christiansen (2012) conducted a study on the relationship between outdoor recreation participation and depressive symptoms of individuals with disabilities. Data for the study were collected from the Behavioral Risk Factor Surveillance System and only included Montana residents 18 years or older. The Behavioral Risk Factor Surveillance System included an “anxiety and depression” section along with a section with questions regarding outdoor recreation.

Results of the study indicated that there was a negative relationship between outdoor recreation participation and depression. Furthermore, participants that engaged in outdoor recreation more frequently showed lower depressive scores than individuals that participated less frequently (Wilson & Christiansen, 2012). The study also noted that these findings could be dependent on each other and cannot be fully conclusive (e.g. individuals that are depressed are less likely to participate in AE). Despite the inconclusive relationship, the findings support the theory that there is a significant relationship between outdoor recreation participation and depression among individuals with disabilities.

There are additional benefits that coincided with self-concept and lack of depression. McAvoy, Smith, and Rynders (2006) examined AE programs for individuals with cognitive disabilities and reported a connection between AE and social skills development. The study included 23 adult participants with cognitive disabilities that participated in an outdoor adventure program including camping, canoeing, and primary outdoor activities. The trip was conducted in the context of a "Gateway to Adventure", a program that provides outdoor adventure opportunities to individuals with disabilities. An interview instrument was developed to assess participants social/socialization skill development. The results of the study indicated that the participants learned and were able to practice appropriate social skills through the AE course. Some of the core skills that were acquired through the course were interacting with other people and being able to be a contributing member of a team (McAvoy et al., 2006). Throughout the course the group of participants developed stronger group culture and teamwork. This is most likely

because the social skills that the participants developed made the group culture and teamwork possible.

The development of group cohesion was found to be a result of AE in another study. Farnham and Mutrie (1997) studied the potential benefits of outdoor education for children with special needs; specifically, the potential to facilitate social and integration skills for children with special needs. The average age of the participants was 14 years and they participated in a 4-day residential camp experience. All of the children attended a school specifically for children with special educational needs and emotional/behavior difficulties and were in the same personal and social development class in school. Three assessments were used to measure the children's tension/anxiety levels, self-perception/esteem, and group cohesion.

The results revealed that through the AE intervention the participants increased their self-confidence and seemed to relax and enjoy themselves as the program progressed. Additionally, the group as a whole showed an increase in group cohesion over the 4 days. The improved group cohesion also indicated that the participants increased their individual attractions to the group task and social interactions. The results from the assessments indicated that participants showed a reduction in tension and anxiety levels over the 4 days. The participants also showed a decrease in loud and aggressive behavior as their communication skills improved. The most meaningful part of this study was that at the 6 week follow-up assessment there continued to be a strong group cohesion within the group. Teachers and participants reported more communication between the students and they were learning to trust each other (Farnham

& Mutrie, 1997). These finding are important because they point to the generalization and retention of the social skills learned through AE.

Participation in AE has also been shown to be beneficial for persons with and without disabilities in integrated programs (McAvoy, et al., 1989). The study examined a sample of 40 participants, 24 who had a disability and 16 who did not. After participating in a wilderness adventure trip, participants with and without disabilities showed an increase in positive behaviors including: self-efficacy, general attitudes, interpersonal relationships, confidence levels, willingness to take risks, ability set goals, and tolerance of stress. Some participants in the study showed increasing levels of the ability to live independently (McAvoy et al., 1989). The increase in interpersonal relationships found in this study are important because it took place with typically developing peers and promotes genuine inclusion.

There are many benefits of AE for participants with disabilities including a reduction in tension and anxiety levels, increases in self-efficacy, general attitudes, interpersonal relationships, confidence levels, willingness to take risks, ability set goals, and tolerance of stress (Farnham & Mutrie, 1997; McAvoy, et al. 1989). These are all qualities that are important for children with ASD to learn and apply to their lives. Adventure education interventions are possible methods of teaching social skills to benefit children with ASD. Additional research needs to be done on the benefits for persons with disabilities after participating in AE with a focus on social skills development.

Benefits of AE for Students with ASD

There are many potential benefits of AE for students with ASD. Adventure Education impacts a participant's interpersonal and intrapersonal development (Priest & Glass, 1997) and has been shown to be a positive method for fostering the development of self and social relationships (Scrutton, 2015; Stott & Hall, 2003; Hattie et al., 1997). Social impairment is a central challenge facing children with ASD, especially in engaging with and interacting with peers (APA, 2013). Through social skills interventions, school-aged children are able develop the social skills required for daily living. There have been minimal studies that have researched the social skills benefits of AE specific to school-aged children with ASD. The few studies that have obtained positive results of acquisition of desired social behaviors after participant's exposure to AE interventions.

Zachor, Vardi, Baron-Eitan, Brodai-Meir, Ginossar, and Ben-Itzchak (2016) conducted a study that explored an AE social skills intervention for kindergarteners with ASD. Early intensive intervention for children with ASD has reported gains in cognition and adaptive functioning, and decreases in severity of ASD symptoms (Ben Itzch & Zachor, 2011). The study included 51 students enrolled in a special education kindergarten for students with ASD to determine the effectiveness of an outdoor adventure program. The intervention required the participants to communicate with others in order to solve problems. The intervention group participated in a 13 week outdoor AE program while the control group did not. The study used the Social Responsiveness Scale and the Vineland Adaptive Behavior Scale (VABS) to track the changes in student's social skills.

Results indicated that the intervention group showed an increase in their scores on the social responsiveness scale. The experimental group showed an increase in all of the VABS subdomains including communication, daily living skills, socialization, and motor skills. The control group showed no such improvements and the severity of the restricted behaviors of the participants in the control group became more pronounced over time (Zachor et al., 2016). The study found that the improved behaviors shown by the students in the experimental group became more evident over time. The results of this study indicate that an outdoor adventure program may be an effective intervention for school aged-students with ASD for enhancing social skills.

Additionally, a case study sought to explore opportunities for interpersonal and intrapersonal development for a 13 year old boy with high functioning autism through participation in an inclusive AE program (Sutherland & Stroot, 2009). The case study took place during a 3 day inclusive rock climbing trip that included 7 typically developing children 10 to 14 years old and one 13 year old boy diagnosed with ASD. Data were collected through direct observations and interviews throughout the 3 day trip and continued after the end of the trip.

At the beginning of the trip the participant with ASD often chose to exclude himself from interacting with his peers and expressed feeling different from his peers. Eventually, over the span of the 3 day trip he engaged in more interactions with his peers. He started to become more comfortable and began to interact more with other group members. Once his comfort level with the group seemed to increase, more positive social interactions started to take place and his inappropriate behaviors that initially seemed to exclude him from the group began to decrease.

The findings of this study suggest that participation in AE provided positive inter and intrapersonal experiences for the participant with ASD. The increases in inter and intrapersonal skills were maintained for 1 month following the trip. However, the inter and intrapersonal skills acquired were not generalized by the child outside of the adventure trip setting. This suggests that more of an emphasis on generalization of skills may need to be incorporated as part of an AE intervention. Regardless, the results of the study indicated that the AE intervention provided the child with ASD positive experiences that led to an increase in his social efficacy, therefore increasing his social interactions with his peers on the trip.

Similar findings were obtained from Karoff, Tucker, Alvarez, and Kovacs (2017) in a case study. This study focused on one high school boy diagnosed with ASD who participated in an adventure therapy program over a span of 3 years. Adventure therapy uses adventure experiences provided by mental health professionals, in a natural outdoor setting that kinesthetically engages participants on cognitive, affective, and behavioral levels (Karoff et al., 2017). Throughout the adventure therapy intervention, the student was given consistent practice in social interactions, first through participation when invited, and then gradually becoming more comfortable with initiation interactions. The Social Skills Improvement System was administered on an annual basis throughout the trial period to track change in the student's social behaviors compared to his normative aged peers.

Beginning in 9th grade, prior to starting the program, the student's level on the Social Functioning Scale was very low and his score on the Problem Behaviors Scale was very high. On the top 10 scale (functioning in 10 principal areas) he scored in the 15th

percentile. By the time he reached 11th grade his scores had increased significantly for total Social Skills Scale with each subscale improving over time. Additionally, his score on the Problem Behaviors Scale decreased over time and he moved up to the 43rd percentile on the top 10 scale (Karoff et al., 2017). Overall, there was a significant increase in social skills and decrease in problem behaviors after continued participation in the adventure therapy intervention.

The research presented provides evidence for the hypothesis that AE can be a beneficial intervention for teaching social skills to students with ASD (Sutherland & Stroot, 2009; Karoff et al., 2017; Zachor et al., 2016). Gains in student's social skills and interest in group interactions are important to their overall social development and can be beneficial to their quality of life. There needs to be more research done to strengthen the link between AE and social skills acquisition for school-aged children with ASD.

Literature on Teaching Social Skills to Students with ASD

Multiple research studies have indicated that AE programs can positively impact an individual's behaviors, attitudes, and feelings. The significance of these changed behaviors is dependent on the quality of the program provided. There have been many resources developed to guide adventure educators in providing useful, appropriate, and meaningful content to participants that can be adapted for school-aged children with ASD. The seven stages of adventure are one method used to sequence and scaffold the adventure process.

Seven Stages of Adventure

Seven stages make up the AE process including: acquaintance activities icebreakers/deinhibiters, communication, problem solving, trust, low ropes, and high ropes elements. The seven stages are designed to teach new skills at each stage and progressively build upon those skills in the next stage. The activities in each stage can be planned and adapted to enhance social skills development in school-aged children with ASD. The implementation of each stage needs to be well planned and developmentally appropriate for the participants with ASD.

Stage one of the AE includes acquaintance activities and name games. This stage is designed to get participants comfortable with others in the group. This is where students learn each other's names and become familiar with each other. As a facilitator, this is an opportunity to teach students the proper social skills you want them to display such as eye contact, proper greetings, and using others names. These are all skills that students with ASD tend to lack and require direct instruction to accomplish. Playing games to practice social skills is an opportunity for students to apply them in multiple realistic settings. For example, a common game that is played in this first stage would require participants to introduce themselves by saying their name and a name of a fruit that starts with the same letter as their first name. The other participants in the group would respond by looking at the person and saying “Hello” with that person's name and fruit.

The second stage of AE is the icebreaker/de-inhibitor phase. The purpose is for participants to feel comfortable within the group situation. Mainly this stage is to facilitate participants getting to know each other while increasing their comfort level with

the other members of the group (Schoel, 1988). The major purpose is to get participants to smile, loosen up, and feel comfortable. Group development is a central component of AE because students focus on social growth (Forgan & Jones, 2002). Students with ASD often do not initiate interactions with others so this is an opportunity to get them to interact with others in the group.

An example of a game that would be played during the second stage is eye tag. In eye tag students stand in a circle and look at their feet. On the count of three, students look at another person in the circle. If they make eye contact, they need to yell and join another circle. This game requires students to make and sustain eye contact with another student, a skill learned in the first stage. It is the facilitator's job to end the activity at the peak of excitement to keep the students engaged and wanting to play more. Children with ASD have a difficult time transitioning from one activity to the next (APA, 2013). It is important to prepare them to transition by either counting down to the end or giving a visual representation of the number of rounds left.

The third stage of AE is communication. The goal of this stage is for participants to understand that communication is complex and can be accomplished in a variety of mediums including: verbal, nonverbal, writing, and listening. Participants learn to take turns verbalizing their ideas and listening to others' ideas. The communication stage is important for developing social skills for students with ASD. They are able to practice the social skills they have been learning to move towards a common group goal.

This stage is a process that may require students to complete the activity multiple times. For example, the game "blind forms" require students to make a shape while all participants hold a circular rope and wear blindfolds. The participants need to work

together to move as a group to make the directed shape. Students with ASD will practice giving and receiving directions from a peer. After the participants are content with the shape, the instructor has them take their blindfolds off and look at the shape they formed. The instructor will lead the participants in a discussion, asking them how they think they did. What was helpful? And what could they have done better? Teachers can encourage appropriate social skills for students with ASD in stage three by having them use names, taking turns talking and listening, and following directions. Then the participants try the activity again using a new shape. The new shape should be a little more difficult than the previous one to continue to challenge the participants. It is important to get participants working together before moving on to more complex problem solving activities (Stremba & Bisson, 2009).

The fourth stage is the problem solving stage. In this stage, participants are put into situations where they need to work together as a group to solve a problem within the parameters of an activity. Participants need to use the skills they learned in the previous stages including: using each other's name and communicating effectively. The main objective of the problem solving stage is the process not the product. The participants learn through concrete experiences and trial and error. Activities presented in this stage tend to be physical problems that require cooperation, planning, and group consensus (Stremba & Bisson, 2009). Students with ASD may need a little extra support in this stage to help them use the communication skills effectively, but the social skills learned in the previous stages will help them be successful interacting with their group members.

The human knot would be an example of an activity that teaches problem solving. In the human knot, students stand in a circle and link hands with someone across

the circle from them to form a circle and then, forming a knot. Then the group needs to work together to unknot themselves. To get the knot undone, participants need to use each other's names, communicate effectively, look at all the information and resources they are given, think outside the box, so that everyone’s ideas are being heard. There are typically multiple activities in the problem solving stage sequenced from simple to more complex (Stremba & Bisson, 2009). As students, work through the activities in stage four teachers can gradually start to decrease the level of support given to the students to work towards independence.

The fifth stage of adventure is trust. This stage is important for establishing trust among members of the group. Prior to beginning trust activities, the facilitators should lead participants in a discussion about how a trustworthy person acts. Facilitators need to remind participants to act in a trustworthy way in order for their group members to trust them. Trust is something that is hard to gain but easy to lose. The presentation of trust activities begins to establish a comfortable and secure feeling among group members (Rohnke & Butler, 1995).

In the trust stage, participants will physically support other members of the group through spotting. Students will learn the spotting contract so they have the cognitive knowledge to participate in the activities. This includes teaching and demonstrating the proper technique and the aspects of spotting (Clocksin, 2006). More complicated trust exercises can follow basic trust exercises to build students trust in their group members. This will take time and groups should not move past this stage until completely proficient.

The sixth stage of AE is low elements and includes activities that are 0-3 feet off the ground and require spotting from other group members. On the low elements stage, participants need to rely on less psychological and more physical support (Stremba & Bisson, 2009). Low elements are designed to get students comfortable with the idea of leaving the ground. Low elements include activities, such as log lineup, where participants all start standing on a log and need to lineup in a specific order (height, birthday, etc.) without anyone stepping off the log.

Participants need to rely on each other for physical and emotional support throughout the activity. They need to work together to accomplish a task under a situation with some pressure. For students with ASD, stage six provides an opportunity to practice their social communication skills in a situation with a higher risk and reward. This stage results in exchange of trust. Trust helps students with and without ASD develop friendships. When low elements are properly planned and sequenced, they develop cognitive, affective, and psychomotor skills necessary for a successful transition to high elements (Clocksin, 2006). If students do not demonstrate an ability to work together, problem solve, communicate, and show trust in their peers they should not move on to high elements.

The seventh stage high elements. High elements are 30-50 feet in the air and tend to be individual based. High elements include activities, such as climbing walls and ropes courses. The role of the seventh stage is to challenge participants out of their comfort zone into a state of disequilibrium. The seventh stage is mainly individual challenged based, but the stage does require a degree of psychological support from the group (Stremba & Bisson, 2009; Bartley, 1997). All of the stages prior to stages six and

seven work up to these last two. They prepare the participants to get to know each other, have fun together, communicate, problem solve, and trust each other. When these stages are done correctly, participants are more open to pushing themselves out of their comfort zones on the low and high elements. For children with ASD, this can be an opportunity for them to feel supported by the group. As they are challenging themselves on the high elements their peers on the ground support them by cheering for them or belaying them. Physical and emotional support can lead to a strong sense of trust and friendship between group members.

After every stage it is important to debrief with the participants in order for them to get the most out of the experience. Processing or debriefing the experience can give activities greater meaning rather than using adventure activities purely for recreation (Bartley, 1997). It is important to get students to think about how they came to a solution to a problem, what things they did as a group that helped them solve a problem, what things they could have done differently, and how they could apply this to situations in their own lives. This will help students with ASD generalize what they learned during AE activities into their everyday lives. It is vital to the effectiveness of the program that the activities are developmentally appropriate so students are challenged and also find some success. Appendix A of this document contains a list of AE activities for each of the seven stages. Each activity includes directions, equipment needed and adaptations for students with ASD.

Additional Teaching Strategies Infused Throughout the AE Stages

As you can see from the stages of adventure, there is a purpose behind each of the seven stages. For students to receive the full benefit from each stage it is important for

facilitators to conduct the stages using appropriate teaching strategies that promote individual and group success. One of the most common teaching strategies in AE that can be utilized throughout the seven stages is storytelling. Through storytelling, instructors are able to incorporate cognitive and affective knowledge into a time that is engaging to students. Stories teach students holistically, as they capture emotion while delivering cognitive knowledge (Gilbertson, Bates, McLaughlin, & Ewert, 2006). Story telling is complementary to social stories, another social skills intervention for children with ASD. Social stories have been found to produce positive behavior for children with ASD (Crozier & Tincani, 2007). Social stories teach appropriate behavior though a story prior to a student engaging in the setting or activity described in the story.

In AE storytelling can be done by the instructor or the participants. Instructors can tell stories to introduce an activity or desired behaviors. Likewise, when students act out information they have learned, it can make the content more meaningful to them. Additionally, having students tell stories can help them use their imagination, get them out of their comfort zone, and use social skills in front of a group. Students with ASD have imaginations but struggle expressing this imagination in an appropriate way. Story telling provides opportunity for children to practice social skills such as speaking in front of a group, changing their volume to a situation, making eye contact, and reading a crowd of people. Stories require the language skills of the storytellers and the listeners. Stories require students to practice effective listening and give their attention to another person.

This method of content delivery often times requires students to use abstract thinking to generalize the points of the story into their life. At the end of a story, a listener should be able to answer questions about, or recap the story. For this to happened stories

need to be appropriate to students age and developmental level. It is also important that the stories being told are meaningful and important to what the students are learning. They should build off of what the students already know and understand. This will help students solidify what they already know and it is a great opportunity for instructors to check for understanding from their students.

In a hiking unit, an instructor could use storytelling to get students excited about the hike that they are planning. The instructor could add details about the geographic area that they were hiking, proper hiking etiquette, and safety reminders. At the end of the hike students could tell a story to the group of what they say throughout the hike and how they think it got there. This would require the students to practice their social skills while sharing with a group what they saw and using their imagination. Children with ASD have imaginations. This can be a powerful method to hone their attention to learn important content to be successful within the group.

Another teaching method of AE is guided discovery. This method is closely associated with problem solving as instructors lead students to a problem with some parameters and students solve the task (Gilbertson et al., 2006). This is almost always done in groups or with partners, requiring students to work together and use communication to be successful. Giving students with ASD opportunities to work together to solve problems with another person can be very beneficial to the development of social skills. The case study mentioned earlier by Sutherland & Stroot (2009), found that after the group participated in AE activities, the student with ASD made connections with the other trip members that he had not previously made. This method is beneficial because students are actively engaged in their own learning and tend take ownership of

the outcome. Instructors will sometimes need to step in at some points to lead students in the right direction so they have a higher likelihood of success but should never freely give students the answer. Students with ASD may need more redirection and guidance to be a contributing member of the group. This opens doors for many teachable moments about being a good group member such as sharing ideas, listening to other group members, and working towards a common goal. Guided discovery can also help students generalize the problem solving skills that they used while solving the problem in their daily life. For this to happen instructors, need to lead the students in a discussion at the end of the process to reflect on what they learned.

Summary

There are many social skills benefits of AE for school aged children including interpersonal and intrapersonal skills (Stott & Hall, 2003; Scrutton, 2015; Stuhr, et al. 2015). There has also been a connection shown between AE for participants with disabilities and benefits by a reduction in tension and anxiety levels and an increase in self-efficacy, general attitudes, interpersonal relationships, confidence levels, willingness to take risks, ability set goals, and tolerance of stress (Farnham & Mutrie, 1997; McAvoy et al., 1989). The research presented adds strength to the hypothesis that AE can be a beneficial intervention for teaching social skills to students with ASD (Sutherland & Stroot, 2009; Karoff et al., 2017; Zachor et al., 2016). To maximize the benefits of AE as a social skills intervention for school-aged children with ASD proper planning and facilitation is needed when using AE.

CHAPTER III

CRITICAL ANALYISIS

Introduction

Adventure education (AE) has been shown to be an effective method for teaching social skills to students with autism spectrum disorder (ASD) (Sutherland & Stroot, 2009; Karoff, et al. 2017; Zachor, et al. 2016). Intra and interpersonal skills including initiating interactions, using appropriate greetings, making eye contact and communicating with peers and adults have been improved through participation in AE (Farnham & Mutrie, 1997). Social growth is a central component of AE because activities are focused on group development (Forgan & Jones, 2002). The seven stages of AE can be taught and experienced by teachers, facilitators, and students in many different ways. There are numerous teaching strategies that can be implemented into the AE process to maximize social skills development. The purpose of this project was to provided educators resources for teaching social skill to students with ASD through AE.

This chapter presents a variety of teaching strategies for social skills development through AE, description of the video developed for this project, resources such as books, journal articles, graduate projects, and assistive technology useful for teaching students with ASD in AE. Additionally, recommendations for future research and critical analysis projects are discussed.

Teaching Strategies for Social Skills Development Through AE

There are several teaching strategies that can be employed to help students with ASD be successful in AE. Every student with ASD is different and it is important to get to know each student to determine what teaching strategy or strategies will be most

beneficial. Students with ASD rely heavily on routines. By keeping routines the same or similar across the school day, a student experiences consistency and predictability, which helps prevent frustration and meltdowns (Coyne & Fullerton, 2004). The following teaching strategies are commonly used in special education classes and could be used in AE settings.

Video Modeling

Video modeling is a very common teaching strategy for students with ASD. Video modeling is a mode of teaching that uses video recordings to provide a visual model of the targeted behavior or skill (Franzone, & Collet-Klingenberg, 2008). It involves taking a video of the skill or task that you want the student to complete. In AE this could be a video of putting a harness on, performing a trust fall, or climbing on a rock wall. The video would be shown to the student prior to completing the task. Preparing students with a video model of what they will be doing will make them more successful. Video modeling can be particularly important for students with ASD because they typically have a difficult time processing high amounts of auditory information (Marks, et al., 2003). Video modeling gives a student with ASD the opportunity to receive instructions through visual input.

Video modeling can be done in a number of ways. Basic video modeling involves recording someone else besides the student engaging in the target behavior or skill. Modeling can be very helpful when teaching a new skill or one that the students has little experience performing. The video could be shown to the student the day before and the day of the activity to prepare them. Video self-modeling is used to record the student displaying the target skill or behavior and is then viewed by the student. Watching

oneself on video can be very motivating to a student. Point-of-view video modeling is when the target behavior or skill is recorded from the perspective of the learner. This can be very helpful to prepare students for what they will experience when they go up on a high ropes course. Video prompting involves breaking the behavior skill into steps and recording each step pausing for the student to attempt the step before viewing the next steps. This could be used when teaching more complex skills that have multiple steps such as tying knots for climbing. It is important that a teacher choose the type of video modeling that is most effective for their individual students.

Social Stories

Students with ASD often have difficulties with transitioning from one environment or activity to the next (Marks, et al. 2003). It is important to adequately prepare students ahead of time so that they know what to expect. Students with ASD will find it easier to participate in class routines and activities when they have had the opportunity to prepare (Klin & Volkmar, 2000). One technique used to prepare students with ASD is social stories. Providing a student with ASD with a social story before each class in an AE unit will help the student know what to expect from the lesson, environment, and teacher (Barry & Burlew, 2004). A social story can be a written or visual guide describing various social interactions, situations, behaviors, skills, or concepts (Gray & Garand, 1993). Social stories present information in a literal, 'concrete' way, which may improve a person's understanding of a previously difficult or ambiguous situation or activities (Gray, 2015).

Social stories can also be helpful for students with ASD navigating social situations. Students with ASD tend to lack a theory of mind making social interaction

more difficult, confusing, and unpredictable. A social story can then be used to explain social situations in terms of what another person might be thinking and/or why they may behave in certain ways; thus reducing or removing the confusion and unpredictability (Ali & Frederickson, 2006).

Social stories can be very useful in AE because students will participate in a number of new and unique social situations. Games and activities taught in the first five stages require students to use intra and interpersonal skills. Students will benefit from having the situations and appropriate responses explained to them ahead of time. For example if a game played in the AE unit had students find a partner, a teacher could give a student a social story that displayed the appropriate way to ask someone to be their partner and how to accept if someone asked to be their partner. Another example would be if a game required students to share their name and something about themselves. During the acquaintance stage a teacher would give the student a social story that gives an example of someone else sharing. The social story would also cue the student to begin thinking of something about themselves they would like to share with the class.

The presentation and content of a social story can be adapted to meet different student needs. A social story can be read to, with, or by a student before class. Then a teacher can use a continuation of the social story during class. In an AE unit, social stories can be used to teach students appropriate behavior during games where they need to physically touch another student or another student will need to touch them, such as a trust fall. If students know before class what they will be doing and how to use appropriate social interactions in those situations they are more likely to participate appropriately with their peers.

Peer Mentoring

Some students with ASD lack interest in interacting with peers in their class. Additionally, students with ASD can become dependent on a paraprofessional or other adults working with them for support, which again limits their interactions with their peers. Peer-support interventions contribute to consistently higher levels of activity engagement than traditional paraprofessional models (Shuka, Kennedy, & Cushing, 1999). Peer mentoring involves one or more peers without disabilities providing academic and social supports to a student with disabilities (Carter, Cushing, Clark, & Kennedy, 2005).

Peers can serve as mentors by modifying activities and bridging instructional gaps that may exist when students with ASD are included in general physical education. Peers can also help students with ASD to unlearn the helplessness that tends to characterize their relationships. This can be done through appropriate social cueing, independence, and positive peer relationships (Hutzler, Fliess, Chacham, & Auweele, 2002). Specifically in AE, peer mentors can support their peers with ASD by modeling appropriate behavior, making sure students with ASD are included and being contributing members of a group during each of the stages of AE, and guiding them through group activities. It is important for peer mentors to be trained to work with students with ASD so that they know how to appropriately support them.

Sensory Considerations

For many individuals with ASD, processing sensory input requires a great deal of effort and attention as compared to their typically developing peers who automatically process sensory information. The sensory and emotional regulation of a person with ASD

can become overwhelmed and result in anxiety and distress (Autism Speaks, 2012). Sensory challenges can affect the student's ability to take in information, respond to requests, participate in social situations, write, participate in sports, and maintain a calm and ready to work state (Autism Speaks, 2012).

It is important for teachers to be aware of possible sensory issues their students with ASD may have and alter the environment when necessary. For example, minimizing exposure to loud noises, using one color for the child's set of equipment, and modifying delivery of instruction can help students stay on task. Some students with ASD become very preoccupied in class with the different texture or feel of various pieces of equipment. Prior to an AE class starting, a teacher may choose to give a piece of equipment, such as a climbing harness, to the student that he or she will use that day. The student could keep it in their classroom, or they could then try it on and even wear it for a while to become comfortable with it. This gives the student a chance to become acquainted with the equipment so when they get to class they are familiar with it.

Another sensory accommodation that can be made for students with ASD is providing a home base or safe place. This should be a place where the student feels safe and can regroup, calm down, or escape overwhelming situations or sensory overload such as a separate room, a corner of the gym, or a particular teacher's or administrator's classroom or office. Teachers need to proactively instruct students how to use this safe place when they need it and not abuse the use of this area. Once the student feels calm, and is ready to participate again they can come back and join the class. In AE students with ASD could use this home base area to watch an activity in which they don't feel

comfortable. Then when students understand and feel comfortable participating in the activity they could join in.

Visual Supports

Students with ASD often display inappropriate behavioral responses when new or incongruent information is presented to them in an unfamiliar way (Houston-Wilson & Lieberman, 2003). Students with ASD tend to be visual learners who can make sense of instructional content when presented in an organized, visual structure (Marks, et al. 2003). A visual support refers to using a picture or other visual item to communicate with a child who has difficulty understanding or using language. Visual supports can be photographs, drawings, objects, written words, or lists. Research has shown that visual supports work well as a form of communication for students with ASD (Loring & Hamilton, 2011).

Visual aids include a visual representation, such as a first-then, board that visually shows a student what to complete and what still needs to be completed. A teacher could show a student a picture of a harness, then a helmet, then a rope and then a student climbing so that the student knows they need a harness, a helmet, and a rope, before they are able to climb. Additionally, having a large clock on the wall, or posting lesson transitions where the student can see them can help students gain an understanding of how much time they have left. Teachers should also designate clear activity boundaries and preselect cue cards to direct students to the appropriate task (Menear & Neumeier, 2015).

One very popular visual aid is a Picture Exchange Communication System (PECS). The PECS is a form of communication in which a child is taught to

communicate by giving them a card with a picture on it. The PECS has a vast array of pictures to choose from giving students and teachers options. PECS not only help students communicate what they want or how they feel to a teacher but also help a teacher give instructions. The PEC could be used for a variety of adventure activities in all seven stages. A teacher could use a PEC card that signified a greeting during the acquaintance stage to tell a student to greet another student. A teacher could also use a PEC card that signifies listening during the communication stage to encourage a student to listen to their classmate. There are many options for PECS and it is important to be prepared with appropriate cards for the activity.

There are also iPad applications (APPs) that are available to assist students and teachers in communicating in AE. Proloquo2Go is an APP that can be downloaded on an iPad. Prolquo2Go includes natural sounding text-to-speech voices, and over 10,000 up-to-date picture symbols. There are other APPs that are available to use to support students with ASD communicating with their peer and helping them be involved in AE activities.

Summary

There are many different teaching strategies and tools teachers can use to help their students with ASD throughout the AE process to develop social skills. Video modeling, social stories, peer mentoring, sensory considerations, and visual aids are just a few ways to support student needs. It is important to get to know each students abilities and needs to choose the strategies that will be most beneficial for them. Students with ASD will be more successful with a variety of these teaching strategies in place. Working with the special education staff at your school and parents can help with specific accommodations for a student that will be consistent throughout their school day.

Description of Project Video

The instructional video produced for this project includes characteristics of students with ASD, an overview of AE, as well as an explanation and examples of the seven stages of adventure. Along with each stage there are teaching recommendations for developing social skills for high school students with ASD. There are also examples of social skills resources and teaching strategies for students with ASD. The video includes practical modifications and accommodations for students with ASD at all ability levels within AE, as well as descriptions of resources that can assist in the process of designing and implementing AE for students with ASD.

The purpose of the video is to prepare physical education teachers, adapted physical education teachers, and AE professionals to teach social skills through AE to students with ASD. The video will assist these professionals in making the appropriate adaptions to help students with ASD be the most successful in AE. The video can be found online at the UW-La Crosse Center on Disability Health and Adapted Physical activity website.

Resources

Several resources were used to develop this critical analysis project and instructional video that can assist in teaching and modifying AE units for students with ASD. The following resources can further support the facilitation of an AE unit for the inclusion of student with ASD.

Books

1. Aubry, P. (2009). Stepping-stones: A therapeutic adventure activity guide. Beverly, MA: Project Adventure.

This book utilizes the Project Adventure program and activities to enhance outcomes with alternative populations as part of personal responsibility, behavior management, and skills development process. The book is divided into four parts: full value community, learning to assess my group and self, working and collaborating with a team, and acquiring leadership skills. Each section includes learning objectives, activities, tips, and reflection prompts. This book will be very useful for teaching students with ASD because it includes chapters focused on the development of intra and interpersonal skills including expressing emotions, giving and receiving feedback, self-awareness, and developing and accomplishing shared goals.

2. Butler, S., & Rohnke, K. (1995). Quicksilver: Adventure games, imitative problems, trust activities, and a guide to effective leadership. Dubuque, IA: Kendall/Hunt.

This book outlines the teacher or leader's role during the adventure process including creating group cohesion, trust, and the elements of a good debrief. Additionally, the book includes activities and initiatives used throughout the adventure process. Each activity has a set-up, description, rules, and considerations. The activities are listed according to whether they can be done indoors or outdoors, if few or many props are needed, and if pre constructed props are required. This book is a helpful resource for teaching students with ASD because of the amount of activities described for each stage. A teacher is able to pick activities that are most suitable for their student's specific developmental level and needs.

3. Coyne, P., & Fullerton, A. (2004). Supporting individuals with autism spectrum disorder in recreation. Champaign, IL: Sagamore.

This resource includes information and suggestions regarding challenges and strengths of students with ASD when participating in recreation. Along with the benefits of participation in recreation activities, perspectives, and experiences of individuals with ASD related to recreation, planning participation in recreation for individuals with autism spectrum disorder, and supports for maximizing success. This resource will be very helpful to teachers looking for specific modifications for students with ASD.

4. Panicucci, J., Faulkingham, L., Rheingold, A., Kohut, A., & Constable, N. (2003). Adventure curriculum for physical education: High school. Beverly, MA: Project Adventure.

This book helps educators integrate and implement all or part of a grades 9-12 adventure component into and existing physical education program. The book includes safety protocols, assessment, full value contract, leadership, belay techniques, and debriefing tips for teachers. Additionally, the book includes a scope

and sequence for each grade 9 through 12 to be used by teachers in general physical education classes. This resource will help teachers debrief with their students with ASD. The book includes specific debriefing tips and example topics and questions that will help students with ASD make meaning out of the games and activities in a AE unit.

5. Faulkingham, L., Rheingold, A., Kohut, A., & Stratton, N. (2002). Adventure curriculum for physical education: Middle school. Beverly, MA: Project Adventure.

   This book helps educators integrate and implement all or part of a grades 6-8 adventure component into and existing physical education program. The book includes connections to standards, safety protocols, assessment, full value contract, and choosing the right activity. Additionally, the book includes a scope and sequence for each grades 6 through 8 to be used by teachers in general physical education classes. One section in this book entitled “GRABBing the right activity” that instructs teachers in pick the most appropriate activity for their students with ASD.

6. Grenier, M. (2013). Physical education for students with autism spectrum disorders: A comprehensive approach. Champaign, IL: Human Kinetics.

   This book provides an understanding of students with ASD that offers insights from parents’ and teachers’ perspectives. Also, content includes the application of the inclusion spectrum that helps teachers plan for appropriate instruction. Communication and social learning tools to minimize the stress students may experience while optimizing learning experiences are included. Additionally, the book includes individualized and group games and activities that enhance lifelong learning for students with ASD. The book also includes information on tools such as scripts, video modeling, social stories, and choice boards that could be related to AE.

7. Winnick, J., & Porretta, D. (2017). Adapted physical education and sport (6th edition). Champaign, IL: Human Kinetics.

   The authors of this book address the use of new technology as it relates to teaching and administration for adapted physical education. The apps apply to behavior management, fitness development, communication, social interaction, and physical education activities. One chapter in the book is specific to autism spectrum and social communication disorders. Another chapter in the book is specific to individual, dual, and adventure sports and activities.

Journal Articles

1. Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.

   This article points to the increasing popularity of AE in school physical education classes. The purpose of the article is to give an overview of the first six stages of adventure education and prepare physical education teachers to facilitate AE activities. The article breaks down day by day activities associated with each stage of adventure. The resources needed, set up required, description of each activity, and the purpose of each activity are included. This book is a helpful resource for teaching students with ASD because of the amount of activities described for each stage. A teacher is able to pick activities that are most suitable for their student's specific developmental level and needs.

2. Clocksin, B. (2006). High adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(4), 16-21.

   This article builds off the previous article by Clocksin regarding the first six stages of AE. The article describes the transition from the low elements to the high elements such as an increase in perceived (and actual) risks. The transition between includes personal and social responsibility, belying, and the climbing contract. Numerous high element activities are included that can be completed independently or as a team. This way teachers of students with ASD are able to choose from a variety of high element activities that best fits the needs and abilities of their students with ASD.

3. McIntire, B. (2017). The usage of Mosston's spectrum styles of teaching for students with ASD. PALAESTRA, 31(3), 50-55.

   This article illustrates Mosston's teaching styles specifically for teaching students with ASD. To accommodate the unique characteristics of students with ASD, Mosstons teaching styles allow teachers to choose a style that is more conductive for the student's abilities and circumstances. The article also includes examples of styles with fictitious scenarios that could be applied to AE games and activities for students with ASD.

4. Lee, J., & Vargo, K. (2017). Physical activity into socialization: A movement-based social skills program for children with autism spectrum disorder. Journal of Physical Education, Recreation & Dance, 88(4), 7-13.

   This article highlights some of the difficulties that children with ASD face in physical education class and how that effects their overall physical activity level. The article points out the importance of how movement experiences can help

children with ASD develop social skills and provides practical teaching strategies to support students with ASD in physical education class including resources, sample activities, and teaching strategies that could be applied to an AE unit.

5. Lee, J., & Haegele, J. (2016). Understanding challenging behaviors of students with autism spectrum disorder in physical education. Journal of Physical Education, Recreation & Dance, 87(7), 27-30.

   This article is very helpful to teachers that are new to working with children with ASD or have little experience. The article provides readers with an overview of autism, what causes some of the challenging behaviors that children with autism often display, and strategies to minimize challenging behaviors in physical education. There are several activities that can promote social-communicative behaviors for children with ASD in physical education and can be modified for an AE unit.

Graduate Projects

1. Laszewski, B. (2015). Designing and implementing a universal adventure education unit in high school physical education. Unpublished master's degree project, Department of Exercise and Sport Science, University of Wisconsin-La Crosse, La Crosse, WI https://www.youtube.com/watch?v=Mu2DkSj2QWY&feature=youtu.be

   This instructional video instructs general and adapted physical educators about universal strategies for students of all abilities in AE, designing and implementing an AE unit, and the use of universal equipment modifications. The video also highlights an established and very successful universal adventure and outdoor pursuits program at Holmen High School in Holomen, Wisconsin. The program includes students with and without disabilities, including many with ASD.

2. Zimmerman, D. (2012). Development of a teacher's manual for adaptions for students with physical disabilities on challenge courses and climbing walls. Unpublished master's degree project, Department of Exercise and Sport Science, University of Wisconsin-La Crosse, La Crosse, WI.

   This manual is a very in-depth resource for any educator that will be teaching AE to students with disabilities. The manual includes specific accommodations for persons with physical disabilities on climbing walls and challenge courses. The manual gives equipment modifications for students with physical disabilities to allow them to participate with their nondisabled peers in high elements, the seventh stage of AE. The modifications in this manual could be applied to students with ASD who have low muscle tone or motor ability in order to help them, be successful in high ropes elements.

Video

1. Video: Accommodating All: Awesome Adaptations for Students with Autism in General Physical Education: https://www.youtube.com/watch?v=n-nuU_ko60Q

   This video outlines modifications that can be made in general physical education classes to help include students with ASD. The video describes and gives examples of a number of resources including first then boards, task cards, visual schedules and other visuals. All of these modifications could be adapted for an AE unit in a physical education curriculum.

APPS

1. Proloquo2Go

   Proloquo2Go is an APP that can be downloaded on to an IPad. Prolquo2Go includes natural sounding text-to-speech voices, and over 10,000 up-to-date picture symbols. This APP is a helpful resource for teaching students with ASD who are nonverbal in an AE unit. Students are able to communicate with other members of their group through this communication device.

2. Wait Timer Visual Timer Tool

   Wait timer us a visual and audio tool to help teach good waiting behavior. The app includes a social story about waiting, and an audio/visual timer that can be set for different times. This tool can help students with ASD transition between tasks. Teachers can use this APP to help students understand how much time is left in class or in a specific activity and how to wait during that time appropriately. Specifically for AE this APP could be used particularly in the seventh stage when students are taking turns belaying and participating in the high elements.

3. Calm Counter

   Clam counter is a visual and audio tool to help people clam down when they are angry or anxious. The app includes a social story about anger, and audio/visual tools for calming down. This APP could be very useful to students throughout the adventure process. If a student became overwhelmed during an activity, they could pick up the APP, follow the directions on the screen until they are ready to join the group again.

Recommendations for Future Research

The development of this project have sparked several research questions for future study due to the minimal research in the area of developing social skills in students

with ASD through AE. Research has indicated however that AE is beneficial in developing social skills. In order to further promote and support knowledge of this topic more research needs to be conducted. The following research questions could be investigated.

1. What is the impact of an AE unit in physical education on social skills development among students with ASD?
2. How do students social skills change after each of the seven stages of AE?
3. What AE activities provide the greatest increases in student's social skills?
4. Is there a method of facilitation of AE that is more beneficial than others when teaching students with ASD?
5. Do social skills acquired through AE translate or generalize into children with ASD's everyday life?
6. In the unified design (incorporating students with and without disabilities into one class), what affect does participating with students with ASD in the AE process have on social skills development?
7. What size groups in AE foster the greatest development of social skills among students with ASD?

Recommendations for Future Critical Analysis Projects

Along with future research, there is a need for practical and descriptive critical analysis projects for the development of social skills for students with ASD through AE. Projects on this topic would serve as valuable resources for others who are teaching AE to students with ASD. The following critical analysis projects could be completed to contribute more knowledge and resources on the topic.

1. A worthwhile project would be to construct a resource binder that includes each stage of adventure and several games and activities for each stage. These games and activities would include modification for students at all three levels of ASD.
2. A resource binder could be developed for equipment modifications in AE for students with ASD. The equipment modifications would include specialized equipment and modifications for students at all three levels of ASD.
3. A resource binder could be made to support students with ASD throughout the AE process. The binder would include social stories, visual aids, PECS cards, and daily schedules. The resources would be developed to prepare students for an activity, transition between activities, and initiate social interactions.
4. A worthwhile project would be to design a complete AE curriculum focused on social skills development for students with ASD. The curriculum would include modifications that can be made to each stage for students with ASD at different levels. Educators could continually expand on the project to include more learning styles, adaptations, activities, resources, and additions to what is already established.
5. A project that would be of benefit would be to make video models for a variety of adventure activities that students could watch such as putting on a harness, performing a trust fall, climbing a rock wall, or walking across a platform on a challenge course. This could help prepare students with ASD for what they are going to experience and help them be more successful.

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APPENDIX A

ACTIVITIES FOR AE IMPLEMENTATION FOR STUDENTS WITH ASD

List and Description of AE Activities for the First 5 Stages of Adventure

Stage 1- Acquaintance Activities

1. **Group Juggle**

Divide the students into groups of 8-10 and have each group form a circle. Have students select one object and pass it around the circle, saying their name and a descriptor (e.g., fruit or vegetable, animal, adjective) that starts with the same letter of their first name (Brian Banana, Brian Bat, Brave Brian). When everyone has introduced themselves, they begin to pass the object randomly around the circle. Before each throw, they call out the name of the recipient. After catching the object, the recipient thanks the thrower (i.e., "Brian Banana" "Thank-you, Sarah Strawberry"). Prepare students with ASD ahead of time with a descriptor of their name.
(Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.)

2. **Boppity Bop Bop Bop**

Boppity Bop Bop Bop can be played in the same groups of 8-10 students, or expanded to include an entire class. Start with one student in the middle of the group. That person picks one student in the circle and says either "Left," "Right," "You," or "Me" followed by "boppity bop bop bop". That student must say the name of the person located in the designated direction before the center student finishes "boppity bop bop bop". If the student that is part of the circle is successful, the student in the center must try again with someone else. If unsuccessful, that student goes to the center and the person in the center rejoins the circle. If you play with the whole class in a single circle, place several students in the center and have them all go at once. Have students with ASD sit next to friends they are comfortable with and know well.
(Rohnke, K., & Butler, S. (1995). Quicksilver: Adventure games, initiative prolems, trust activities and a guide to effective leadership. Dubuque IA: Kendall/Hunt.)

3. **Peek-a-who**

Divide the class into two groups. Hold up a divider (sheet, mat, etc.) so the two teams cannot see each other. Instruct each team to send one student forward to sit near the divider. When both sides are ready, drop the divider. The first student to name their classmate on the other team "wins" and brings that person over to their team. Students with ASD could say something about the person, like the color of the shirt they are wearing, before the other person says their name.
(Panicucci, J., Faulkingham-Hunt, L., Rheingold, A., Kohut, A., & Stratton, N. (2002). Adventure curriculum for physical education: Middle school. Beverly, MA: Project Adventure.)

4. **High Five**

Have students find a partner. For students with ASD you might need to prepare them to be able to do this or facilitate the process. With their first partner, the students will do a handshake given by the facilitator and say his or her name to their partner. Students will then find another person, introduce themselves, and create a different shake. Students can get creative using a high five, low five, regular handshake, Wisconsin milking cows' handshake, happy salmon, or an original handshake. For students with ASD, it could be helpful to teach them a variety of handshakes before participating in the activity. If they are hypersensitive to touch, teach them a few creative ways to do a handshake without touching hands like an air five.
(Rohnke, K., & Butler, S. (1995). Quicksilver: Adventure games, initiative prolems, trust activities and a guide to effective leadership. Dubuque IA: Kendall/Hunt.)

Stage 2- Deinhibitizers/Icebreakers

1. **The Race is On**

The Race is on, is a fun way to show students some similarities that exist between them. Create a large circle using poly spots, one for each student or for each pair of students. Students begin by sitting or standing on the poly spot, with the leader in the middle. The role of the leader is to state something about themselves (e.g., likes/ dislikes, what they are wearing, number of siblings, etc.). The leader could say, "My name is Hannah and the race is on if you like ice cream." All students who like ice cream have to move to a new poly spot. Students cannot return to the same poly spot or move to one that is directly next to them. The leader also tries to find a poly spot. The result is a new leader. Students with ASD will benefit from being prepared with prompts beforehand that they can use when they are in the middle.
(Rohnke, K., & Butler, S. (1995). Quicksilver: Adventure games, initiative prolems, trust activities and a guide to effective leadership. Dubuque IA: Kendall/Hunt.)

2. **Bear, Fish, Mosquito**

This game is a variation of Rock, Paper, Scissors. Divide the class into two teams. Demonstrate a movement for each of the animal: Bears stand tall with arms outstretched and growling; Fish stand making fish lips with their hands on their cheeks to look like gills; and Mosquitos flap their arms at their sides while making a buzzing noise. Explain that Bears eat the fish, the fish eat the mosquito, and the mosquito kills the bear. Establish a centerline and a safe zone (10'-15' from the centerline) for each group. The two teams huddle-up. Each group decides on the animal they will all perform. After determining their animal, they line up facing each other at the centerline. If team one shows the bear action and team two makes the mosquito action, team two chases team one toward team

one's safe zone, because mosquito beats bear. Students that are tagged join the chasing team (team two). The game continues with the two teams huddling-up again and choosing another animal. If both teams choose the same animal, they huddle up and pick again (or you may choose to have them pick a primary and a back-up animal to save time). Have another student in his/her group check in with a students with ASD prior to each round to make sure they know the sign.
(Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.)

3. Morph

Have students stand in a circle. Once everyone is in the circle, have all of the students look at the ground and get into a creative pose. Then on the count of three, the students will look up at a person across the circle from them. For students with ASD, you may need to cue them to look a specific person across the circle from them. Once the students are looking at someone else's pose they will then try to form/morph their body into what the other person looks like. Eventually everyone will morph into the same pose.
(Aubry, P. (2009). Stepping stones: A therapeutic adventure activity guide. Beverly, MA: Project Adventure.)

4. Quail Shooter

Students will form a large circle. Two volunteers will start back to back in the center of the circle; all the individuals on the outside of the circle will have a beanbag. On the count of three, the students can toss their beanbags to the center of the circle. The students in the center will try to catch as many beanbags as possible. Once this first trial is over, two new volunteers will be in the middle. Repeat the process until all the students have been in the middle that want to be. Some students with ASD, may not want to be in the middle or will feel more comfortable standing back away from the group. Allow students to do that but still throw the ball into the middle.
(Rohnke, K., & Butler, S. (1995). Quicksilver: Adventure games, initiative prolems, trust activities and a guide to effective leadership. Dubuque IA: Kendall/Hunt.)

Stage 3- Communication

1. Group line up

Have students form a line and then designate a beginning and end of the line. Then instruct students to line up according to a desired subject such as, height, birth month, last name, etc. At first, students are able to use all of their senses, which should be easy. Once they have mastered this, the facilitator can eliminate certain senses from students such as sight or voice which will make the activity more difficult. For students with ASD, prepare them with the subjects

before the activity. In addition, it may be beneficial to teach students different nonverbal ways to express their personal answers to the questions you will ask. (Rohnke, K., & Butler, S. (1995). Quicksilver: Adventure games, initiative prolems, trust activities and a guide to effective leadership. Dubuque IA: Kendall/Hunt.)

2. Tanks

Have students partner up. Designate one as the "tank" and one as the "driver". Provide each pair with a yarn ball and blindfold. The tank is blindfolded and given a yarn ball to hold. The driver must maintain physical contact with the tank but may not touch the yarn ball. The object of the game is for each tank to knock out other tanks by hitting either the tank or its driver with the yarn ball. Once either player is hit, the pair moves outside the playing area and waits for the next game. Encourage the pairs to use this time to strategize. The game moves fast, so having to sit out does not result in much waiting time. An alternative is to have the tank and driver switch roles and then re-enter the game immediately. For students with ASD it will be beneficial to facilitate a discussion with them and their partner explaining the different verbal and nonverbal directions that they will use during the activity.
(Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.)

3. Italian Golf

Italian Golf is played in partners. Each pair needs one six-inch diameter deck tennis ring. Students will be tossing and catching their ring. To catch the ring, they must hold their arm up with the back of the hand facing their partner and the thumb tucked in. Throwers attempt to loop the ring on their partner's arm. Catchers can move their arm or body but cannot catch the ring with a hand. To start an Italian Golf Race, teams line up on one side of the playing area. The object is to be the first team to cross the end line. A player cannot move while in possession of the ring. A ring can only be tossed and caught as described above. Each player throws the ring to a partner. If the ring is caught, the thrower runs past the catcher and becomes the new catcher. If the ring is not caught, the thrower must retry from the same position; however, the catcher is allowed to move closer or further away. Pairs continue alternating thrower and catcher until they cross the playing area. If needed, facilitate a discussion with a pair of students (if one has ASD) requiring different verbal and nonverbal directions that they will use during the activity.
(Panicucci, J., Faulkingham-Hunt, L., Rheingold, A., Kohut, A., & Stratton, N. (2002). Adventure curriculum for physical education: Middle school. Beverly, MA: Project Adventure.)

4. **Mine field**

In minefield students work with partners for this activity. Mark a playing area with 4 cones. Inside the playing area, place a variety of objects (mines). Make it unlikely that anyone could walk straight across the area without hitting a mine. Blindfold one partner, while the other partner stands outside the playing area. The object of the game is to verbally guide the blindfolded partner safely across the minefield. Anyone coming in contact with a mine must return to the beginning and start again. After a successful crossing, or perhaps three unsuccessful crossings, have the partners switch roles. For students with ASD, review directional cues such as left, right, forward backward. Have them watch another pair do the activity before so they have an example of how to do the activity. If students are not comfortable wearing a blindfold you can have them walk backwards.

(Panicucci, J., Faulkingham, L., Rheingold, A., Kohut, A., & Constable, N. (2003). Adventure curriculum for physical education: High school. Beverly, MA: Project Adventure.)

Stage 4 – Problem solving

1. **Fire Swamp**

Lay out a boundary to represent the fire swamp. Tell student they will need to find a way to get across the fire swamp. No part of your body can come in contact with the fire swamp. Shoes and clothing will instantly catch fire if they touch the swamp. Give students equipment, such as carpet squares and poly spots, that they can use as stepping-stones to cross the fire swamp. Only give students just enough to make the activity challenging. Encourage students to engage in strategizing for several minutes before beginning to move. You might also have each group decide on consequences for touching the swamp (e.g., start over, have the student who touched face backwards, switch order, etc.). Students with ASD may have trouble conceptualizing that the ground is off limits. Lay down panel matts that will represent the fire swamp, that student will then lay their stepping stones on.

(Aubry, P. (2009). Stepping stones: A therapeutic adventure activity guide. Beverly, MA: Project Adventure.)

2. **Rope Knots**

This activity requires climbing rope (e.g., 15-20 feet for a group of 8) with loose overhand knots tied every 2-3 feet (one knot per student). Students in the group grab the rope so their hand is directly behind one of the knots. The object of this activity is for the group to get the knots out of the rope without anyone letting go. No one may let go of the rope; they may not slide their hand over a knot, and they must all maintain contact with the rope until all the knots are out. To complete the task, students must work together. Students need to discover, as a group, that they need to create enough slack in each knot to allow people to step

through it to be able to get the knot out. Prepare the other students in the group to provide the student with ASD clear and concise directions and prompt them to share their thoughts.
(Panicucci, J., Faulkingham-Hunt, L., Rheingold, A., Kohut, A., & Stratton, N. (2002). Adventure curriculum for physical education: Middle school. Beverly, MA: Project Adventure.)

3. Traffic Jam

For this activity, students need to be placed in a group of 8 and split into two teams. Each group needs 9 poly spots. Position the poly spots in a straight line, about two feet between each poly spot. The two teams each stand on four consecutive poly spots, with the middle poly spot free and the two teams facing each other. The object of this activity is for the two teams to switch ends. Students may take one-step forward (to an open poly spot) or leap around one person from the other team (to get to an open poly spot). However, they may not go backwards or leap around more than one person. The groups are to work together to solve this problem. If they get into a traffic jam (no more moves possible), have them start over in their original starting positions. Prepare the other students in the group to provide the student with ASD clear and concise directions and prompt them to share their thoughts.
(The solution is as follows for teams of 4. Team A: one move (forward); Team B: two moves (1 leap, 1 forward); Team A: three moves (2 leaps, 1 forward); Team B: four moves (3 leaps, 1 forward); Team A: four moves (4 leaps); Team B: four moves (1 forward, 3 leaps); Team A: three moves (1 forward, 2 leaps); Team B: two moves (1 forward, 1 leap); Team A: one move (1 forward).)
(2003). Adventure curriculum for physical education: High school. Beverly, MA: Project Adventure.)

4. The Infinite Circle

This is a partner activity. Each student needs a short rope (2'-6'). Create a loop at each end (like a set of handcuffs). To begin, one student puts on the handcuffs. The other partner passes his or her rope between their partner’s rope and body before putting handcuffs on. Thus, partners are attached in the middle, each wearing their own set of handcuffs. The object of the activity is to work together to separate themselves. The students cannot take the handcuffs off their wrists at any time. Allow several minutes for students to step through, around, or over the partner's rope trying to free themselves. To successfully remove the hand cuffs, one partner needs to push a bight of your own rope through their partner's handcuff loops, over and around their hand, and back out of the loop (but don’t tell them that). Prepare the other students in the group to provide the student with ASD clear and concise directions and prompt them to share their thoughts.

(Panicucci, J., Faulkingham-Hunt, L., Rheingold, A., Kohut, A., & Stratton, N. (2002). Adventure curriculum for physical education: Middle school. Beverly, MA: Project Adventure.)

Stage 5- Trust

1. **Spotting Contract**
   Participant: "Spotter ready?"
   Spotter "Ready"
   Participant "Falling"
   Spotter "Fall away"
   Participant "Off spot"
   Spotter "Spot is off"

   Cues when spotting
   - Hands like spoons, not forks (protect fingers)
   - Feet staggered and shoulder width apart (athletic stance)
   - Knees bent
   - Elbows bent (to absorb shock)
   - Always support/protect head, neck and back
   - Eyes and attention on participant at all times!

   (Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.)

2. **1 on 1 spot**
   Students will find a partner. One student will be the faller and the other will be the spotter. The faller will crisscross arms with hands on the opposite shoulders. The pair must remember to go through the spotting contract until the trust fall is fully completed. When catching the faller, the spotter will catch on the shoulder blades. Allow students to fall back only as far as they are comfortable. If it would make students more comfortable, place a mat under the students or have the spotters back against a padded wall. Use video modeling to prepare students with ASD for the trust fall process.
   (Clocksin, B. (2006). Sequencing low adventure activities in elementary physical education. Teaching Elementary Physical Education, 17(3),16-22.)

3. **Willow in the Wind**
   Divide students into groups of 8-12. One student stands in the middle of a circle. Students in the circle come close until their shoulders are touching one another. The circle is the "wind." Students in the circle position themselves (spotting stance) to spot the student in the middle, the "willow." Beginning with the calls described above, the willow is gently passed around the circle. The

willow should maintain a trust fall position during the entire exercise. Further, the willow can choose to keep eyes open or shut, but must attempt to stay on either heels or toes to maximize the movement around the circle. For safety, the “wind” needs to have a minimum of 4 hands on the “willow” at all times; no one student should be left supporting the willow alone. Keep the circle close together to prevent the “willow” from falling out of it. Let students with ASD choose whether they want to be the willow or not.
(Panicucci, J., Faulkingham, L., Rheingold, A., Kohut, A., & Constable, N. (2003). Adventure curriculum for physical education: High school. Beverly, MA: Project Adventure.)

4. **Zipper Line/Run**

Students will form two parallel lines facing each other. There will be one participant and the remaining will be part of the zipper line. Participants in the zipper line will alternate arms/hands outward with palms facing downward. The participant can start back as far as he/she chooses. The participant will then run from the beginning to the end of the line. The zipper will lift their hands right as the participant runs through. The participant will then go to the back of the zipper line and those individuals in the front can choose to be the participant. Let students with ASD choose whether they want to run into the zipper or where they would like to stand in the zipper line.
(Aubry, P. (2009). Stepping stones: A therapeutic adventure activity guide. Beverly, MA: Project Adventure.)

APPENDIX B

INSTRUCTIONAL VIDEO SCRIPT

Utilizing Adventure Education to teach social skills to high school students with ASD

Time	Content and Script	Video
0:00-1:00	Welcome to this instructional video about utilizing adventure education to teach social skills to school aged students with autism spectrum disorder or ASD. My name is Hannah Zimmerman and I am in the adapted physical education teaching graduate program at the University of Wisconsin-La Crosse. The major goal of this video is to assist general and adapted physical educators, adventure education professionals, and special education teachers with topics such as adventure education, teaching social skills through adventure education, infusing adventure education into a physical education curriculum and adapting adventure education for individuals with ASD at different levels. Specifically, my main focus is to show how to use adventure education to teach social skills to school students with ASD. Let's get started!	Title page Video of me speaking in professional setting
1:00-3:00 3:00-4:30	Since this video is designed to help educators teach students with ASD, it is important to describe autism, some learning, and behavioral characteristics of students with ASD. According to the DSM-5 from the American Psychiatric Association, autism spectrum disorder is characterized as persistent deficits in social communication and social interaction across multiple contexts currently or by history, as manifested by deficits in social-emotional reciprocity, deficits in nonverbal communication, deficits in developing and, maintaining and understanding relationships. There are 3 severity levels of ASD. Level one requires the least amount of support but does present deficits in social communication that cause noticeable impairments and inflexible behavior that causes significant interference with functioning. Individuals in level one can speak in full sentences but their attempts to communicate with others are odd and typically unsuccessful. Level two requires substantial support and is marked by deficits in verbal and nonverbal social communication these deficits cause noticeable impairments and inflexibility of behavior and difficulty coping with change even with support. Individuals that are at level two speak in 3 to 4 word sentences and are limited to narrow specific interest. Level three requires very substantial support and is marked by severe deficits in verbal and nonverbal communication, minimal reciprocal reactions with others, inflexibility of behaviors and great distress when changing focus or action. Individuals at level three have few words of intelligible speech and only responds to very direct social approaches. Additionally, along with social deficits individuals with ASD tend to have delayed motor skills. According to Green and colleagues, 79% of	Video of Students with ASD DSM-V autism definition on screen Show Clips of Students with ASD participating in GPE.

	children with ASD have movement impairments. This deficit impacts their participation in and outside of physical education class. Bandini and colleagues reported that parents of children with ASD have reported lower rates of participation in fewer types of physical activities than their typically developing peers. Students with autism tend to have a difficult time in physical education class. Goodwin reported that situations and environments, such as physical education, that demand social understanding or that lack structure can be very challenging for individuals with ASD, and, as a result, these situations can lead to isolation, outburst, depression and higher stress levels. Modifications and teaching considerations for students with ASD at all levels will be presented in this video as adventure education is explained. Let's take a look at the adventure education process.	Video of me speaking in professional setting
4:30-5:30	According to Byson, adventure education involves a structured sequence of physical activities and opportunities for reflection, which aim to promote personal and social development. Adventure education is focused on the process of learning rather than the product. The learning process is focused around the achievement of group goals as compared to individual success. Adventure education refers to the actual teaching of adventure activities including cooperative games, trust building activities, problem-solving initiatives and low and high elements. According to Sutherland and Stroot, adventure education has been shown to be an effective social skills intervention for children with ASD including developing inter and intra personal skills. This includes initiating and maintaining appropriate conversations, and developing friendships. For the purpose of this instructional video, we will focus on adventure education within a school-based physical education curriculum, not recreational summer camps and community YMCAs. However, some strategies may be similar. Adventure education can be incorporated as a unit in your physical education curriculum. Adventure activities are found in the SHAPE America grade level outcomes for physical education including standard 4: exhibiting personal and social responsibility, standard 2: applying knowledge of strategies, and standard 1: competency in a variety of movement patterns.	Clip of myself talking in front of climbing wall. Video clip of adventure education taking place in a school. SHAPE standards on screen
5:30-8:00	The gentlemen I am going to introduce to you next is Steve Eggerichs. He is an adapted physical education teacher in the school district of Holmen in Holmen, WI. He has been teaching adventure education to his student at the middle and high school levels for years. He will share with you how he teaches adventure education to his students and how he has seen, students with ASD develop social skills because of adventure education. Interview with Steve Eggerichs	Video of me speaking in professional setting Video clip of

	Me: How do you use adventure education in your physical education curriculum? Me: How do you modify activities for students with autism? Me: How have seen adventure education benefit students with autism specifically to social skills?	Steve Eggerichs talking
8:00-8:30	According to Bisson, adventure education should be taught through the seven stages of adventure. These stages include acquaintance activities, deinhibitizers, communication, problem solving, trust, low elements and high elements. I will now present the seven stages of adventure education along with specific strategies for implementing these stages to students with ASD.	Video clip of myself talking in a gymnasium
8:30-9:00	The first stage is acquaintance activities. Acquaintance activities involve name games or 'get to know you' games. The purpose of this first stage is to get to know the names of the other students in the class and begin to feel comfortable in the group setting. As a facilitator or teacher, this is an opportunity to teach students the proper social skills you want them to display such as eye contact, appropriate greetings, and using others names. These are all skills that students with ASD tend to lack and require direct instruction to accomplish. Playing games to practice these skills is an opportunity for students to learn and apply social skills in multiple settings.	Video clip of me talking in a gymnasium
9:00-10:00	A game that is played during this first stage is "Group juggle". For the game divide the students into groups of 8-10 and have each group form a circle. Have students select one object and pass it around the circle, saying their name and a descriptor like a fruit or vegetable, animal, adjective) that starts with the same letter of their first name for example, "Allison the Ape". Then everyone else in the circle would reply, "Hi Allison the Ape!" For students with ASD this helps them practice appropriately initiating and responding to an interaction. If your student with ASD is resistant to participate, try using a sensory object that they enjoy such as a squishy ball or animal beanbag.	Video clip of student playing the game Show different sensory balls
10:00-10:30	The second stage of AE is the icebreaker/de-inhibitor phase. The purpose is for participants to loosen up, smile and feel comfortable within the group situation. The main job of the facilitator is to help participants increase their familiarity with the other members of the group and feel comfortable in the group setting. Group development is a central component of AE because students are encouraged to focus on social growth. Students with ASD often do not initiate interactions	Clip of me speaking in a gymnasium

	with others so this is an opportunity to get them to interact with others in the group.	
10:30-12:00	An effective way to show students some similarities that exist between them is through the game, “the race is on”. Create a large circle using poly spots, one for each student or for each pair of students. Students begin by standing on the poly spot, with the leader in the middle. The role of the leader is to state something personal such as their likes/dislikes, what they are wearing, number of siblings, etc. For example, “My name Hannah and the Race is on if you like ice cream.” All students who like ice cream have to move to a new poly spot. Students cannot return to the same poly spot or move to one that is directly next to them. The leader also tries to find a poly spot. The result is a new leader. Through playing the game all students, including those with ASD learn more about each other making it easier to find commonalities. The game many be challenging for students with ASD and they may benefit from being prepared ahead of time through a social story so that they know what to expect and what will be expected of them. The social story could include different, “the race is on if...” statements so that the student is prepared with something to say when they are in the middle. Setting students with ASD up for success will be beneficial to their development of social skills and interactions within the group.	Clip of students playing the game Show example of social story for the activity.
12:00-12:30	The third stage of AE is communication. The goal of this stage is for participants to understand that communication is complicated and can occur in a variety of mediums including verbal, nonverbal, listening or written words and pictures. Participants learn to take turns verbalizing their ideas and listening to others’ ideas. The communication stage is important for directly teaching and practicing social skills for students with ASD. They are able to practice the social skills they have been learning to work towards the achievement of a common group goal. This stage is a process that may require a group of students to complete the activity multiple times before being successful.	Video clip of me talking in gymnasium
12:30-14:00	“Mine field” is a game that helps students practice directive communication skills. For the game students will work with a partner. Mark a playing area with 4 cones. Inside the playing area, place a variety of objects (mines). Make it unlikely that anyone could walk straight across the area without stepping a mine. Have the pair pick one person to be blindfolded. The other partner stands outside the playing area. The object of the game is to verbally guide the blindfolded partner safely across the minefield. Anyone coming in contact with a mine must return to the beginning and start again. After a successful crossing, or up to three unsuccessful crossings, have the partners switch roles. This game could prove to be difficult for	Video clip of student playing the game Show revers roles

	students with autism but with some patience, prompting and practice, students will learn to use their words to express what they want someone to do. Prepare the student ahead of time by reminding them of directional words they will need to use during the activity such as left, right, forward, and backward. Additionally, students with more severe ASD may need more support. You can assign a third student to their group to act as a backup driver. The backup driver does not drive for the student with ASD but prompts the student to give directions to their blindfolded partner. This peer-mentoring model can be very beneficial throughout the adventure education process if the peer mentors are trained properly.	
14:00-14:30	The fourth stage of adventure education is problem solving. In this stage, participants are purposefully put into situations where they need to work together as a group to solve a problem or challenge within the parameters of an activity. Participants need to use the skills they learned in the previous stages including: using each other's name and communicating effectively to be successful. The main focus of the problem solving stage is the process not the product. In this stage, participants learn through concrete experiences and trial and error so the teacher should never provide students with the answer. Activities presented in this stage tend to be physical problems that require cooperation, planning, and group consensus or agreement. Students with ASD may need a little extra support in this stage to help them use their communication skills effectively, but the social skills learned in the previous stages will help them be successful interacting with their group members.	Video Clip of myself speaking inside a gymnasium
14:30-16:00	The game "All knotted up" requires about 15-20 feet of rope for a group of 8 students with overhand knots tied every 2-3 feet, or one knot per student. Students in the group pick up the rope so their hand is directly behind one of the knots. The object of this activity is for the group to get the knots out of the rope without anyone letting go of it. No one may let go of the rope; they may not slide their hand over a knot, and they must all maintain contact with the rope until all the knots are out. The activities leading up to this stage will help students with ASD feel comfortable in the group, and comfortable using their words to voice their thoughts. If students are nonverbal, you can an app on an IPad such as Proloquo2Go as a method of communication. This stage will help students expand their social skills to contribute to a common group goal. It is important for students with ASD to fully understand what the goal of the group is especially if it is an abstract concept. In this case video modeling can be used to show the student what you want them to do and what the outcome should look like. Prior to the student participating in the activity, take a video of another group	Video clip of students playing the game. Show Student watching video modeling of activity.

	doing the same thing. Show the student different aspects of the process including untangling in small parts, talking together as a group to problem solve and what the rope will look like when the group is finished. Video modeling will help student with ASD understand their role and be an effective member of the group.	
16:00-16:30	The fifth stage of adventure is trust. This stage is vital for establishing trust among members of the group. Prior to beginning trust activities, the teacher should lead participants in a discussion about how a trustworthy person acts. Facilitators need to remind participants to act in a trustworthy way in order for their group members to trust them. Trust is something that is hard to gain but easy to lose. Participation in trust activities begins to establish a comfortable and secure feeling among group members. In the trust, stage participants will learn the spotting contract so that they have the cognitive knowledge to be able to participate in the activities. This includes teaching and demonstrating the proper technique and aspects of spotting. More complicated trust exercises can follow basic trust exercises to build students trust in their group members. This will take time and groups should not move past this stage until completely proficient. Prepare students with ASD prior to starting this stage in order to increase their likely hood of success.	Video clip of myself talking in the gymnasium
16:30-18:30	Trust falls are a common feature of adventure units. However, prior to any actual falling, it is critical that students develop competency in spotting. To begin, demonstrate a proper spotting technique. Proper spotting includes hands in ready position, fingers closed; legs staggered with knees slightly flexed; hands at shoulder height). Then, discuss important aspects of spotting: (a) Protect head, neck, and spine; (b) work at a comfort level appropriate to both the faller and the catcher; and (c) stay focused. Have students practice the spotting position with you or another highly experienced spotter. Introduce the first call, “Spotter Ready.” Have students practice getting into spotting position when they hear, “Spotter?” Talk about the role of the faller: (a) communicate with spotters, (b) keep body straight and tight, (c) work at comfort level of both the catcher and faller, and (d) stay focused. Some students with ASD may have reservations about falling back or being caught by a partner. This is another opportunity where video modeling could be beneficial. Show the student a video of a peer doing a trust fall and then videotape the student performing the trust fall so they are able to watch themselves. Have students practice with a partner or a small group. Participating in trust exercises can help students, especially those with autism, to develop deeper and more meaningful relationships with their peers. If students are still resistant to falling backwards make modifications to make them more comfortable such as adding additional spotters, have students stand on	Video clip of students participating in the activity. Picture of proper spotting technique Show students doing trust fall activities Student watching video of peer performing trust fall.

	top of a matt, have students start by kneeling or standing closer to each other so that the “fall” is less significant.	
18:30-19:00	The sixth stage of AE is low elements and includes activities that are 0-3 feet off the ground and require spotting from other group members. Low elements are designed to get students comfortable with the idea of leaving the ground. Participants need to rely on the other members of their group for physical and emotional support throughout the activity. They need to work together to accomplish a task under, a situation with some pressure.	Video clip of myself talking inside a gymnasium
19:00-20:00	To get students off the ground have them participate in the log line up. For this activity, you will need a long wood log or beam positioned directly on/close to the ground. Have the students stand on the log before giving directions. Tell them that from now until the activity is finished there should be no more talking. Then instruct the students to line up in a designated order such as height, last name, or birthday. Students will need to work together to maneuver around other classmates in order to switch positions. If students step off the log you can choose if they hop back up to, where they were or start over in the original order. In this clip I modified the activity and let students use the cross supports as a stepping stone. For students with ASD stage six provides an opportunity to practice their nonverbal communication skills in a situation in a higher risk and reward. When low elements are properly planned and sequenced, they develop cognitive, affective, and psychomotor skills necessary for a successful transition to high elements. Through stages 1 through 6 students as a group need to grow in their ability to work together, problem solve, communicate, and show trust in their peers to be able to participate in stage seven.	Video of myself giving directions to students Video clip of students participating in the activity
20:00-21:30	The seventh stage is the high elements stage. High elements are 30-50 feet in the air and tend to be individual based. High elements are typically performed on a high ropes course and include activities such as Catwalk, Two Line Bridge, Multi-Vine, Centipede, Pamper Pole, and Flying Squirrel. The role of the seventh stage is to challenge participants out of their comfort zone into a state of disequilibrium. The seventh stage is mainly individual challenged based, but they do require a degree of psychological support from the group. Just like anyone else, students with ASD may have different reactions to participating in high elements. If the student is very anxious about the activity, make accommodations to meet the student where they are at. This could look like having the student climb and touch the top of the pamper pole instead of climbing on top of the pamper pole and jumping off. If physical ability or safety is a concern, there is adapted adventure equipment such as a three to one pulley system, that assists	Show indoor and outdoor high elements Show modifications used for students with disabilities.

	a climber by taking some of the weight off of them as they are climbing or a booty-bag that straps a student in up right for the flying squirrel.	
21:30-22:00	All of the stages prior to stage six and seven work up to these last two stages. They prepare the participants to get to know each other, have fun together, communicate, problem solve and trust each other. When these stages are done correctly, participants are more open to pushing themselves out of their comfort zones on the low and high elements. For children with ASD this can be an opportunity for them to be part of a group and feel supported by their peers. As they are challenging themselves on the high elements, their peers on the ground support them by cheering them on or belaying for them. Physical and emotional support can lead to a strong sense of trust and friendship between group members.	Show students with ASD participating in high elements with group
22:00-23:30	A teacher may need to spend a day or two on each of the stages. Communicating with students with ASD prior to each stage will help prepare them to be successful interacting with their peers in each stage. After every stage, it is important to debrief with your students in order for them to get the most out of the experience. Processing the experience can give activities greater meaning rather than using adventure activities purely for recreation. It is important to get students to think about how they came to a solution to a problem, what things they did as a group that helped them solve a problem, what things they could have done differently, and how they could apply this to situations in their own lives. This will help students with ASD generalize what they learned into their everyday lives and understand the thoughts and feelings of those around them. Students with ASD to can learn from their peers talk about their experience in a situation. If they felt uncomfortable during a high element and they hear their peer say that they were, also scared during that same element it will help them understand more similarities between themselves and their peers. To help student with ASD best reflect and debrief from an activity give them plenty of time to think about the question that you have asked. Additionally, utilize assistive communication apps or pecs to get students start expressing their feelings or others perceived feelings.	Clips of adventure in sequence order Show group debriefing together Show different communication tools
23:30-24:30	Interview with Steve Eggerichs From your experience why is debriefing so important to an adventure education process? What are some tips that you have for facilitating meaning reflection for students with ASD?	Clip of Steve Eggerichs talking
24:30-25:30	As you can see, adventure education can be a useful tool for teaching social skills to students with autism. In this video, we have reviewed	Video clip of myself

	the seven stages of adventure and the key aspects of social skills incorporated into each stage. Also highlighted were ways to design an adventure education unit with modification to games and activities so that students with ASD at all levels can be successful. This could include game selection to specific or teaching strategies such as peer mentoring. This instructional video is to help you design and implement an adventure education unit within physical education that meets the unique needs of students with autism. Thank you for watching. End credits: List all who helped with the video and available resources.	speaking in professional setting